

Freedom to Act?
Strategic Peer Evaluation, Negative Relationships and Brokerage

Abstract

From capital and resource allocation to hiring and promotion, organizational actors constantly make evaluations. These evaluations occur within an environment in which these actors jockey for limited resources, often resulting in negative sentiment that may color putatively objective evaluation outcomes. In this paper, we bring to bear social network theory to suggest that an individual's ability to evaluate critically peers they feel negative sentiment towards is contingent on the focal individual's network. Specifically, we suggest that only individuals in brokered network positions perceive the freedom to act upon their negative sentiment thereby contravening organizational norms. We use a mix of archival and experimental methods across two different populations to test this proposition. Across both settings, we provide evidence that only network brokers have the freedom to act in opposition to cultural norms by acting on their negative sentiment in peer evaluation. These results suggest that overlooking an evaluator's negative sentiment, as well as the network positions that constrain or enable an individual's actions, may lead to distortions in peer evaluation processes and outcomes.

Freedom to Act? Strategic Peer Evaluation, Negative Relationships and Brokerage

The strategic allocation of organizational resources—the decisions concerning where and when to invest financial, human, and social capital assets—is a basis of establishing competitive advantage. A common thread linking a wide array of critical organizational choices is the process of evaluation. In developing their strategies and roadmaps, for example, organizations evaluate which: projects to fund, alliances to establish, candidates to hire, and individuals to promote to key managerial positions (Wright, Dunford, and Snell, 2001; Dokko, Wilk, and Rothbard, 2009; Huang and Cappelli, 2010; Campbell, Coff, and Kruscynski, 2012). Within organizations, individuals constantly (in)formally assess the merits and contributions of their fellow employees. These evaluations are essential for gaining access to resources, status, advancement opportunities, pay, and future employment (Kane and Lawler, 1978; DeNisi, Randolph, and Blencoe, 1983; Ibarra, 1992; Podolny and Baron, 1997). The procedures employed in these evaluations, in turn, reflect and define the organization's culture and thus its reputation with respect to prospective, current, and competing organizations' employees.

Intra-organizational evaluations in many settings entail a fundamental tension that threatens to undermine their integrity as individualistic incentives intersect and conflict with social forces (Feldman and March, 1981). This follows because work within modern organizations is increasingly interdependent, which renders the allocation of credit to specific individuals challenging (e.g., Sanchez and Mahoney, 1996). At the same time, employees often compete for a finite set of rewards, such as promotion, pay, and prestige (e.g., Lerner and Wulf, 2007; Peiperl 2001). Hence, this intra-organizational competition is likely exacerbated among individuals and their (structurally) “equivalent” peers (e.g., Biancani, McFarland, and Dahlander,

2014; Liu, Srivastava, and Stuart, 2016); precisely those individuals that are often tasked with supporting and also evaluating one another's work. Finally, evaluation is "socially embedded" insofar as decisions are shaped by specific networks that magnify organizational cultural norms (Gartrell, 1987; Hsu and Podolny, 2005; Hsu, 2006; Pachucki and Breiger, 2010; Turco 2010, Lamont, 2012; Zuckerman, 2012; Bothelo and Abraham, 2017; see also Brass, Butterfield, and Skaggs, 1998).

One likely byproduct of this tension between socially embedded cooperative interdependence and competition is the development of negative sentiment between some co-workers as they jockey for limited resources within an organization. While often hard to trace, this negative sentiment may manifest itself in the form of gossip (Feldman and March, 1981; Ellwardt, Labianca, and Wittek, 2012), social comparison (Gartenberg and Wulf, 2017), and politicking (Chown and Liu, 2015). With regard to evaluative outcomes, however, the undercurrents of negative sentiment are often constrained by an organization's cultural norms, which dictate that evaluation should be based on the merits of work, without taking into consideration an evaluator's negative sentiment of a peer.¹ Given the pervasive co-occurrence of these countervailing forces as well as their consequences, the more salient questions are thus: under what conditions are cultural norms concerning the imperative that peer evaluation should be based on performance and not personal sentiment flouted, and what structural conditions enable individuals to have the perceived freedom to act upon their negative sentiment?

In this paper, we argue that individuals with divergent social network structures may differ in their willingness to disregard cultural norms in peer evaluation. Specifically, evaluators that are network brokers (i.e., have relationship partners that are disconnected from one another)

¹ In academia, for example, this presumption extends beyond the boundaries of specific "organizations" to the entire industry.

have greater freedom to act upon their negative sentiments in the evaluation process contrary to norms dictating that evaluations should *not* be based on personal sentiment. This freedom arises because a more fragmented network frees the evaluator from perceived normative obligations by reducing the evaluator's concerns about accountability, which is more likely in closed networks (Coleman, 1988; Portes and Sensenbrenner, 1993; Castilla, 2015). Thus, the proposition of this paper is that evaluators with greater network brokerage have the autonomy to act upon negative sentiment.

This paper examines an individual's perceived freedom to act upon negative sentiment through the lens of peer evaluations. We focus on peer relations, rather than hierarchical supervisor-subordinate relations, for two reasons. First, these "horizontal" evaluations are purged of formal power differentials associated with organization hierarchy. Second, peers are most likely to tussle with one another for finite advancement opportunities by virtue of organizational design used to define comparison sets. Thus, we anticipate that peer evaluations may be a particularly salient research setting in which to examine the freedom to act upon negative sentiment and thus transgress cultural norms concerning tendentious evaluation.

We employ two complementary methodologies across two different empirical settings to substantiate this claim. First, we designed and deployed a peer evaluation system over two semester-long classes in a business school in which each student evaluated every other student's class contribution. We chose this strategic research site because it afforded us the opportunity to collect a complete set of negative sentiments among a bounded population. Moreover, we were able to measure the extent to which each individual occupied brokerage positions, as well as to collect a number of vital control variables (e.g., socio-demographic characteristics, peer effects, test grades). Further, in this context, peer evaluations accounted for a considerable component of students' comparative grades that were allocated on a fixed-curve. This further heightened

competitive juices in an institutional context widely reputed to be very competitive. While there are many advantages to the depth of the classroom data, social relationships in that setting remain the product of a multitude of individual choices. As a result, endogeneity and alternative interpretations remain, and causal inference is particularly difficult to establish (Bettis, Gambardella, Helfat, and Mitchell 2014; Schilke, Levine, Kacperczyk, and Zucker 2019).

To address these causal inference concerns, we complement the classroom data with a simple evaluation experiment. Additionally, the experiment was conducted online, allowing us to examine the robustness of our findings in a non-student population. Specifically, we randomly assign network structures (brokered or closed) and sentiments (positive or negative) to evaluators. Although this laboratory experiment lacks the verisimilitude of the classroom data, it allows us to control precisely for conditions such as “objective” quality of performance and to derive causal inference, bolstering confidence in our findings.

Across both studies, we find that when negative sentiment arises, individuals, on average, do not act upon this negative sentiment in evaluation. Rather, negative sentiment is set aside and individuals adhere to established cultural norms. However, as predicted by social network theories of structural autonomy, we find that brokers have the freedom to exploit their structural holes and evaluate the peers towards which they have negative sentiment more harshly, counter to organizational norms. Lastly, we note that the magnitude of these effects are consistent across both the classroom setting and the online experiment, lending credence to our results.

