

FITTING IN OR STANDING OUT?

THE TRADEOFFS OF STRUCTURAL AND CULTURAL EMBEDDEDNESS*

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May 13, 2015

Abstract

A recurring theme in sociological research is the tradeoff between fitting in and standing out. Recent work examining this tension has privileged network structural accounts over cultural explanations. We remedy this imbalance by developing a theory of how structural and cultural embeddedness jointly relate to individual attainment within organizations. Given that organizational culture is hard to observe, we develop a novel approach to assessing individuals' cultural fit with their colleagues in an organization based on the language expressed in internal email communications. Drawing on a unique data set that includes a corpus of 10.25 million email messages exchanged over five years among 601 employees in a high-technology firm, we find that network constraint impedes, while cultural fit promotes, individual attainment. More importantly, we find evidence of a tradeoff between the two forms of embeddedness: cultural fit benefits individuals with low network constraint (i.e., brokers) but hurts highly constrained actors.

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Introduction

Is it better to fit in to or stand out from your group? This longstanding question in sociological research has been studied extensively in recent years, though—especially when applied to attainment in organizations—primarily through a structural lens. A consistent theme in this work is that excessive structural embeddedness can have adverse consequences for individual attainment. Perhaps the most commonly studied form of structural embeddedness is network constraint—the quality of having contacts who also have ties to one another. Across a wide range of organizations, the absence of constraint—or brokerage—has been linked to career outcomes such as higher compensation (Burt 1992), greater upward mobility (Podolny and Baron 1997), and increased job satisfaction (Seibert, Kramer, and Liden 2001). In other words, standing out from a group structurally can have positive career consequences.

Recent years have seen a surge of research examining the tradeoffs and contingencies involved in occupying positions of brokerage (Aral and Alstytne 2011; Burt 1997; Vedres and Stark 2010). Whereas brokers who span structural holes can gain advantages such as access to non-redundant information, structural embeddedness can confer trust, coordination, and identity benefits. Various studies have investigated the circumstances under which positions of brokerage or constraint provide benefits, or disadvantages, to their occupants (Burt 2005; Fleming, Mingo, and Chen 2007).

Culture has been conspicuously absent from these explanations.¹ Numerous scholars have extensively theorized about, and studied the implications of, cultural variation for individuals and their careers (Rivera 2012; Van Maanen and Barley 1984). In particular, organizational scholars have investigated the effects of cultural fit on socialization and career outcomes such as job satisfaction and commitment (e.g. Chatman 1991; O'Reilly, Chatman, and Caldwell 1991). Across a variety of empirical settings, this work has demonstrated the benefits individuals accrue when they fit in culturally (for a review, see Kristof-Brown, Zimmerman, and Johnson 2005). Yet this line of work has tended to overlook the relationship between culture and networks (but see Erickson 1996). We argue that this cultural blind spot is the result of conceptual and methodological structuralism that—insofar as individual

¹But see Xiao and Tsui (2007) and Sharone (2014) for exceptions. Whereas these studies demonstrate that individual returns to brokerage are mediated by national level institutional factors, we focus on culture and its distribution within organizations.

attainment is concerned—has tended to privilege network explanations over cultural ones (Emirbayer and Goodwin 1994).

Overall, these two bodies of scholarship—one focused on network sources of advantage and the other on cultural fit—have remained largely disconnected from one another. The former has tended to emphasize the information-based benefits of brokerage but paid relatively little attention to its potential identity-based costs. By contrast, the latter has focused on the advantages of having a social identity that hews to the normative expectations of colleagues but tended to overlook the risks of appearing to be too similar to one’s crowd.

Our purpose in this paper is to fuse these two literatures to develop a theory of how structural and cultural embeddedness jointly influence individual attainment through the twin mechanisms of information and identity. We begin by reviewing the conceptual arguments that underpin two well-documented facts: that both network position and cultural fit independently shape individual career trajectories. Next we take a core insight from social psychology and economic sociology: that individuals face conflicting pressures to fit in to or stand out from the pack (Brewer 1991; Zuckerman forthcoming). Previous work has suggested that this tension is best resolved by finding a position that is optimally poised between conformity and distinctiveness (Leonardelli, Pickett, and Brewer 2010).

In contrast, we propose a novel theoretical account of how this tension can be resolved. Building on Zukin and DiMaggio (1990), we argue that people can be simultaneously embedded within their organization in two conceptually distinct ways: structurally and culturally. We further contend that career benefits accrue to people who are embedded in one dimension and disembedded in the other. Stated differently, the informational returns to spanning structural holes are greater for those who fit culturally into their organizational group, while those who are structurally embedded—that is, have high levels of network constraint—fare better when they are culturally distinct.

We test these hypotheses using a unique dataset that includes detailed personnel records—including employee start dates, exit dates, nature of exit (voluntary or involuntary), and managers’ ratings of employee performance—as well as a corpus of 10.25 million emails exchanged over a period of more than five years among 601 employees in a U.S.-based technology firm. We propose that email archives can provide a window both into network structure and into an important facet of culture—the extent to which the language people use within their organizations conforms to the linguistic style of their colleagues. Email metadata enable us to locate individuals over time within network structure and assess the

extent to which they occupy structurally constrained (Burt 1992) network positions. Computational linguistic techniques allow us to translate the unstructured natural language of email content into a novel measure of cultural fit. In sum, we consider whom people communicate with to assess their structural embeddedness and how they communicate with these colleagues to derive a measure of cultural embeddedness.

We then assess how network constraint, cultural fit, and the interaction between these two dimensions of embeddedness relate to two distinct indicators of attainment: the hazard of experiencing involuntary exit from the firm and the likelihood of receiving a favorable performance rating. Together, our findings illuminate how structure and culture operate independently and in tandem to shape career outcomes and illustrate that the benefits and disadvantages of structural and cultural embeddedness are inherently contingent on one another.

Fitting In or Standing Out: The Tradeoffs of Embeddedness

People constantly face the cross-pressures to integrate with and distinguish themselves from the social groups to which they belong (Brewer 1991). Though this tension is by no means unique to organizations, resolving it is particularly challenging in organizational settings where members are evaluated for their individual performance, while their productivity inherently depends on interpersonal coordination.

This tradeoff of fitting in versus standing out is what sociologists—following Granovetter’s (1985) influential popularization of the term—often refer to when they invoke the concept of embeddedness. Though the vast majority of this literature treats embeddedness primarily through a network prism (Krippner and Alvarez 2007), people are, in fact, embedded into their social worlds along multiple social dimensions. Following Zukin and DiMaggio (1990), we distinguish between two forms of embeddedness: structural and cultural. *Structural embeddedness* relates to the configuration of interpersonal networks and the extent to which individuals are anchored in tightly-knit social communities. *Cultural embeddedness* references the extent to which individuals share similar norms and taken-for-granted assumptions about appropriate behavior with those around them, and how these shared understandings shape their interactions with others. We use the terms “integration” and “assimilation” to denote structural and cultural embeddedness, respectively. As we discuss below, the tension between fitting in and standing out is a recurring (if mostly implicit)

theme in work that examines the link between structural and cultural embeddedness and individual attainment. It relates to the extent to which one is integrated, or assimilated, into one's group. These tradeoffs are considered explicitly in the arguments we develop below.

Structural Embeddedness and Attainment in Organizations

The tradeoff between integration and differentiation has long animated social network research. Granovetter's (1973) classic distinction between strong and weak ties, which has dominated sociological work on social networks over the last four decades, echoes this tension. As Burt (1992) points out, whereas members of tightly knit circles tend to develop strong ties with one another, weak ties more commonly connect people who are otherwise embedded in different social worlds. The relative benefits of occupying positions of network brokerage versus closure have been a major focus in recent scholarship on social networks.²

A preponderance of empirical evidence demonstrates that structural embeddedness—in the form of network constraint—is negatively associated with various indicators of individual attainment (for a recent review, see Burt, Kilduff, and Tasselli 2013). Occupying such brokerage positions confers information-based advantages: because brokers bridge otherwise disconnected parts of the social network, they have access to diverse and non-redundant information. Abundant empirical evidence shows that organizational actors who span structural holes tend to receive greater compensation, are more highly regarded by their peers, and are more likely to generate better ideas than their peers who operate in more constrained networks (Burt 1992).

While brokers enjoy the benefits of being unique, structural differentiation sometimes comes at a price. Being anchored in multiple social worlds also implies projecting an incoherent social identity (Podolny and Baron 1997). Moreover, network closure engenders trust because it facilitates enforcement of behavioral norms through peer sanctioning (Coleman 1988; Reagans and McEvily 2003). Consequently, when there is uncertainty about an actor's skills or intentions (Podolny 2001) or the quality of her output (Fleming et al. 2007), brokerage can become a liability rather than an advantage. Moreover, diversity comes at the expense of tie intensity and depth, which can in turn stymie access to novel information

²Closure is the theoretical construct of interest, while constraint is the corresponding measure. For ease of exposition, we use the two terms interchangeably.

(Aral and Alstytne 2011) and impede the transfer of complex knowledge (Hansen 1999). The benefits of brokerage also depend on an actor’s local context: the returns to brokerage decrease as the number of peers engaged in the same work as the focal individual increases (Burt 1997).

Cultural Embeddedness and Attainment in Organizations

Just as there are tradeoffs associated with structural embeddedness, so does cultural embeddedness entail both benefits and costs. Before explicating these tradeoffs, we first define what we mean by cultural fit. Sociological consensus on the definition and foundational elements of culture has been elusive (Small, Harding, and Lamont 2010). Nevertheless, most accounts recognize that culture rests on taken-for-granted understandings that are shared among members of a group and that relate to deep-rooted beliefs and assumptions about the world, as well as to normative and procedural agreements that enable interpersonal coordination (DiMaggio 1997; Patterson 2014). Our conceptualization of cultural fit focuses on the latter: the extent to which organizational members’ behaviors are normatively compliant.³ Whereas the extant literature on organizational culture (e.g. Rivera 2012; Schein 2010) has tended to conceptualize cultural fit with respect to the organization as a whole, we focus on one’s fit into one’s group of interaction partners in the organization. As we discuss below, such an approach accounts for the possibility of cultural differentiation or fragmentation within the organization (Martin 1992). Moreover, it mirrors our approach to conceptualizing structural embeddedness: both network constraint and cultural fit relate to one’s level of local embeddedness within the organization.

Scholarship on organizational culture tends to highlight the benefits of cultural assimilation for organizational outcomes. Individuals who fit in culturally are expected to exhibit greater levels of attainment for a variety of reasons. First, culture can serve as an alternative to formal mechanisms of control. Those who have effectively internalized shared normative expectations are more likely to behave in ways that align with and contribute to the organization’s strategic goals (Schein 2010). Second, culture functions as a form of tacit knowledge that facilitates seamless task coordination among organizational members

³Such compliance may be merely conventional or reflect a more fundamental agreement in assumptions about the world (what Douglas [1986] calls “institutions”; see also Pinker [2007]). Importantly, it may be interpreted by peers as an indication of one’s underlying beliefs and the extent to which they are aligned with those of one’s group. Our assumption is that normative compliance is both a reflection and a cultural signal of one’s strength of membership in a “thought community” (Zerubavel 1997).

(Weber and Camerer 2003). Finally, individual cultural attachment to an organization instills motivation and a sense of shared destiny (Baron and Kreps 2014). Those who are more culturally invested in the organization are therefore more likely to be committed to its success (Chatman 1991; O'Reilly et al. 1991). Indeed, as Rivera (2012) highlights, employers recognize the advantages of cultural assimilation and consciously hire on the basis of cultural matching.

At the same time, there exist forces that push individuals to differentiate themselves culturally from their organizations. These forces are both internal and external to the individual. For example, studying a technology firm similar in some respects to the one that serves as our research setting, Kunda (1992) reports that organizational members, especially those in the lower ranks of the formal hierarchy, are torn between their identification with the company and a psychological need to assert their independent identities through acts of cultural resistance. Rather than being denounced, however, public displays of dissent are often embraced as acts of authenticity that ritually reenact group boundaries and commitment.

The need for differentiation is not only driven by a psychological desire for distinctiveness but also by the internalization of others' expectations. Work in economic sociology demonstrates that actors who enact culturally nonconforming identities are generally devalued by others because of their lack of a clear social identity (Hannan 2010; Zuckerman 1999). Yet cultural noncompliance can still be a risk worth taking because it can result in disproportionate rewards. Innovative breakthroughs, for example, emerge from unconventional combinations of ideas (Fleming 2001). Though such combinations are sometimes received with suspicion, devaluation is replaced by enthusiasm when audience skepticism is overcome. Often, actors who already enjoy favorable reputations have more latitude to engage in cultural noncompliance: prominent film actors can resist typecasting (Zuckerman, Kim, Ukanwa, and von Rittman 2003) and famous chefs are granted the artistic license to erode established cuisine categories (Rao, Monin, and Durand 2005).

Baseline Accounts of Structural and Cultural Embeddedness and Attainment

The tension between fitting in and standing out is woven into these sociological accounts of structural and cultural embeddedness. But it is mostly an invisible protagonist. In fact,

the vast majority of previous work on brokerage and cultural fit overlooks the fitting-in-versus-standing-out tension by assuming that the advantages of being on one end of the embeddedness continuum outweigh the benefits of the other end.

Although recent work has highlighted various scope conditions and contingent effects of brokerage, structural accounts have overwhelmingly tended to emphasize the information-based advantages that come with spanning structural holes. Brokers are assumed to benefit because of their privileged access to information. Cultural accounts, on the other hand, have tended to highlight the identity benefits of cultural conformity. This is particularly true in organizational contexts, where actors are engaged in highly interdependent activity. Although they may seek to have their contributions viewed by others as unique and difficult to replace, they face stronger pressures to don culturally legitimate identities that facilitate coordination with their colleagues.

Thus, considered independently, one would expect that structural embeddedness tends to retard attainment, while cultural embeddedness promotes it. Existing literature therefore suggests two baseline hypotheses:

BASELINE HYPOTHESIS 1: *All else equal, the more structurally embedded employees are—that is, the higher their constraint in the intraorganizational network—the lower will be their attainment.*

BASELINE HYPOTHESIS 2: *All else equal, the more culturally embedded employees are—that is, the greater their cultural fit within the organization—the higher will be their attainment.*

A Theory of Balanced Embeddedness and Attainment in Organizations

A more nuanced approach acknowledges that standing out or fitting in embodies a set of tradeoffs. The prevailing view is that people will seek to occupy positions that are optimally distinctive (Brewer 1991). In other words, people will seek positions that strike a balance—within a given dimension of embeddedness—between fitting in and standing out.⁴ This literature implies an inverted U-shaped relationship between embeddedness and individual attainment: those located at the sweet-spot will maximize their performance.

⁴Although optimal distinctiveness is a psychological theory concerned primarily with the individual motivations underlying self-identification with a group, we extend its rationale to apply more broadly to the informational and identity-based consequences of fitting in to or standing out from one's group.