Moreover, both studies begin to hint at potential mechanisms. In the classroom study, there is evidence that individuals who are downgraded are not inferior performers. To the contrary, students held in high regard by others and who perform in the top quartile on tests have a greater likelihood of being “punished” by their high-performing, competitive peers who dislike them. Interestingly, these same peers generally evaluate their other peers consistent with their

overall average evaluation. This evaluative pattern is consistent with an argument for strategic intent insofar as these individuals are strategically penalizing their peers whom they perceive as competition for a finite reward.

The second set of experimental results conducted online further indicates a potential mechanism for this effect. We find that evaluators randomly assigned to the negative sentiment and brokered network position condition did not feel a sense of obligation to offer a favorable evaluation. This finding is consistent with the notion that having a closed network results in a greater feeling of accountability, which is not the case in an open network. Taken together, this paper draws attention to the presence of negative sentiments within organizations, as well as the conditions under which these sentiments may (or may not) affect seemingly objective evaluation outcomes.

PRIOR THEORETICAL AND EMPIRICAL WORK ON EVALUATION

Interdependence, Negative Sentiment, and Strategic Evaluation

Strategic management rests on a host of evaluations and choices from which markets to enter and exit to those pertaining to internal resources and capabilities including those pertaining to human capital. In adjudicating between alternative strategic options, planners often must tap into diverse skill sets to account for the organization's technical expertise, capital structure, and human capital resources, among others. And within each disparate domain, the work of collating complex information and evaluation options is often carried out within, and influenced by, teams that are themselves embedded in larger social structures.

Given the complex, often path-dependent process that is involved in crafting organization strategy (Barnett and Burgelman, 1996), individuals often lobby and politic for their own favored courses of action. Moreover, as the consequences of organization strategic decisions likely lead to substantive reallocations of organization resources, with concomitant shifts in organization

financial and human capital to support those decisions, employees have very real incentives to advocate for strategic decision that fall in their favor. Taken to the extreme, Mintzberg has construed one view of organization strategy as a political *détente*, with shifting coalitions vying for support within the organization (Mintzberg, 1983).

A particular salient window into potential distortions of assessments within organizations is peer evaluation, an increasingly prevalent form of performance feedback within organizations. Indeed, Estimates indicate that roughly 66% of employers use performance appraisal systems, and between one third and one-half of U.S. companies, and nearly every Fortune 500 company, employs some variant of peer-based evaluation (London and Beatty 1993, Ghorpade 2000, Fisher 2013).

As work is increasingly interdependent and conducted within teams, it is often difficult to unpack individual contributions—or “fixed effects” if you will. Thus, a burgeoning body of literature on peer evaluation has evolved, broadly emphasizing either the *characteristics* or the *connections* of the evaluator and the evaluated (i.e., the “evaluation dyad”). Underlying key facets of this literature is a fundamental social scientific question: What factors enable or constrain objective evaluations in general, and within organizations in particular? Scholars have focused on characteristics of the evaluator and the evaluated, whether these are traits of each individual (Tsui and Gutek, 1984; Greenhaus, Parasuraman, and Wormley, 1990; Stoll, Raphael, and Holzer, 2004; Castilla, 2012; Rivera, 2012), or those characteristics the two individuals share in common such as gender or race (Giuliano, Levine, and Leonard, 2009; Abraham, 2017). More recently, Castilla (2011) moved beyond the evaluator and evaluated to examine how evaluators’ peers may influence their appraisals—in essence, a peer effect. Taken together, we have learned much about how one individual evaluates another, as well as the factors that distort this process.

Across this growing body of literature, researchers have largely presumed that sentiments between peers within organizations are positive and collegial as such sentiments are rarely observable to the researcher. However, there are at least two reasons to believe that there exists a wider range of sentiments, including negative sentiments among peers.

First, is the often zero-sum nature of performance feedback systems. Evaluative rankings are inherently ordinal, with some individuals receiving higher ratings than others do by construction. Framed in this manner, it is clear that such peer evaluation outcomes are the result of a competitive process even if not framed as such. If all members of an organization received uniformly positive or negative evaluative rankings the informative and discriminating value of the system is diminished. Thus, it is essential that some organizational members be given more positive evaluations than others based on the merits as organizationally defined. Viewed this way (positive) peer evaluations are no different from other organizational resources (e.g., pay, promotion, prestige) and it should come as no surprise that the two are correlated.

Second, this ranking system underlying peer evaluation is likely to yield negative sentiments, feedback, and discomfort (Parker, Halgin, and Borgatti, 2016). People do not like being judged (cf. Cottrell, Wack, Sekerak, and Rittle, 1968; Cottrell, 1972). Third, peers within organizations are determined through task interdependence as a byproduct of organizational design (e.g., Mintzberg, 1979), rather than primarily through individual choice (e.g., voluntary organizations as in McPherson, 1983). Consequently, two individuals that hold negative sentiment towards one another may still be required to interact by the organization, unlike other social settings where interaction is often a function of some choice.

Consistent with the notion of competitive forces at play within the organization, there is a growing literature on negative sentiment within organizations. For example, negative gossip can lead to victimization (Ellwardt, Labianca, and Wittek, 2012), as well as bullying within the

workplace (Yap and Harrigan, 2015). More passively, individuals may actively avoid others within the organization, and negative ties affect workplace satisfaction (Venkataramani, Labianca, and Grosser, 2013), and are associated with deviant and even criminal behavior at the organizational level (Aven 2015).

Despite strong individual incentives in many organizations to act negatively--including with respect to evaluation-- towards peers with whom one competes, such behavior is counterweighted by strong norms to act ethically (Greenberg and Cropanzano 2001; but see also Merton 1938). It is this normative control that is one of the benefits of hierarchies insofar as it induces organizational members--not just coerces them--to consider the best interests of the collective (Kunda, 1992: 11; O'Reilly III and Chatman, 1996). These norms are valuable because they help channel individual effort towards superordinate, organizational goals in a self-reinforcing dynamic as organizational procedures deemed fair elicit fair behavior from members who believe they are fairly treated and evaluated (Greenberg 1987). This self-perpetuating facet of organizational norms thus depends critically on the actions of the individuals that comprise the collective, and are undermined when individuals believe they are not being evaluated on the merits (Martinson, et al. 2006).

Negative Sentiment and Social Networks

If we suspect that negative sentiments are likely to occur within the organization, and there is strong reason to believe this is the case as noted above, how might these interpersonal biases color evaluation outcomes, especially when cultural norms dictate that evaluators should not take personal sentiment into account? In other words, what social conditions may enable (or restrain) an individual from acting upon negative sentiment? One of the most prominent theories applicable to this question is the notion that dense social ties can influence an individual's behavior. When a focal individual's relationship partners are also connected to one another,

information and opinions are reinforced (Eder and Enke, 1991; Grosser, Lopez-Kidwell, and Labianca, 2012). When differences in opinion do occur among these close-knit individuals, out of sync individuals often alter their views and, in this manner, reduce the odds of conflict and the stress and discomfort that inconsistent opinions bring about (Heider, 1946; Cartwright and Harary, 1956; Davis, 1963). As a result, individuals with overlapping sets of relationships are subject to strong normative expectations and held accountable to an effective sanctioning mechanism (Coleman, 1988; Portes, 1988; Portes and Sensenbrenner, 1993), limiting an individual's degrees of freedom to act (Simmel, 1964[1902]; Coleman, 1988) counter to established cultural norms within the organization.