Consistent with this view, network studies have provided evidence for the benefits of occupying positions that—in different respects—straddle network integration and brokerage. Vedres and Stark (2010), for example, argue that entrepreneurial teams that connect cohesively embedded members from distant groups—a network topology that they call a “structural fold”—exhibit high performance. In a study on the garment industry, Uzzi (1999) similarly found that firms with a blend of embedded and arm’s length ties outperform those that are on either end of the brokerage-closure continuum. Likewise, Uzzi and Spiro (2005) reported that creativity peaks in Broadway when the structure of production teams, and the overall network of collaboration between artists, is poised in-between cohesion and brokerage.

Similarly, cultural research acknowledging the tension between standing out and fitting in has mostly focused on the tradeoff between identity conformity and distinctiveness. In the realm of consumer marketing, for example, Chan, Berger, and Boven (2012), reported that consumers resolve the conflict of assimilation by conforming to the cultural scripts associated with their social identities in the choice of salient product features and by seeking uniqueness in the choice of more marginal features. Similarly, scientists whose novel findings are anchored in conventional scientific knowledge, but who also combine scientific knowledge in unique ways, tend to have the greatest impact through their work (Uzzi, Mukherjee, Stringer, and Jones 2013). Cultural fit, in other words, is generally advantageous, but there are also costs to being perceived as too similar to one’s group, implying that the tradeoff can be resolved by occupying a position of intermediate cultural fit.

Generally, these two approaches to studying brokerage and cultural fit—those that implicitly disregard the fitting-in-versus-standing-out tension and those that solve it through the assumption of an optimal balance—explore structural and cultural embeddedness in isolation from one another.⁵ Consequently, each is necessarily fragmentary. The former tacitly resolves the standing-out-or-fitting-in tension by assuming that one position is, ultimately, inherently better than the other. It privileges the informational benefits of structural disembeddedness or the identity advantages of cultural embeddedness. The optimal distinctiveness approach, on the other hand, implies that actors necessarily need to compromise on

⁵Of course, sociologists have debated the culture-structure interplay extensively (e.g. Sewell 1992; Emirbayer and Goodwin 1994). Previous work has examined the cultural meanings associated with network ties (McLean 1998; Zelizer 2011) as well as how cultural repertoires facilitate, or impede, network formation (Erickson 1996; Lizardo 2006). Nevertheless, the implications of one’s structural and cultural positions on attainment (or other outcomes of interest) have been mostly studied independently of one another.

the potential benefits of standing out or fitting in because they need to offset each position’s inherent downsides. It is not readily obvious when such a balance is achieved.

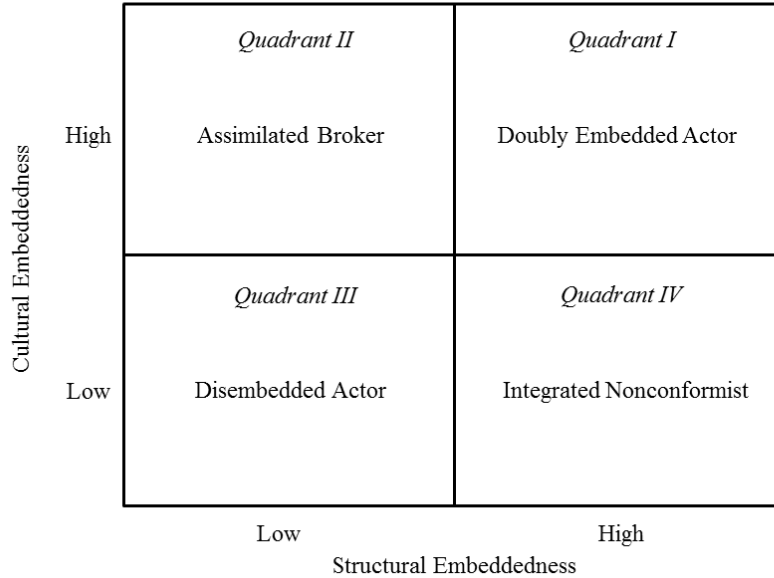
In contrast, we argue for the value of considering the interpenetration of the two dimensions of embeddedness and suggest that organizational members can resolve the dual pressures to fit in to and stand out from their groups by offsetting the advantages (or downsides) of structural embeddedness against those of cultural embeddedness. The informational advantages of structural brokerage can be reaped if counterbalanced by the identity benefits of cultural conformity, while the potential returns to cultural distinctiveness can be realized when buffered by the integration benefits afforded by structural cohesion.

Figure 1 depicts our conceptual framework. The axes represent the two dimensions of embeddedness. Quadrants I and III represent the two possible extremes: *Doubly Embedded Actors* and *Disembedded Actors*. Individuals in these positions are either relative outsiders—both structurally and culturally—or deeply integrated and assimilated into their locales within the organization. Neither of these positions adequately resolves the fitting-in-versus-standing-out tension. *Doubly Embedded Actors* enjoy the advantages of a coherent social identity that confers acceptance and trust within the organization. At the same time, their structural position makes them less likely to produce valuable innovations or gain access to non-redundant information, while their cultural lack of distinctiveness makes it difficult for their contributions to be recognized as unique and irreplaceable. *Disembedded Actors* are at greater risk of producing novel ideas and of having access to unique information; however, because their identities do not conform to colleagues’ expectations, whatever novelty they produce is likely to be regarded with suspicion and disregard by their peers.

In contrast, Quadrants II and IV represent positions that strike a better balance between fitting in and standing out because they represent embeddedness in one dimension and disembeddedness in the other. We propose that their occupants will achieve higher levels of attainment than those in positions that are disembedded or doubly embedded.

Assimilated Brokers (occupants of Quadrant II) enjoy the informational benefits of brokerage, while their enculturation buffers them from experiencing the deleterious identity effects of being perceived as untrustworthy or nakedly self-serving. As Krackhardt (1999) points out, brokerage can become a liability when the network cliques on the two ends of the network bridge being traversed impose inconsistent normative and role expectations. Such conflicting expectations can lead to identity imbalance, affecting both an actor’s self-perception, as well as how she is evaluated by her peers (Bearman and Moody 2004). *As-*

Figure 1: Two dimensions of embeddedness



Assimilated Brokers can enjoy the rewards of spanning structural holes through the projection of a multivocal identity that diffuses identity incongruence (Padgett and Ansell 1993).

On the other end, *Integrated Nonconformists* (those in Quadrant IV) occupy a structural position of network closure and a cultural position of distinctiveness. Although their structural constraint does not expose them to as many non-redundant ideas as their counterparts who are brokers, it facilitates trustful and information-rich relationships. They also enjoy greater latitude to introduce unconventional and potentially valuable ideas into the organization without suffering a penalty by virtue of their strong cultural fit. Moreover, compared to Doubly Embedded Actors, their contributions are more likely to be perceived as distinctive, and therefore as valuable.

Overall, our arguments suggest:

MAIN HYPOTHESIS: *There will be a tradeoff between the two forms of embeddedness such that cultural fit will promote attainment for individuals with low network constraint (i.e., brokers) but inhibit attainment for those who are highly constrained.*

Language as a Window into Individual-Level Cultural Fit

Although the literature on organizational culture is vast, the conceptions of, and methods used to study, culture in the extant literature also have significant limitations. This is the case for three main reasons. First, much of the work on organizational culture has focused on cultural content and its consequences for group effectiveness. These studies investigate which values and beliefs and what forms of cultural enactment are conducive to superior organizational performance (Hartnell, Ou, and Kinicki 2011; Hofstede, Neuijen, Ohayv, and Sanders 1990; Schein 2010). Yet a focus on cultural content necessarily orients the researcher toward the norms and taken-for-granted understandings that are shared by organizational members while tending to neglect the points of divergence.

Second, even scholars who do not take a content approach to the study of organizational culture have tended to focus on differences between, rather than within, organizations. A common theoretical framework in this vein relates to the distinction between strong and weak organizational cultures. Sørensen (2002), for example, uses survey data to compare cultural strength across a variety of firms and demonstrates that strong cultures contribute to performance in non-volatile industries where organizational consistency is key to success. Related work in the economics literature shows how cultural homogeneity in the form of shared beliefs can lead to faster coordination but also to less experimentation and information collection, thereby contributing to culture clash when two firms that are internally homogeneous but different from each other merge (Van den Steen 2010). Heterogeneity in cultural fit at the individual level is easier to theorize about with abstract mathematical models that treat enculturation as a continuous variable. Even in such studies, however, cultural variation has mostly been explored with relation to its impact on organizational, as opposed to individual, outcomes (Harrison and Carroll 2006).

Finally, research that emphasizes how individuals vary in cultural assimilation and considers its consequences for their careers has tended to rely on survey-based methods that often provide relatively coarse-grained indicators of cultural fit. For example, the Organization Culture Profile (OCP) assesses cultural fit using the Q-sort method (O'Reilly et al. 1991). Respondents are first asked to force-rank a set of cultural values. Cultural fit is calculated by correlating each individual's ranking to the firm's culture, which is induced from the average Q-sort ranking produced by key informants within the organization. Although this technique represented a breakthrough in the study of organizational culture when it was

introduced and has since left an influential mark, it also has some important limitations.

OCP and other survey-based tools rely on self-reports of individuals' espoused values. Yet there is often a discrepancy between the values that individuals profess to support and those that guide their behavior (Schein 2010). Indeed, as Vaisey (2009) argues, values expressed in more deliberative, discursive consciousness—for example, in interview settings—may be only loosely connected to deeply rooted motivations and schemata that reside in practical consciousness and that frequently guide behavior. Consistent with this notion, (Srivastava and Banaji 2011) found in an organization with a culture emphasizing norms of collaboration that survey-based self-reports of individuals' orientations toward collaboration had no relation to the pattern of collaborative networks they formed within the organization. By contrast, an indirect measure of collaborative tendencies that tapped into implicit, automatic forms of cognition was positively related to boundary-spanning collaborative networks.

Survey-based measures of cultural fit often rely on cultural categories that are defined by the researcher or a small group of organizational elites and may not reflect the categories that matter to rank-and-file employees. Moreover, these approaches often make the simplifying but frequently invalid assumption of cultural homogeneity across the various subgroups that exist within organizations (Martin 1992). Finally, these methods can also be time-consuming to implement and only provide a snapshot of individuals and the organization at one point in time. Researchers must implement them repeatedly to observe how an individual's cultural fit changes over time. Doing so can produce the unintended consequence of respondent survey fatigue.

We propose that the language through which organizational members communicate with each other can provide a novel window into an important facet of cultural fit. We begin with the premise that language is central to how organizational members negotiate, codify, and uphold the norms and taken-for-granted understandings that constitute organizational culture and that its use is a lens into the semantic categories with which they construe meanings out of their daily experiences (DiMaggio 1997; Patterson 2014; Pinker 2007). Indeed, as Vaisey (2009, p. 1685) notes, “There is substantial evidence that culture shapes emotions, intuitions, and unconscious judgments as well as acceptable forms of talk.” Consistent with this notion, experimental studies of organizational culture—for example, about the consequences of cultural conflict following the merger of two firms—have used language as the means to operationalize culture (Weber and Camerer 2003). In a similar vein, Carley

and colleagues (1992) develop a semi-automated technique to measure cultural similarity, or shared mental maps, within a work group from the concepts and the relationships among concepts that materialize in textual responses to open-ended survey questions. Although this approach also represented a methodological advance when it was introduced, it is cumbersome to implement, requires researcher input to define which concepts to filter, and operates in the context of a well-defined and bounded work group. It is therefore not well-suited to deriving time-varying indicators of how well individuals fit culturally with their colleagues in the organization.

In contrast, our empirical strategy assesses cultural fit based on the content of internal email messages exchanged over time among organizational members. Although this approach is not without limitations—for example, it does not consider language expressed in face-to-face or telephone interactions or culture as manifested in physical artifacts and other nonlinguistic forms—it overcomes many of the disadvantages of traditional survey-based research. First, it derives measures of culture and cultural fit based on the natural language that people use rather than values or beliefs they choose to communicate to researchers. Thus, it is less susceptible to impression management and social desirability bias that can plague survey-based research. Second, most organizations maintain archives of past email communications, which can be readily downloaded and thereby facilitate the construction of time-varying measures of cultural fit. Finally, the categories of language used to assess culture can come from the data itself or from well-established linguistic dictionaries (Pennebaker, Chung, Ireland, Gonzalez, and Booth 2007) and are therefore less susceptible to biases or blind spots on the part of researchers or organizational elites.

In light of these advantages, recent years have seen an upwelling of research that employs the techniques of computational linguistics to measure underlying social processes through natural language. For example, McFarland, Jurafsky, and Rawlings (2013) show that rituals of romantic courtship exhibit distinct linguistic signatures, and Danescu-Niculescu-Mizil, Lee, Pang, and Kleinberg (2012) demonstrate how linguistic accommodation between interlocutors can reveal their relative status. Building on and adapting these techniques to the context of formal organizations, we conceptualize cultural fit as the linguistic distance between a focal individual and a reference group within the organization. We define the reference group as the subset of organizational members with whom a focal individual communicates by email in a given period—in our case, a given month. Cultural fit is simply the inverse of linguistic distance from the reference group. Those whose vocabularies are

aligned with the reference group, we argue, are more culturally congruent with that group.

Our approach is similar to that employed by Danescu-Niculescu-Mizil, West, Jurafsky, Leskovec, and Potts (2013), who study the linguistic dynamics in two online beer enthusiast communities. They demonstrate that individuals’ propensity to adapt to evolving linguistic norms relates to their level of attachment to the community. Users initially align their language with that of the community, but they eventually cease to adapt to new vocabulary as they near the end of their active involvement in the community. Whereas Danescu-Niculescu-Mizil et al. (2013) use cross entropy over bigram language models to compute linguistic distance, our data exhibit greater topical and linguistic variation and thus require a different language model. Moreover, while the cross entropy approach assumes homogenous linguistic norms shared by all members of the community, ours allows for greater linguistic variation within the organization.

Method

Empirical Setting and Data

A mid-sized technology firm served as our research site. The company was organized functionally into departments, including operations, technology, sales, marketing, engineering, human resources, and legal. Conversations with the firm’s senior leaders and own observations led us to conclude that the firm had cultivated a strong corporate culture, which emphasized innovation, rapid growth, collaboration, and an energizing work environment. These cultural tenets were distilled in widely disseminated artifacts such as company brochures, shared with all prospective and newly hired employees, and reinforced in communications from senior management and through employee recognition programs.

The company provided us access to the complete corpus of electronic messages—including not only metadata but also content—exchanged among the more than 600 full-time employees who were employed at the firm between 2009 to 2014. The company experienced both highs and lows during this period: it was forced to contract its workforce on more than one occasion when the industry experienced severe downturns, and it also grew rapidly following several capital infusions.

To protect employee privacy and company confidentiality, we agreed to a number of restrictions in working with the email data. First, we only analyzed messages exchanged

among the firm’s employees—that is, we excluded all messages exchanged with external parties. Second, we dropped all messages that were exchanged among the seven executive team members. We included, however, messages that executive team members exchanged with individuals outside the executive team. A third restriction involved the legal department: we excluded any message exchange involving one of the company’s attorneys. Fourth, the raw data were extracted from company archives and stored on secure research servers that we purchased and had installed at the firm. After applying our natural language processing algorithms on the raw data, we deleted message content and all identifying information about employees.⁶ Our resulting data set included approximately 10.24 million messages.