The rejoinder to this argument concerns the freedom afforded by open networks. Burt's (1992: 65) original formulation of brokerage viewed a structural hole as, "a buffer, like an insulator in an electric circuit." By limiting the information shared between contacts, a broker has the ability to keep secrets (Aven, 2015). More recently, Burt (2010: 10) suggested that being a broker has cognitive implications as well, enabling the broker to manage contradictory relationships and to become "less troubled by differences in opinion or practice." Thus, a broker has less concern that her evaluation will result in imbalance with contacts (Cartwright and Harary, 1956; Heider, 1958) as her brokerage position entails "buffers" that limit this possibility and concern (Burt, 1992; Padgett and Ansell, 1993). Rather than feeling dirty (Casciaro, Gino, and Kochaki, 2014), brokers have diminished pressure to change dissonant opinions. Rather, individuals with non-overlapping sets of friends have much greater tolerance for conflicting opinions among their (unconnected) contacts.

This notion of heightened behavioral norms for individuals in closed network structures is mirrored in the literature on organization networks. Building on Powell's (1990) work, Podolny and Page (1998: 60) state that members of a connected network "feel a sense of

obligation to the other party or parties rather than a desire to take advantage of any trust that may have been established.” By contrast, in the context of peer evaluation, evaluators with less constrained networks (i.e. those having contacts that are not directly connected themselves) may have the freedom to engage in a greater range of actions. These individuals are not faced with the attendant cognitive apprehension that comes with structurally induced normative obligations (Shelley et al., 1995; Strahilevitz, 2005; Cowan, 2014; Aven, 2015).

In a organization where cultural norms dictate that evaluation should be based on merit rather than personal feelings, this logic implies that individuals with networks comprised of overlapping sets of relationships should be less able to act on their personal negative sentiments in peer evaluation due to network closure (Coleman, 1988). By contrast, the actions of those with more fragmented networks—networks in which individuals are disconnected or buffered (Burt, 1992)—should be less limited by such normative obligations (see also Brass, Butterfield, and Skaggs, 1998). Thus, we hypothesize that:

Hypothesis 1: Evaluators with less (more) constrained networks will more (less) critically evaluate peers towards which he or she has negative sentiment.

We use two complementary techniques to test this prediction: archival analysis of peer evaluation in a classroom as well as two experiments of peer evaluation in the laboratory. We discuss each in turn.

METHODS

Study 1: Classroom Data

We designed and implemented a peer evaluation system within two classes of a management course at a private business school in the Northeastern United States, following similar studies in the management field (e.g., Baldwin, Bedell, and Johnson, 1997; Jung, Vissa, and Pich, 2017). The design was informed by existing systems employed in large professional

services organizations.² Both classes were observed in the spring and fall of 2012. While there are clear differences between the classrooms we study and formal organizational settings, especially concerning the age distribution of its members, there are also a striking number of similarities. The most prominent parallel between the two is a common emphasis on competition for a limited set of organizational resources. Just as “typical” organizational members compete for limited attention (Ocasio, 1997), resources (Burgelman, 1996), and jobs (Bidwell and Briscoe, 2010), students compete with one another for grades that they believe are integral to securing full time employment in desirable organizations. In the fixed curves of our classrooms, roughly 10% of students received an A and 15-25% received an A-. Between 35-55% receive grades in the B range, with the remainder earnings Cs and a handful of students earning a D. Because student grades *are* disclosed to prospective employers, students are justifiably concerned about their (relative) performance. Indeed, these students are reputed throughout the university—and, indeed, programs in business more generally—for their competitive culture.

The study of peer evaluation in a classroom setting affords some design and control advantages. First, close contact with this research setting enabled the collection of a number of detailed covariates, including socio-demographics (e.g., gender, ethnicity, major) and an objective measure of performance in the class.³ Thus, we are able to provide a rich set of controls to account directly for alternative explanations. Second, the social system—notably friendships and negative sentiment—emerged *de novo* over the course of four months. Only a very small

² The results of this research haven been presented to the employees of one of the world’s largest professional services organizations whose partners attested to the parallels in this systems and theirs, as well as the underlying social forces discussed below.

³ Two exams were administered to the students, each worth 17.5% of the total grade. Exams included 10 multiple choice questions, and 6 short answer questions on class material. Exams were graded by a teaching assistant who did not attend class. We explicitly hired the TA from a different population to ensure that he had no personal connection with a student that might bias his evaluation of responses.

number of students were friends or familiar with each other at the beginning of the semester. Thus, we were able to capture the social network both at its conception and at its end with pre- and post-semester surveys, and use the former to establish a baseline for understanding the social system. Each survey included a complete roster and picture book of students to aid recall, and questions concerning the student's dyadic social relationships (e.g., close friend, stranger), including binary questions (yes/no) whether s/he was "not fond" of the other student or held her in "high regard." The response rate for both surveys was nearly 100%. In the second survey, we implemented a peer-to-peer evaluation system akin to "360 degree" performance evaluations within organizations (Ghorpade, 2000; Fisher, 2013).

Finally, we were able to set the blueprint for the organizational culture with a sharp focus on fair and accurate assessment of one's peers' contribution and the need to refrain from introducing personal sentiment into evaluation. Students were informed about the importance of class contribution to their overall class grade, as well as the peer-to-peer evaluation system that would be employed at the end of class, in the syllabus posted before the class began and at several points throughout the semester.

The researchers involved in this work spent considerable time and effort ensuring that all students were apprised and aware of the norms of the classroom and school more generally, which began on the first day of class as we highlighted this evaluation system as a unique feature and obligation of this specific class. Instructions stressed that all students are expected to adhere to the school's honor code, including basing their assessment on the "merits and nothing else," such as personal feelings or animosity. These instructions were restated and reinforced via emails and in-class verbal communications throughout the semester. Hence, as much as any organization could, we stressed that contributions to class discussion mattered for performance assessment, and that when one evaluates one's peers one must do so with integrity and honesty.

Measures

As peer evaluation is an inherently dyadic social phenomenon (Homans, 1950; Blau, 1960; McPherson, et al., 2001; Erez, Schilpzand, Leavitt, Wollum, and Judge, 2015), we conducted our analysis at the evaluator-evaluated (i.e., dyadic) level of analysis so that we could include measures of the evaluator, the evaluated, characteristics they share in common, as well as classroom effects.

Dependent Variable. The key outcome measure in the field data reflects how one student, the “*evaluator*,” appraised another person’s, the “*evaluated’s*,” contribution to class discussion, measured on a scale where 1 = poor contribution and 7 = exceptional contribution. These assessments necessarily entail subjectivity, a characteristic inherent in social evaluation (e.g., Baker, Gibbons, and Murphy, 1994; Cattani and Ferriani, 2008; Galunic, Ertug, and Gargiulo, 2012; see also Couzin-Frankel, 2013). In this setting—like many others—these subjective evaluations have *real* consequences as they materially affect another’s grade. This is true by institutional design, and is a key argument made in class action litigation in many organizational settings such as finance that are of interest to this journal’s target audiences (see, e.g., *Chen-Oster v. Goldman Sachs 10-6950 (S.D.N.Y.)*).

A potential analytical complication arises from variation in a student’s beliefs about what constitutes a “poor” or “exceptional” contribution. That is to say, people may have different “tastes” for what constitute good contributions, as well as thresholds of quality. For example, one evaluator’s median evaluation may be 5, while another’s may be 3. To address this heterogeneity, we calculate for each student evaluator, i , her mean evaluation of all students in the class. We then center her evaluation of each specific peer student, j , around this overall mean: $Class\ contribution\ score_{ij} - Mean\ contribution\ score_i$. Alternative operationalizations of this dependent variable (e.g., relative to a raw mean) yielded consistent results, as did the use

of fixed-effects (i.e., within-evaluator) models that purge evaluator-invariant inclinations, which we provide in the Appendix.