In addition to email data, we obtained human resource records that included employee age, gender, and tenure.⁷ Because the company had only recently installed a human resource information system, data on department affiliation and hierarchical rank were not available on a consistent basis. We therefore relied on email distribution lists to fill in these missing data. For example, the company maintained distribution lists for all employees who supervised the work of other employees. We identified an employee as a manager if he or she belonged to one of these distribution lists in a given month.⁸

Dependent Variables

The human resource records also identified all employees who had departed from the company, the date of their departure, and the nature of the exit—voluntary or involuntary. Voluntary exits do not provide a clear indicator of attainment since employees can choose to leave for a variety of reasons—for example, because their progress has stalled out within the company or because they have been poached by a competitor following a period of stellar performance. By contrast, involuntary exits provide a sharper signal of (negative) attainment. Although people with solid performance can sometimes experience involuntary

⁶Since we conceptualize cultural fit as the extent to which individuals match the linguistic patterns of their interlocutors, we also eliminated messages sent to distribution lists rather than to individuals.

⁷Because the outcome of interest is attainment—as indicated by involuntary exit and performance rating—we eliminated temporary employees and summer interns from the analyses because their exit dates were often pre-determined and because they typically did not receive formal performance ratings.

⁸Similarly, the company maintained distribution lists for its various departments. We again used membership in these lists to identify an employee’s departmental affiliation in a given month. In certain cases, employees belonged to multiple departmental lists in a given month—perhaps because they belonged to one department but worked very closely with another. In such cases, we coded an employee as belonging to both departments since there was no way to identify the primary departmental affiliation.

exit when business conditions deteriorate, a person is at greatest risk of experiencing involuntary exit when his performance is weak. Thus, our first dependent variable, *Involuntary Exit*, is set to 1 in the month a person experiences involuntary exit and to 0 otherwise.

In addition, for a subset of the observation period—2011 to 2013—we obtained the performance ratings that employees received from their managers. The rating system changed somewhat during this period. In 2013, the company adopted a rating system that ranged from 1 (does not meet expectations) to 4 (exceeds expectations). For consistency, we transformed ratings from prior years when a different scale was used into this four-point scale. Based on our understanding of the performance evaluation process at the company, we defined an indicator, *Favorable Rating*, which is set to 1 for employees who received a rating greater than 3 and represents our second attainment measure.

Importantly, both our dependent variables reflect not self-perceptions but rather how a focal employee’s level of attainment is perceived by others. That is, organizational members experience involuntary exit, or low performance appraisals, when their peers and managers perceive their contributions to be unsatisfactory.

Independent Variables—Structural Embeddedness

Our measure of structural embeddedness is Burt’s (1992) widely used *Network Constraint*:

$$C_i = \sum_{j \neq i} (P_{ij} + \sum_{q \neq i, j} P_{iq} P_{qj})^2 \quad (1)$$

where C_i is network constraint on person i , p_{ij} is the proportion of person i ’s network activity spent directly on person j (as reflected in the proportion of emails sent to that person), and the second summation represents the proportion of person i ’s network activity spent indirectly on person j . Intuitively, constraint depends on three factors: size, density, and hierarchy. Constraint is high when a person has few contacts and those colleagues are connected to one another either directly—that is, in a dense network—or through a central mutual contact—that is, in a hierarchical network.

Independent Variables—Cultural Embeddedness

We derive the cultural fit measure in two steps. First, we use the Linguistic Inquiry and Word Count (LIWC) lexicon (Pennebaker et al. 2007) to code each email relative to a predefined

set of cognitive, semantic and emotional categories. Introduced more than two decades ago, LIWC has become an established procedure for detecting categories of meaning in natural text (Tausczik and Pennebaker 2010). Table A-1 in the Appendix lists these categories. The process analyzes free text and assigns weights for categories such as “anxiety” or “leisure.” Formally, a LIWC category l is a set of words. An email message m ’s weight for a LIWC category l is the total number of words w in m such that $w \in l$. These counts are normalized into a conditional distribution over categories.⁹

Next, for each individual i for an observation window t (which we define as one month) we divide the set of email messages into outgoing and incoming messages and map each group of messages into a probability distribution over the LIWC categories, resulting in distributions O_{it} and I_{it} respectively. We use the Jensen-Shannon divergence statistic (Lin 1991) to measure the difference between these two probability distributions. Let \mathcal{L} be the set of LIWC categories. The Kullback-Leibler divergence is defined as:

$$KL(O\|I) = \sum_{l \in \mathcal{L}} O(l) \ln \frac{O(l)}{I(l)} \quad (2)$$

and measures the divergence of distribution O from I . The Jensen-Shannon divergence is a smoothed and symmetric transformation of Kullback-Leibler, which is defined as:

$$JS(O\|I) = \frac{1}{2}KL(O\|M) + \frac{1}{2}KL(I\|M) \quad (3)$$

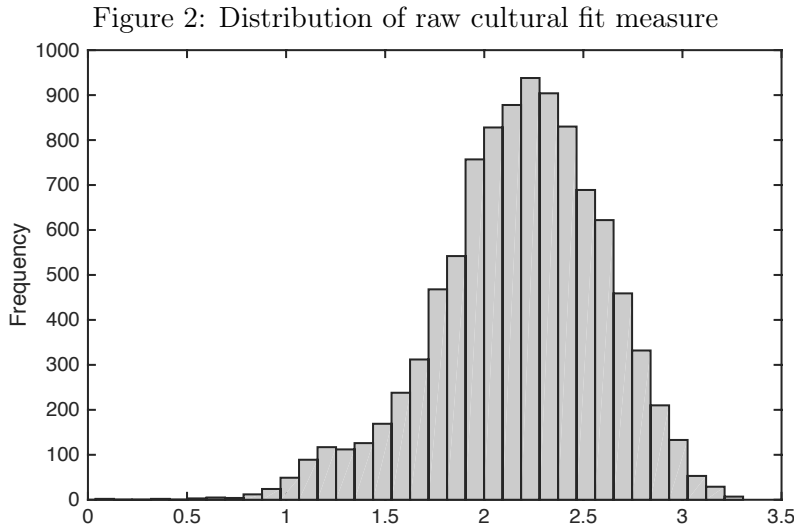
where $M = \frac{1}{2}(O + I)$. The Jensen-Shannon divergence equals zero when the two probabilities are identical and increases as they diverge. Drawing on Shepard (1987), who reports a negative exponential relationship between perceived similarity and distance, we define individual i ’s cultural fit at time t as the negative log transformation of her distance from her interlocutors in that period¹⁰:

$$CF_{it} = \ln JS(O_{it}\|I_{it}) \quad (4)$$

⁹We used a variety of methods to remove textual headers and footers from emails, to remove non-informative stop words such as “the.”

¹⁰*Cultural Fit* is only defined for individuals who exchange at least twenty messages in a given month. So, for example, if an employee enters the organization near the end of month or departs at the start of the month, *Cultural Fit* for that employee is likely to be missing for that month. For such reasons, the sample size drops in models that include this variable.

Intuitively, i 's cultural fit measures the extent to which the semantic categories in her outgoing messages correspond to the categories in her incoming messages. The more the emails she sends that exhibit different topical and emotional characteristics than the ones she receives, the lower her cultural fit. Note that our choice of i 's interaction partners as the reference group means that we measure her fit relative to the set of people with whom she chooses to, or is required to, communicate, given the job role to which she is assigned. Moreover, we use raw distributions, rather than weighting inversely by the frequency of interaction with different partners. In other words, our measure of cultural fit represents the extent to which a person is culturally aligned with the people with whom she corresponds on a frequent basis, rather than with the average person in her department or in the organization more broadly. Our definition of the reference group has two advantages. First, it accounts for potential cultural variability within the organization. Second, it measures the extent to which an actor is culturally assimilated into her immediate group of peers, whom she is mostly dependent on for productivity and who are most likely to evaluate her performance. Figure 2 depicts the distribution of this variable.



In sum, we have three main independent variables. We test Baseline Hypothesis 1—that structural embeddedness impedes attainment—with *Network Constraint*. Baseline Hypothesis 2—that cultural embeddedness promotes attainment—is tested using *Cultural Fit*. Finally, we assess the Main Hypothesis—that the effects of structural and cultural embed-

dedness on attainment will be contingent upon one another—by considering the interaction term, *Network Constraint x Cultural Fit*. In the analyses reported below, all three measures are standardized for ease of interpretation.

Control Variables

We include as a control another well-established network structural variable: Network Centrality, which is based on an individual’s eigenvector centrality. This measure has been shown to correspond to an individual’s power and status in the organization (Bonacich 1987; Rossman, Esparza, and Bonacich 2010) and therefore should affect access to resources and perceptions of productivity. We also include an indicator, *Manager*, which is set to 1 for employees who have direct reports. In models that do not include individual fixed effects, we also control for employee age, age-squared, gender, and departmental affiliation.

Estimation

We estimate two sets of models that correspond to the two dependent variables. First, we model the rate of involuntary exit, or the “hazard rate,” as:

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{p(t \leq T < t + \Delta t | T \geq t)}{\Delta t} \quad (5)$$

The hazard rate can be interpreted as the instantaneous probability that a person experiences involuntary exit at time T between times t and $t + \Delta t$, given that she was at risk of experiencing involuntary exit at time t . Because our theoretical aims are not related to time dependence, we estimate semiparametric proportional hazard models (Cox 1972). The model is specified as:

$$\log h(t) = a(t) + B'X \quad (6)$$

where $h(t)$ is the hazard rate, $a(t)$ is any function of time, and B is a vector of parameters describing the effects of covariates X . Cox’s (1972) method of estimating such models obviates the need to specify $a(t)$. Only the part of the hazard rate that does not depend on time is parameterized (Popielarz and McPherson 1995).

Second, we estimate fixed effect conditional logit models in which the dependent variable is Favorable Rating. Though based on fewer observations, these models account for

time-invariant unobserved heterogeneity among employees—for example, stable personality traits, past work experiences, and skills—that might be endogenously related both to attainment and to structural and cultural embeddedness. Because they control for unobserved heterogeneity, these models estimate the effects of within-person variance in network constraint or cultural fit on performance evaluations and therefore afford a more conservative test of the hypotheses.

Results

Table 1 reports descriptive statistics. Table 2 reports results of Cox proportional hazard rate models based on our first measure of (negative) attainment: involuntary exit. Coefficients are reported as hazard ratios. Thus, coefficients greater than one indicate increased risk of exit, while coefficients less than one suggest decreased risk. Models 1 to 3 test the baseline hypotheses, with Models 1 and 2 corresponding to separate tests of Baseline Hypotheses 1 and 2, respectively, and Model 3 testing both simultaneously. Unsurprisingly, *Age* is positively associated with an increased hazard of involuntary exit throughout these models; the Age^2 coefficient is mostly significant as well, implying a curvilinear relationship between age and the risk of involuntary exit. *Female* is significant in Model 1, with a hazard ratio greater than one, but this relationship becomes insignificant once cultural fit is included in the models.

As anticipated, *Network Centrality* is significant with a hazard ratio less than one in both Models 1 and 3. In other words, individuals who are central in the email communication network are at lower risk of experiencing involuntary exit. Importantly, consistent with Baseline Hypothesis 1—that structural embeddedness is negatively related to attainment—*Network Constraint* is significant in Model 1, with a hazard ratio greater than one. But when network and cultural variables are included in the same model (Model 3), the positive effect of network constraint on involuntary exit becomes insignificant, suggesting that the effects of constraint on attainment are moderated by cultural fit.

In contrast, Baseline Hypothesis 2—that cultural embeddedness in the form of linguistic fit with interlocutors in the organization is positively related to attainment—is supported whether or not network variables are included in the model (Models 2 and 3). As expected, *Cultural Fit* is highly significant, with a hazard ratio less than one. The effect is substantial:

Table 1: Descriptive Statistics

	Observations	Mean	Standard Deviation	Min.	Max.
Age (at time of entry)	601	33.2	9.71	19.8	66.8
Tenure (months)	601	19.6	15.5	1	89
Manager	601	0.245	0.43	0	1
Female	601	0.331	0.471	0	1
Exited	601	0.373	0.484	0	1
Exited—Voluntary	601	0.148	0.355	0	1
Exited—Involuntary	601	0.225	0.418	0	1
Favorable Rating	480	0.748	0.435	0	1
Network Centrality	11907	0.063	0.05	0	0.577
Network Constraint	11907	0.147	0.134	0	2
Cultural Fit	9943	2.181	0.42	0.038	3.306

Network Centrality, Network Constraint, and Cultural Fit are calculated on a person-month basis.

The other measures are calculated at the person level over the complete window of observation.

Performance ratings were missing for 121 individuals.

an increase in one standard deviation in cultural fit reduces the hazard of involuntary exit by roughly fifty percent.

Model 4 provides a test of our Main Hypothesis—that the effects of structural and cultural embeddedness on attainment are contingent upon one another such that: (a) structurally disembedded employees (brokers) experience higher attainment the more culturally embedded they are, while (b) structurally embedded (constrained) employees experience lower attainment the more culturally embedded they are. Consistent with this expectation, the interaction term *Network Constraint* \times *Cultural Fit* is significant, with a hazard ratio greater than one.

Figure 3 provides a graphical representation of the effect. For individuals who are either at the mean level of constraint or who are brokers (i.e. one standard deviation below the mean on constraint), there is a negative association between cultural fit and the hazard ratio of involuntary exit. This effect is particularly pronounced for the latter. In our terminology, *Assimilated Brokers* fare better than *Disembedded Actors*. In fact they fare on orders of magnitude better: a broker who is two standard deviations below the mean on cultural fit (identified as a *Disembedded Actor* in Figure 3) is at a risk of involuntary exit that is more than ten times greater than that of an equally structurally disembedded broker who is two

Table 2: Cox Proportional Hazard Models of Exit By Type of Exit—Involuntary and Voluntary