Key Independent Variable. To examine the extent to which an individual has a brokered network, we use Burt's (1992) widely used measure of network constraint. This measure quantifies the extent to which an individual's network does not span structural holes. Network constraint depends upon three qualities: the number of an individual's communication partners, the extent to which these partners communicate with one another, and whether individuals share information through a central contact. Formally, network constraint is calculated as: $\sum_j (p_{ij} + \sum_q p_{iq} p_{qj})^2$, $q \neq i, j$; where p_{ij} captures individual i 's investment in individual j , and $p_{iq} p_{qj}$ captures the relationship between q (another of i 's contacts that is not j) and j . This measure is summed across all of individual i 's contacts j (Burt, 1992: 55).⁴

We also generated an indicator variable set to one if the *evaluator* had negative sentiment towards the evaluated, and zero otherwise, using the question concerning negative sentiment (i.e., not fond of) referred to above. Our key independent variable is thus an interaction between the evaluator's network constraint measure and her negative sentiment of a particular classmate evaluated. This measure captures the contingent nature of an evaluator's network structure as well as that individual's willingness to act upon her negative sentiment towards the evaluated contrary to explicit norms. Note that as network constraint *increases* brokerage *decreases*.

Control Variables. To account for potential homophily (e.g., McPherson et al., 2001; Greenberg and Mollick, 2017) at the dyadic level, we include indicators set to 1 for evaluator-evaluated pairs that are on the same team, share the same gender, ethnicity, or major, are both

⁴ In models not presented here to conserve space but available in the Appendix we also calculated for the evaluator and evaluated her open triad count as a different way of operationalizing the underlying social process. These models yielded similar conclusions (see Table A4).

born in the USA, or sit in the same partition of the classroom to get at localized geographic sorting and effects (see generally Reskin and McBrier, 2000; Biernat and Manis, 1991; Dovidio and Gaertner, 2000; Ridgeway, 2001). (Appendix Tables A1 and A2 provide supplementary analyses pertaining to classroom differences and the factors that predict working on the same team.)

To account further for the implications of particular social relationships, we generated dichotomous indicators set to one if the evaluator a) considered the evaluated to be a (close) friend or b) had high regard for the evaluated, based on questions from a complete roster of classmates with associated pictures to aid recall and identification. We also included the evaluator and evaluated's number of friends to account for network size and each one's count of "high-regards" to account for status. Lastly, we include a measure of each party's "objective" facility with the course material as determined by her exam scores. This measure provides an additional control for each individual's theoretical capacity to contribute to class discussion, and which is strongly correlated with the peer evaluation score.

Estimation

We employ the following dyad-level model where i indicates the evaluator and j the evaluated:

$$E[Y_{ij}|X_{ij}] = f \left[\beta_0 + \sum_{p=1}^P \beta_p (Constraint)_i + \beta_2 (Negative\ sentiment)_{ij} + \beta_3 (Constraint)_i * (Negative\ sentiment)_{ij} + \beta_4 (Social)_{ij} + \beta_5 (Constraint)_j + \beta_6 (\mathbf{X})_{ij} + \beta_7 (\mathbf{X})_i + \beta_8 (\mathbf{X})_j + \varepsilon_{ij} \right]$$

Where y_{ij} is the evaluator's mean-adjusted evaluation of the evaluated; $Constraint_i$ is the evaluator's network constraint; $Negative\ sentiment_{ij}$ indicates the evaluator's (i) negatively valenced sentiment towards the evaluated (j); and $Constraint_i * Negative\ sentiment_{ij}$ is the interaction between the two that we use to test our proposition above. As Constraint is a negative

correlate of brokerage, our proposition predicts a positive coefficient for β_3 : individuals with less brokered (i.e., more constrained) networks will assess individuals they have negative sentiment for more positively. $Social_{ij}$ is the social relationship (e.g., friendship) between evaluator-evaluated from the evaluator's perspective since this should more forcefully predict evaluation, and $Constraint_j$ is the evaluated's network constraint. For both dyad-level and individual-level controls, X_{ij} is a vector of covariates that vary across dyads (e.g., same race, same gender), X_i is a vector of covariates reflecting i 's characteristics such as status in the classroom and number of friends and X_j reflects the same for j .

For dyad-level models that incorporate evaluator fixed effects, β_1 and β_7 are not identifiable. Modeling dyad-level outcomes statistically is complicated because of structural autocorrelation arising from the dependency between observations (Krackhardt, 1988). We thus employed multi-way clustered standard errors to address this issue (Cameron et al., 2011; Kleinbaum, Stuart, and Tushman, 2013).

RESULTS

We begin with a description of the data. Table 1, Panel A describes the individuals in our dataset. The sample was ethnically diverse, comprising 43% Caucasians, 48% Asians, 2% Hispanic, and 5% Black; 41% of the individuals were female, and just over one-third of the population was born outside of the United States. The students were evenly balanced between second, third, and fourth year students. Importantly, at the inception of the study, the typical individual had very few connections: 43% of the individuals did not have any friends and another 22% only had one friend at the beginning of class. Ninety-four percent of the class did not Negative sentiment anyone (for an analogue see Burt and Knez, 1995). This provides a sharp baseline in which social relationships can be observed as developing (or not), and where factors that affect peer-evaluation should emerge from a neutral starting point. At the conclusion of the

study, the typical individual had 4-5 friends, and only 7% percent of the class listed no friends at the second time point, consistent with the notion that classroom settings are salient focal points for new social ties (Feld, 1981). A correlation matrix is available in the Appendix (Table A3).

*******Table 1 about here*******

A simple point of entry in the analysis is to describe variation across subsamples of the population. As evaluation scores are de-meaned for each individual, an average evaluation score of 0 follows by construction. Across the entire sample, evaluators assess their friends 0.50 points, or 0.42 of a standard deviation, higher than non-friends. Close friends receive an additional 0.25-point boost. Surprisingly, initial analysis did not indicate a penalty if the evaluator Negative sentimentd the evaluated.

*******Table 2 about here*******

To illustrate these correlations, we first present a baseline regression model in Table 2, Model 1. Evaluators rate those that she has high regard for 0.61 points higher, or the equivalent of shifting the median evaluation to the 73rd percentile. Similarly, an evaluator's friends are rated higher, shifting from the median to the 69th percentile. Consistent with prior literature, individuals with constrained, un-brokered networks receive lower evaluation scores (Burt, 2007). Evaluated individuals in the 25th percentile relative to those in the 75th percentile of network constraint (i.e., the former occupy more brokered network positions) receive a 0.12-point boost in how they are evaluated by others. We also observe that individuals with higher objective test grades are recognized in peer evaluation, receiving higher scores. However, those individuals that test well do not appear to penalize others because of their knowledge of course material.

In Model 2, we examine whether individuals for whom an evaluator has negative sentiment receive lower evaluation outcomes. Across the entire class population, this does not appear to be the case. In Model 3, we find evidence that evaluators occupying constrained

positions are more lenient in their evaluations. Evaluators in the 75th percentile in network constraint (i.e., non-brokers) evaluate their friends 0.28 points higher than evaluators in the 25th percentile in network constraint do (i.e., brokers).