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary	Involuntary
Age	1.438*** (4.71)	1.244* (2.38)	1.338** (2.93)	1.309** (2.66)	0.994 (-0.07)	0.941 (-0.57)	1.037 (0.34)	1.031 (0.28)								
Age ²	0.996*** (-4.03)	0.998 (-1.64)	0.997* (-2.20)	0.998* (-1.97)	1.000 (-0.05)	1.001 (0.53)	1.000 (-0.37)	1.000 (-0.31)								
Female	1.563* (2.24)	1.245 (0.85)	1.511 (1.50)	1.509 (1.50)	1.472 (1.68)	1.826 (1.92)	2.111* (2.37)	2.109* (2.37)								
Manager	1.260 (0.63)	1.306 (0.57)	2.092 (1.52)	2.032 (1.49)	1.672 (1.32)	1.057 (0.11)	1.487 (0.81)	1.504 (0.83)								
Network Centrality	0.114*** (-7.01)		0.208** (-3.18)	0.235** (-3.00)	0.128*** (-5.70)		0.347* (-2.49)	0.359* (-2.42)								
Network Constraint	1.133* (2.15)		0.885 (-0.65)	1.346 (1.28)	1.233*** (3.37)		1.326 (1.90)	1.421 (1.57)								
Cultural Fit		0.452*** (-7.85)	0.572*** (-5.08)	0.588*** (-4.37)		0.623*** (-3.73)	0.803 (-1.40)	0.798 (-1.43)								
Network Constraint x Cultural Fit				1.376* (2.31)				1.052 (0.40)								
Department Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes								
<i>N</i>	11809	9879	9879	9879	11809	9879	9879	9879								
χ^2	137.170	121.662	110.103	119.247	151.838	31.188	48.663	48.403								
Log-Likelihood	-682.515	-351.602	-337.899	-335.629	-435.415	-233.663	-225.843	-225.788								

Coefficients reported as hazard ratios; *t* statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

standard deviations above the mean (identified as an *Assimilated Broker*). The hazard of involuntary exit for those at average or below average levels of constraint drops below only one once their cultural fit is at or above mean levels. In other words, only those who are culturally assimilated into their groups reap the advantages of structural brokerage.

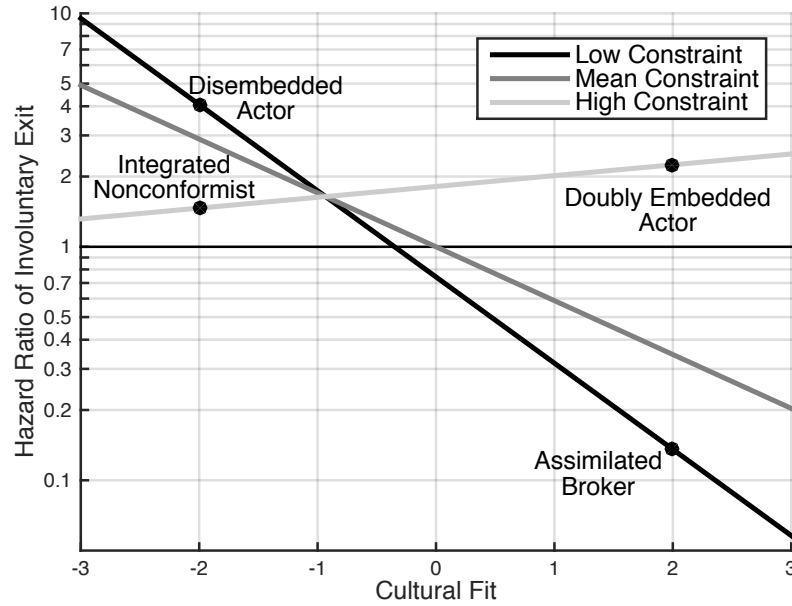
By contrast, cultural fit becomes an obstacle for those who are embedded in constrained networks (one standard deviation above the mean). Though the effect size is not as dramatic as it is for brokers, it is still substantial: a structurally constrained employee who is two standard deviations above the mean on cultural fit (identified as a *Doubly Embedded Actor* in Figure 3) is 53% more likely to be involuntarily terminated than a similarly constrained co-worker who is two standard deviations below the mean on cultural fit (identified as an *Integrated Nonconformist* in Figure 3). Thus, *Integrated Nonconformists* fare better than *Doubly Embedded Actors*.

For comparison, Models 5 through 8 in Table 2 replicate the analyses using the other type of exit—voluntary—that is less directly tied to attainment and is more directly influenced by self-identification with the group. Network Centrality consistently reduces the hazard of exit in all models. Moreover, modeled separately, *Network Constraint* increases the hazard of voluntary exit (Model 5) while *Cultural Fit* lowers it (Model 6); however, these effects are no longer significant when structural and cultural variables are included in the same model (Models 7 and 8). Similarly, the interaction term *Network Constraint x Cultural Fit* is not significant in Model 8. Taken together, the results from Table 2 provide support for our main hypothesis and establish that these effects pertain specifically to (negative) attainment in the form of involuntary exit.

We turn next to considering the second measure of attainment: the likelihood of a person receiving a favorable performance rating. These results are reported in Table 3. Because performance ratings were only available for a portion of the observation period and a subset of individuals, and are collected only on a yearly basis, the sample for these models is considerably smaller than the sample used for the hazard models.¹¹ Recall also that we estimate fixed effect models, which identify the effects of structural and cultural embeddedness on attainment based on within-individual variation. These models afford

¹¹Because performance evaluations are conducted once a year, we transform monthly network and cultural variables into yearly variables by averaging them by person-year. Moreover, because these models include person fixed effects, they only apply to individuals for whom yearly performance is observed at least twice and who experience a change in performance evaluation. Fixed traits such as gender and age cannot be estimated in these models.

Figure 3: Marginal Effect of Cultural Fit on The Hazard Ratio of Involuntary Exit, at Varying Levels of Network Constraint



The x-axis represents the number of standard deviations a person is from the mean level of cultural fit. Low constraint is one standard deviation below the mean, and high constraint is one standard deviation above. Hazard ratios are calculated assuming mean values for all control variables. The y-axis is logarithmically scaled. For illustration, we have identified positions that correspond to the four ideal types of actors in our framework.

a more conservative test of hypotheses since they account for unobserved heterogeneity; however, they lack the statistical power of the hazard models.

Models 1 through 3 represent the baseline hypotheses, the first two testing the effects of structural and cultural variables separately, and the latter combining them. Manager is consistently significant and positive, suggesting that promotion into a managerial position boosts a person’s chances of receiving a favorable performance rating. Though positive, the coefficient for *Network Centrality* is insignificant in these models, while *Network Constraint* is, as expected, negatively associated with favorable performance, but significantly so only when modeled with cultural embeddedness. *Cultural Fit*, on the other hand, is significant and positively predictive of a favorable performance evaluation whether modeled separately

(Model 2) or together with network variables (Model 3). In other words, consistent with Baseline Hypothesis 2, as people become more culturally embedded within the organization, they experience higher levels attainment.

Table 3: Fixed Effects Conditional Logit of Favorable Performance Rating

	(1)	(2)	(3)	(4)
	Favorable Rating	Favorable Rating	Favorable Rating	Favorable Rating
Manager	4.014** (2.80)	3.642* (2.57)	3.714* (2.53)	3.636* (2.43)
Network Centrality	0.977 (1.42)		0.616 (0.76)	0.768 (0.92)
Network Constraint	-0.883 (-1.36)		-2.308* (-2.15)	-2.971** (-2.98)
Cultural Fit		1.202* (2.56)	1.510** (2.91)	0.948* (2.16)
Network Constraint x Cultural Fit				-1.229** (-2.90)
<i>N</i>	176	166	166	166
pseudo <i>R</i> ²	0.142	0.152	0.221	0.243
Log-Likelihood	-54.581	-50.774	-46.645	-45.352

t statistics in parentheses. Robust standard errors. All models include individual fixed effects.