We test our core proposition in Model 4. We find that the evaluator's network is particularly salient for individuals the evaluator has negative sentiment towards. We find that non-broker evaluators will not act upon their negative sentiment: The marginal effect for evaluators who have negative sentiment for those they are evaluating in the 75th percentile of network constraint is .06, and is not statistically significant. However, broker-evaluators have the freedom to act upon their negative sentiment. The marginal effect for individuals in the 25th percentile in network constraint (i.e., those in *more* brokered positions) is -0.37. To put this in perspective in substantive terms, the “penalty” associated with judgment by someone with a more “brokered” network who holds negative sentiments towards a focal peer is equal to the *premium* an evaluator gives to a friend.

An alternative way to present these interaction results is to generate a series of predictions. In Figure 1, we present four predictions of (normalized) evaluation scores, conditional on the evaluator's brokerage position and sentiment towards the evaluated. For positive, friendship relationships, evaluators that are brokers (i.e., at the 25th percentile in network constraint) or non-brokers (i.e., at the 75th percentile in network constraint) yield largely similar evaluations. However, brokers and non-brokers evaluate those with whom they have a negative relationship very differently, with normalized scores of -0.30 and 0.18, respectively. The effect is even larger at the 5th percentile of network constraint at -0.46. These results are consistent with the proposition that evaluators with more brokered network positions have additional normative freedom to act on their beliefs that are contrary to organizational norms.

*******Figure 1 about here*******

Robustness checks

We run a number of robustness tests. It remains possible that a number of unobservable factors, such as an evaluator's status (beyond our measure of "high regard"), drives our effects. In Appendix Table A6, we include the evaluator and evaluated's eigenvector centrality measure to capture network status. Results remain statistically and substantively consistent with those presented here. To account for both observed and unobservable characteristics of the evaluator, we also present similar results with evaluator fixed effects in Table 2, Model 5. These effects account for the possibility that brokers might be more negatively disposed constitutionally, or have different information flow with which to base their opinions (even after accounting for other proxies thereof such as indegree).

We note further that if we compare the objective test scores and number of "high regards" of those individuals who are the subject of negative sentiment by evaluators with low network constraint (i.e., brokers), the mean values are higher (test score= 31.34 v. 28.86, t-test=2.83; number of high regards=3.35 v. 2.14, t-test=3.38). That is, the individuals critically evaluated by brokers have a greater facility with course material as evidenced by an objective test. Even more importantly, the other students in the class actually hold these students in high regard at rates greater than the average. This is counter to the argument asserting that brokers may be more accurate in their negative assessments of peers.⁵ This follows because what students are evaluating is their peers' ostensible performance in class, and the regard in which

⁵ As noted above, exceedingly few students held their peers in "high regard" at the start of class because they did not know them. Hence, the delta in students held in high regard at time 2 is primarily a function of those peers' class contribution, which is the only observable basis for this assessment in this classroom setting. By implication, there is no real basis for an information advantage available to brokerage in this setting. Assessment of one's peers' contributions to class discussion are based on direct observations thereof. To the extent that friends with various characteristics can influence such evaluation, this is modelled directly by such direct connections, indegree, or Eigenvector centrality, as we do in this paper.

their others peers hold each other is highly correlated with their evaluations. Moreover, our results are robust to the inclusion of measures for peer influence on the evaluator (e.g., the evaluator’s friends who like the evaluated), suggesting that our results correspond to the social structure surrounding the evaluated, rather than indirect connections between the parties or third-party influences (see Appendix Table A5 for examples). Finally, in the Appendix (Table A7), we compare these brokers with their peers on observable characteristics. We find few meaningful differences save for the fact that brokers—like their peers whom they regard negatively and evaluate accordingly despite the high regard in which these students are held by others (often including the professor)—tend to score well on exams.⁶ Considered collectively, these results provide evidence consistent with our argument. There is, on the other hand, little evidence to bolster a selection story.

Study 2: Experimental Data

Endogeneity concerns often undermine social network studies (Marmaros and Sacerdote, 2002, 2006; Mouw, 2006; Hasan and Bagde, 2013). In large part, endogeneity concerns stem from the fact that, in theory and practice, social relationships are the product of both *opportunities* for social interaction and the *choices* of multiple actors (Sewell, 1992; Emirbayer and Goodwin 1994, Burt 2010, 2012), and historical and institutional forces often shape both opportunity and choice in important ways. Moreover, how actors *choose* to shape their networks is likely a function of their social characteristics, personality, prior networking experience, and networking style and ability (Mehra, Kilduff, and Brass, 2001; Burt, 2012; Smith, Menon, and Thompson, 2012; Burt, Kilduff, and Tasselli, 2013). Hence, it is often exceedingly difficult to

⁶ It is worth noting that the aggregate peer evaluation is highly correlated with the professor’s evaluations of students ($r > 0.9$).

clarify mechanisms in network studies because social networks are the outcomes of complex decisions enacted by many individuals (see, e.g., Jackson, 2003; Kleinberg, Suri, Tardos, and Wexler, 2008).

Procedure

To address these challenges, we deployed a simple laboratory experiment on an online population of subjects. In the experiment we imposed at random two network structures (i.e., brokered or closed) and valences (positive or negative) on an evaluator. Because each combination was randomly assigned to individual evaluators, we can isolate and observe the impact of both network positional structures (e.g., Bavelas, 1950; Shore, Kearns and Montfort, 2006; Kearns, Judd, Tan, and Wortman, 2009; Shore, Bernstein and Lazer, 2015; VanderWeele and An, 2013) and valences while holding constant the objective quality of the evaluated content. Given this advantage, we envision the laboratory experiment as a complement to the field data.

All participants were randomly assigned a description asking them to imagine the pitch they were about to read was given by one of four conditions: someone they had a positive or negative relationship with and had a friend in common with (closure) or not (brokerage) (see, e.g., Shaw, DeScioli, Barakzai, and Kurzban, 2016). A graphical depiction of the relationships and their valences was also included (see, e.g., Rand, Arbesman, and Christakis, 2011). The presentation was a written pitch concerning a faux business idea for an App (application) that proposes to link potential entrepreneurial co-founders using science. An identical pitch was presented to all evaluators. No other information (e.g., demographics, photographs) was offered to the evaluator that might introduce other bases of evaluation (and possible bias).

Our experiment employs a 2 x 2 factorial design. First, we randomly specified either a positive or negative sentiment between the student evaluator and the presentation creator (the

evaluated) (see, e.g., Shaw, DeScioli, Barakzai, and Kurzban, 2016). Second, we randomly assign the presence (or absence) of a third-party “friend” who had a positive relationship with both the evaluator and the evaluated. We expect that the presence of this common friend will parallel a constrained (i.e., non-brokered) network. By contrast, the absence of a common friend is equivalent to an open (i.e., brokered) position. Building upon our proposition, we suggest that evaluators assigned to the negative, brokered condition will judge the pitch more harshly.

Dependent Measure. Participants (i.e., evaluators) were asked to assess a written pitch for an App (application), using a scale ranging from one (poor) to seven (exceptional). The specific question was: “On a scale from one (very poor) to seven (exceptional), how would you rate the pitch?” To control for the quality and information presented to the evaluator, all participants viewed the same exact pitch. As a result, the experiment enabled us to pinpoint the causal outcome of variation in both network structures and the signed relationship between evaluator and evaluated net of the evaluated’s characteristics such as race or gender.

After completing the IRB protocol, participants were asked a series of manipulation and attention checks concerning the purpose of the app proposed in the pitch they were asked to evaluate, the network structural condition to which they were assigned, and attention check questions, as well as some basic demographic questions. Following prior work (see, e.g., Dutton, Ashford, Lawrence, and Miner-Rubino (2002) and Anicich, Fast, Halevy, and Galinsky (2016)), we only included participants that passed the manipulation and attention checks. However, our results did not differ substantively when we included the full sample.

Analytical Strategy. Given our 2 x 2 factorial design, we tested our argument using an ANOVA analysis of the evaluation score under different experimental conditions. This experimental approach parallels other recent experimental analyses (e.g., Castilla and Benard, 2010; Casciaro, Gino, and Kouchaki, 2014). Our core argument suggests that evaluators assigned

to negative-brokered relationships will evaluate an identical product more harshly net of the main effect of a negative relationship. In the Appendix (Table A8) we present corresponding regressions that yield consistent conclusions.

Results for Experimental Study

To conduct our experiment, we employed a sample of participants on Amazon’s Mechanical Turk. Overall, 90% of those agreeing to participate submitted responses that correctly answered attention and manipulation checks, resulting in a final analytical sample of 266 participants. The majority of respondents were white (76%), working full time (66%), and living in the United States (94%). The modal respondent reported an income between \$40,000 and \$49,999. These descriptive statistics reassure us that we are testing our protocol on a substantively different population than the university undergraduates used in the classroom study described above.

Results reveal, first, that those experimentally assigned to the negative and brokered network condition offered an average evaluation score, on a 7-point-scale, of 3.6. This compares with a mean of 4.1 for those assigned to the positive and brokered condition or 4.0 for those assigned to the negative and closed network condition, representing a relative difference of 10%. The brokered network condition is statistically significantly larger than the closed negative condition ($F = 4.23, p = 0.043$). These results are illustrated in Figure 2, and provide strong evidence that those individuals assigned at random to the brokered network and negative sentiment condition judged the pitch more harshly than those participants assigned to a negative condition with a closed network.

*******Figure 2 about here*******

We also introduced an additional question to provide a qualitative assessment of our proposed mechanism concerning normative autonomy. Specifically, we asked whether each

participant agreed or disagreed on a seven-point Likert scale that s/he “Felt obliged to offer a favorable evaluation of the pitch.” We administered this question immediately after the participant took the experiment, allowing us to investigate whether a sense of obligation might correlate with our assigned experimental conditions.

There was significant variation in participant responses to this perception of obligation with a mean of 2.93 and a standard deviation of 1.8. Reassuringly, pairwise correlations suggest a strong positive association between “feeling obligated to offer a positive evaluation” and actual positive evaluation outcomes ($r=.26, p = .0001$). Significantly, individuals that were experimentally assigned to the negative and brokered condition had a negative correlation with this measure ($r=-.18, p = 0.004$). This suggests that a dampened sense of normative obligations, induced by this experimental condition, could lead to harsher evaluation outcomes. Consistent with prior theorization, we also find that those assigned to the positive closed condition are more likely to feel obligated to offer a favorable evaluation ($r=.12, p = .04$), consistent with a network closure story (e.g., Coleman, 1988). The “intermediate” two conditions—negative and closed network or positive and brokered network are not statistically significantly correlated with an evaluator’s feeling obliged to offer a favorable evaluation. Similar results hold in regression models that are available upon request.

Finally, we included the obligation measure in a regression including coefficients representing the four experimental conditions. The results of this regression (graphically depicted in the lighter bars in Figure 2 and included in Table A8 in the Appendix (omitted here to conserve space) indicate that with this measure included, there is a notable reduction in the size of the negative and brokered coefficient, which drops in magnitude by approximately 20%. Moreover, the contrast between the two negative conditions (brokered v. closed) is no longer statistically significant, which suggests that normative obligations partially explain observed

evaluative differences. This exercise is not, however, intended as a formal mediation analysis. While the obligation measure follows the random assignment of participants to experimental conditions and is thus plausibly interpreted as a function of those conditions, to establish causal mediation with respect to evaluation would require an orthogonal and separate manipulation of this measure.

GENERAL DISCUSSION

The goal of this paper is two-fold. First, we highlight a missing facet of the evaluation literature: that peer evaluations are likely to occur in the context of negative ties and sentiment between peers. Second, we examine the importance of these negative sentiments through the lens of the social structure surrounding the *evaluator*, not just the individual being evaluated. Taken together, we show that only evaluators that occupy brokerage positions act on their negative sentiments, while evaluators that are not brokers adhere to established organizational norms. Drawing on both fine-grained archival data that includes complete social structures and peer evaluations within two classrooms, as well as a laboratory experiment that randomly imposes networks structures upon a different population of individuals, we find that evaluators with less network constraint assess those individuals for whom they have negative sentiment more critically.

Practical, Strategic Implications

Our findings may have implications for how organizations structure and interpret peer-to-peer evaluation ranking systems. We find considerable evidence that social relationships matter in evaluation. First, direct friendship connections between the evaluator and evaluated skew evaluations favorably, as intuition implies and prior research shows. To the likely extent that friendships form in organizations—or even precede co-employment given the importance of referrals in hiring—this implies that it is non-trivially difficult to devise a peer evaluation system

in which a truly “de-socialized” assessment of performance is given, as has been argued in class action lawsuits. To the extent that friendship formation is driven in part by homophily (McPherson et al., 2001), as we observed here, this implies that existing gendered/race-based hierarchies are likely to be sustained (see also Bothelo and Abraham, 2017).

Left unexamined, however, has been whether the evaluator’s network structure has a bearing on how she evaluates others. This research fills this gap. We note that within organizations, people regularly evaluate one another’s contributions in the form of 360-degree feedback systems and performance reviews, and/or do so via less formalized social processes and gossip. Similar to our classroom setting, evaluative outcomes within organizations are often critical determinants of who receives greater rewards within the organization, whether those rewards include promotion, a year-end-bonus, or more attention by and deference from key decision makers. In presenting this work to partners at a very large professional service organizations that employs such an evaluative system we were struck by how much individuals at different levels of the hierarchy in the organization observed similar processes at play.

We do note, however, that our classroom setting diverges from some organizations in its narrow age range, the comparative lack of political sophistication on the part of the students, as well as an atypical span-of-control. The stakes and thus incentives in various roles in various organizations may also differ. To attempt to address these scope conditions, we replicated our core findings with an online experiment, where the subject pool was significantly older and gainfully employed. Nonetheless, the extent to which our results apply to other organizational settings remains an open question. Lastly, it is worth considering to what extent similar mechanisms operate in other evaluative decisions within organizations, including hiring practices and strategy formulation.

We began this study with a focus on peer evaluations in the organizational context of a classroom. We chose this setting because it afforded us the opportunity to implement a peer-based evaluation system, coupled with the necessary accompanying data to test rigorously our arguments. Close contact with the setting allowed us to observe social relationships at the onset of the study, to include an objective (i.e., exam scores) and subjective (i.e., high regard) measure of each individual's capacity to contribute, to include detailed ascriptive characteristics, as well as project team and friendship networks, that also enabled the calculation of network measures of status. Moreover, we could customize our survey instrument to capture not only positive, friendship ties, but also instances where individuals expressed negative sentiment for one another. Finally, we were able to set the organizational cultural blueprint, and observe how participants reacted to it. In short, we have amassed a rich dataset not normally available in organizational settings.

We complemented the classroom setting with a novel set of experiments. While this second empirical approach lacks the verisimilitude of the classroom setting, as noted above, it has the added advantage of experimental control. Specifically, we have the ability to control explicitly for the quality of the evaluated work-product, as well as to assign at random social structure and valenced relationships to the evaluator-evaluated dyad. In this manner, the experiment allows us to establish more compelling causal inference. Taken together, we believe that the juxtaposition of real-world empirical data with laboratory experiments is a powerful combination. Although papers structured in this manner are still relatively rare, one of our hopes is the greater adoption of multi-method empiricism.

Limitations and Future Research

This study is not without limitations. First are issues of scope and generalizability. We chose to focus on a "strategic research site" within which to study processes that are difficult to

observe, and in which we could collect granular network data (e.g., Petersen et al., 2000; Fernandez et al., 2000). This does come at some expense. As is the case of most organizational network research, we present a quantitative case study of a particular organizational setting. Hence, one must be reflexive and question whether the dynamics observed may differ from those in other organizational settings. In particular, whether there is reason to believe that institutional factors, culture, and larger social structures may have a bearing on some of the effects observed. The population we study is very competitive by reputation. These students do not benefit from grade non-disclosure, and grades in this class are based on a fixed-curve. Finally, peer-evaluation accounted for a large part of the variation in their final grades. Hence, performing well in peer evaluation here can mean the difference between grade levels, which can significantly influence GPA and thus the odds of gaining an interview and/or a future job offer. To the extent that the stakes are higher in work contexts (e.g., banking, consulting), it may in fact be the case that these same underlying mechanisms are actually heightened, particularly within organizations that are competitively structured, with structurally equivalent employees competing for slices of a fixed pie.

All of these institutional features may have a bearing on the prevailing institutional culture and, by extension, the formation of social relationships and peer evaluation. We think future research that includes a research design that can derive the measures included here, along with cultural measures that may have moderating effects would prove useful (Owen-Smith and Powell, 2008), as might those that observe institutional change. Additionally, it is worth considering how and if so to what extent the design of a peer evaluation system has a bearing on the applicability of the mechanism we discussed in this paper.

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TABLE 1
Descriptive Statistics from Classroom Data

| | <u>Mean</u> | <u>SD</u> | <u>Min</u> | <u>Max</u> |
|---|-------------|-----------|------------|------------|
| Panel A: Individual Characteristics (N = 95) | | | | |
| Evaluator's average score of evaluated | 4.001 | 0.790 | 1.46 | 6 |
| <i>Race=Caucasian</i> | 0.432 | 0.498 | 0 | 1 |
| <i>Race=Asian</i> | 0.484 | 0.502 | 0 | 1 |
| <i>Race=Hispanic</i> | 0.021 | 0.144 | 0 | 1 |
| <i>Race=Black</i> | 0.053 | 0.224 | 0 | 1 |
| <i>Female</i> | 0.411 | 0.495 | 0 | 1 |
| <i>Born in USA</i> | 0.617 | 0.489 | 0 | 1 |
| Exam score | 28.78 | 4.880 | 17.7 | 38.2 |
| Year entered University | 2009.7 | 1.034 | 2008 | 2011 |
| # of team members | 4.000 | 0.911 | 1 | 6 |
| Network Constraint | 0.317 | 0.149 | 0.110 | 1 |
| # of Close friends-pre | 0.189 | 0.511 | 0 | 3 |
| # of Close friends-post | 0.642 | 1.175 | 0 | 5 |
| # of friends-pre | 1.042 | 1.940 | 0 | 16 |
| # of friends-post | 4.389 | 2.980 | 0 | 15 |
| # of Negative sentiments-pre | 0.074 | 0.300 | 0 | 2 |
| # of Negative sentiments-post | 0.432 | 1.235 | 0 | 9 |
| # of high regards-pre | 0.189 | 0.532 | 0 | 3 |
| # of high regards-post | 1.916 | 4.404 | 0 | 30 |
| Panel B: Dyad-Level Characteristics (N =4,283) | | | | |
| Evaluator's mean centered evaluation of evaluated | -0.010 | 1.206 | -4.28 | 5.04 |
| <i>Evaluator and evaluated on same team</i> | 0.089 | 0.284 | 0 | 1 |
| <i>Evaluator and evaluated same gender</i> | 0.519 | 0.500 | 0 | 1 |
| <i>Evaluator and evaluated on same ethnicity</i> | 0.440 | 0.496 | 0 | 1 |
| <i>Evaluator and evaluated both born in USA</i> | 0.530 | 0.499 | 0 | 1 |
| <i>Evaluator and evaluated have the same major</i> | 0.298 | 0.458 | 0 | 1 |
| <i>Evaluator considers evaluated a friend</i> | 0.112 | 0.315 | 0 | 1 |
| <i>Evaluator Negative sentiments the evaluated</i> | 0.010 | 0.097 | 0 | 1 |
| <i>Evaluator has high regard for the evaluated</i> | 0.042 | 0.202 | 0 | 1 |
| Evaluator's Network Constraint | 0.313 | 0.146 | 0.110 | 1 |
| Evaluated's Network Constraint | 0.315 | 0.147 | 0.110 | 1 |

Source: Proprietary data from two management classes at a large, private school in the Northeastern US.

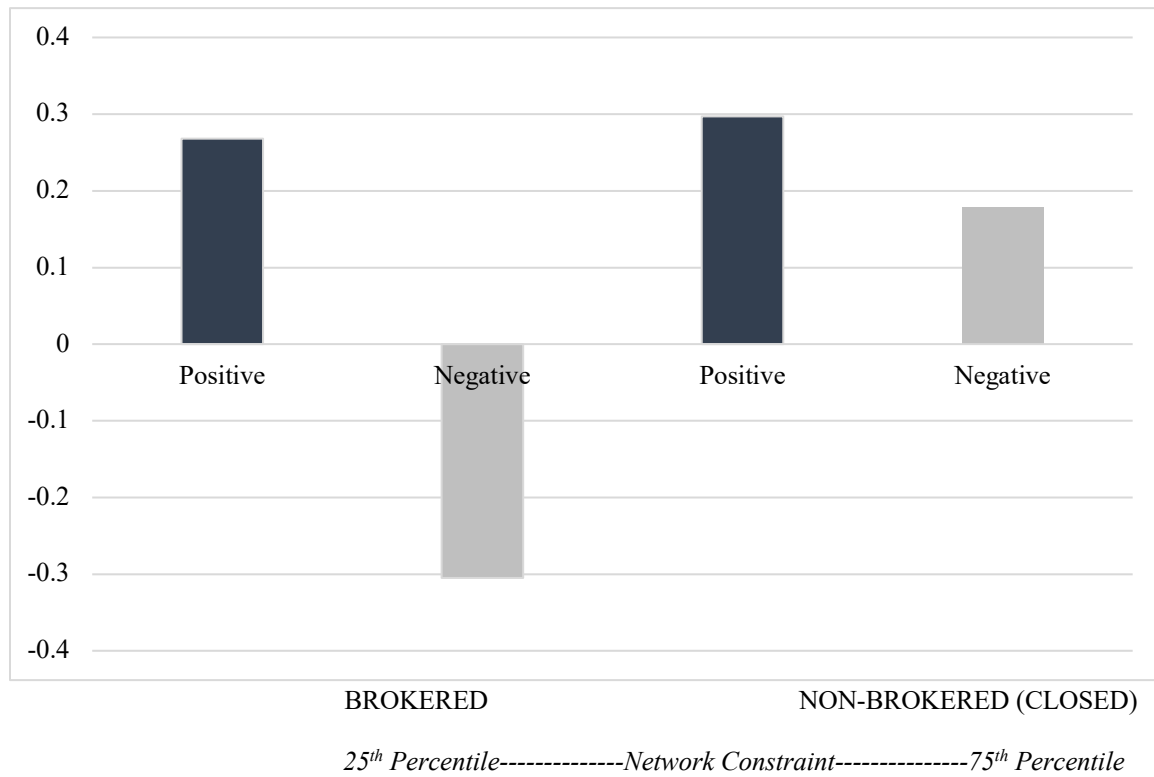
Note: "Pre" refers to pre-class, "post" end of semester. Italicized variables are binary.

TABLE 2
OLS Regression of Determinants of Peer Evaluation

| VARIABLE | (1) | (2) | (3) | (4) | (5) |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|
| Evaluated negative sentiment by evaluator | | -0.231 (0.266) | -0.220 (0.265) | -0.728* (0.308) | -0.829* (0.345) |
| Evaluator's constraint | | | 0.144** (0.044) | 0.125* (0.050) | |
| Evaluated negative sentiment by evaluator * Evaluator's constraint | | | | 2.278* (1.120) | 2.724* (1.244) |
| Evaluated is a friend of evaluator | 0.321** (0.098) | 0.318** (0.099) | 0.329** (0.100) | 0.329** (0.100) | 0.336** (0.117) |
| Evaluated's constraint | -0.610* (0.284) | -0.610* (0.284) | -0.605* (0.285) | -0.604* (0.285) | -0.601* (0.296) |
| Evaluator has high regard for evaluated | 0.619*** (0.172) | 0.616*** (0.172) | 0.620*** (0.171) | 0.620*** (0.171) | 0.821*** (0.228) |
| Evaluated test grade | 0.035*** (0.009) | 0.035*** (0.009) | 0.035*** (0.009) | 0.035*** (0.010) | 0.035*** (0.012) |
| Evaluator test grade | 0.002 (0.003) | 0.002 (0.003) | 0.002 (0.004) | 0.002 (0.004) | |
| Evaluated's # of high regards received | 0.187*** (0.028) | 0.188*** (0.028) | 0.188*** (0.028) | 0.187*** (0.029) | 0.183*** (0.035) |
| Evaluator's # of high regards received | -0.005 (0.006) | -0.005 (0.006) | -0.002 (0.010) | -0.002 (0.011) | |
| Constant | -1.587*** (0.353) | -1.578*** (0.349) | -1.634*** (0.341) | -1.624*** (0.341) | -1.396*** (0.573) |
| CONTROLS | Yes | Yes | Yes | Yes | Yes |
| Ego Fixed Effects | No | No | No | No | Yes |
| N | 4283 | 4283 | 4283 | 4283 | 4283 |
| R ² | 0.1804 | 0.1807 | 0.1810 | 0.1835 | 0.1868 |

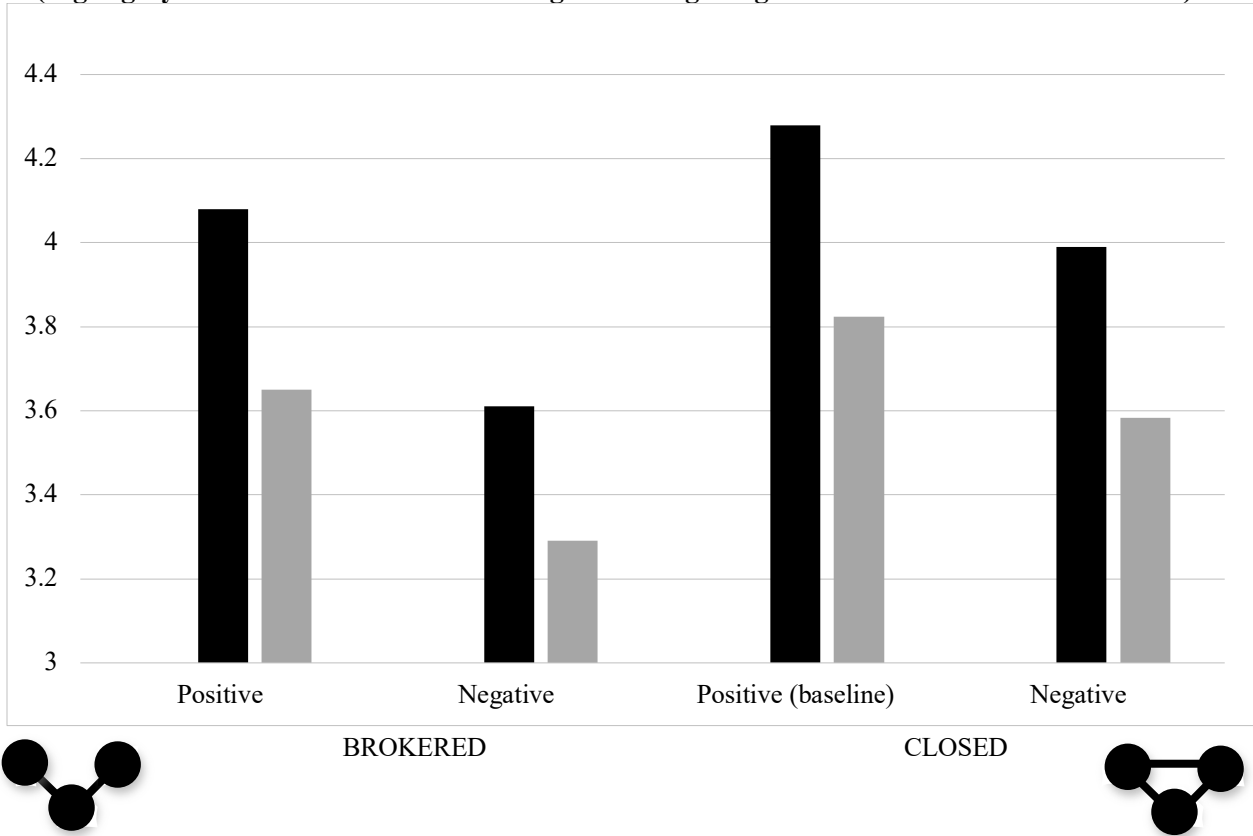
Source: Proprietary data from two management classes at a large, private school in the Northeastern US
Note: Indicators for classroom, same classroom side, both born in the USA, same team, same gender, same ethnicity, and same major included but not shown. Two-way clustered errors in parentheses.

Figure 1. Marginal Effects from Regression Predicting Normalized Evaluation



Source: Proprietary data from two management classes at a large, private school in the Northeastern US
Note: Results from conditional regression models reported in Table 3, Model 4 above.

FIGURE 2
Regressions Predicting Evaluation Score
 (Light grey results from model controlling for feeling obliged to offer a favorable evaluation)



Source: Experiment conducted on MTurk (N=266).

Notes: Negative brokered v. negative closed or negative brokered v. positive brokered different at $p < .05$ (two-tailed test). Negative brokered v. positive closed different at $p < .001$ (in black) regression (two-tailed test). Negative conditions ns different in grey regression. Coefficient for felt obliged = 0.138, $p < .001$ (two-tailed test).