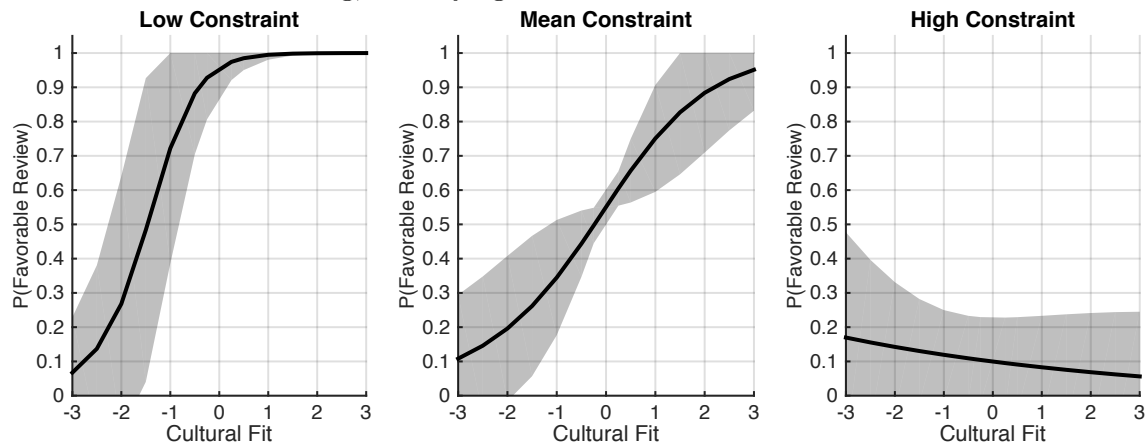
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Our main model of interest is Model 4, which includes the interaction term, *Network Constraint x Cultural Fit*. Not only are *Network Constraint* and *Cultural Fit* both significant and in the expected direction in this model, the interaction between the two is negative and significant. Thus, the Main Hypothesis is again supported.

Figure 4 provides a graphical representation of the interaction effect. For individuals at the mean level of constraint and for those with low constraint (brokers), there is a positive and substantial relationship between cultural fit and attainment. This effect is more pronounced for brokers: we again find that *Assimilated Brokers* do better than *Disembedded Actors*. The benefits of brokerage drop dramatically below mean cultural fit, reduced from an almost one hundred percent likelihood of receiving a favorable performance evaluation

to roughly twenty percent once cultural fit is two standard deviations below the mean. By contrast, there is a negative relationship between cultural fit and attainment for employees who have high levels of constraint. Though this effect, once again, is not as precipitous as it is for brokers, it is still substantial: the likelihood of a favorable evaluation for a constrained actor who is two standard deviations above the mean on cultural fit is more than fifty percent lower than one who is two standard deviations above it (dropping from 14.2% to 6.8%).¹² As with the hazard models, the analyses based on performance ratings also indicate that *Integrated Nonconformists* are more likely to reach high levels of attainment than *Doubly Embedded Actors*.

Figure 4: Marginal Effect of Cultural Fit on the Predicted Probability of Receiving a Favorable Performance Rating, at Varying Levels of Network Constraint



The x-axis represents the number of standard deviations a person is from the mean level of cultural fit. Low constraint is one standard deviation below the mean, and high constraint is one standard deviation above. Probabilities are calculated assuming mean values for control variables, and assuming that individual fixed effects are zero. Gray shades correspond to 95% confidence intervals.

Finally, as a robustness check, we derived an alternative measure of cultural fit. Rather than considering Jensen-Shannon divergence between the probability distributions of incoming and outgoing messages over a vector of LIWC categories, we instead assessed divergence over a vector of the thousand most popular words used by the focal actor across the

¹²Figure 4 depicts slopes for the mean person in the sample. For managers (result available upon request), the negative effect of cultural fit for individuals with high constraint is even more pronounced, and is statistically significant.

entire corpus. This measure has the advantage of using categories that emerged naturally within this particular empirical setting; however, it is a noisier measure than the one based on LIWC categories. Table A-2 in the Appendix reports comparable models to those in Table 2 using this alternative measure of cultural fit. Table A-1 largely replicates the results reported in Table 2. Table A-3 in the Appendix reports comparable models to those in Table 3 using the alternative measure. The main effect of *Cultural Fit* in Model 2 is of the expected sign but not significant (t-statistic of 1.45); however, the interaction term *Network Constraint x Cultural Fit* in Model 4 is of the expected sign and significant. Together, these additional analyses indicate that our results are not an artifact of the particular method we used to operationalize *Cultural Fit*.

Discussion

Overall, our models of the two measures of attainment—involuntary exit and performance evaluation—provide evidence, consistent with the Main Hypothesis, that the effects of structural and cultural embeddedness are contingent on one another. Brokers fare better if they fit culturally, and cultural distinctiveness becomes beneficial when buffered by structural cohesion.

Our findings both provide support and add nuance to the prevailing narratives in the sociological and organizational literatures about the consequences of brokerage and cultural fit. On the one hand we reproduce two fundamental findings, which served as our baseline hypotheses: that, evaluated independently, structural brokerage and cultural assimilation lead to greater attainment, all things equal. Even when interacting these two dimensions of embeddedness with one another, we find that high constraint and low cultural fit are, on average, detrimental to performance. In particular, we reproduce the finding—which has by now almost become axiomatic in the literature—that network constraint leads to lower levels of attainment. This is especially pronounced in Figure 4, where highly constrained individuals generally perform poorly compared to their peers, irrespective of their cultural fit.

Yet our results also demonstrate that considering the two dimensions of embeddedness independently can lead to an overestimation of the benefits of structural brokerage. Actors occupying positions of network constraint do not always underperform brokers. Rather, as Figure 3 illustrates, constrained actors with very low cultural fit (two standard deviations

below the mean)—that is, *Integrated Nonconformists*—have a hazard of experiencing involuntary exit that is almost three times less than the hazard experienced by comparably unassimilated brokers—*Disembedded Actors* in our terminology. “People with networks rich in structural holes” as Burt (2005, p. 18) argues, “are the people who know about, have a hand in, and exercise control over more rewarding opportunities.” In the absence of the trust and reputation afforded by network closure, however, capitalizing on such opportunities requires a social lubricant. We propose that cultural fit can serve as just such a lubricant.

In fact, differences in the predicted probability of receiving a favorable performance rating (Figure 4) across low, mean, and high levels of constraint are most pronounced (and only statistically significant) at the mean level of cultural fit. These differences cannot be detected at low levels of cultural fit, and the difference between low and mean levels of constraint blurs when cultural fit is high. In other words, the nearly taken-for-granted negative relationship between constraint and attainment may just represent the special case of individuals who are “typical” in their level of cultural fit with their immediate peers in the organization.

Work on attainment in organizations has overwhelmingly focused in recent years on the structural underpinnings of individual career success. It has tended to treat culture as epiphenomenal of, and therefore secondary to structure, assuming that individuals who span structural holes necessarily bridge between groups with different beliefs and normative arrangements and that such brokers are adept at enacting different social identities (Burt et al. 2013). While this may often be the case, it is not necessarily so. In fact, our findings suggest that not all brokers are *Assimilated Brokers*; some, at least, are *Disembedded Actors*.

What are the mechanisms that lead *Integrated Nonconformists* and *Assimilated Brokers* to fare better than their peers? In line with previous work on social networks and economic sociology, we contend that the effects of network position on attainment operate through the channel of information access, whereas the effects of cultural fit on attainment relate to an identity channel that affects how an actor is perceived by others. That is, networks influence an actor’s productive output, while cultural fit affects how this productivity is perceived and valued by others.¹³ When properly aligned, these two channels can complement, rather

¹³Of course, output and perceptions are highly intertwined—productivity depends on one’s ability to communicate effectively with others, which in turn is shaped by how one is perceived. Nevertheless, we believe it is useful to think of these two channels—information access and identity—as analytically distinct.

than counteract, one another. Brokers have access to varied and novel information, but they are short on trust and reputation; a stable and congruent cultural identity is useful for offsetting this shortage. Positions of network closure, on the other hand, provide interactional consistency and facilitate a wide informational bandwidth; under such circumstances, cultural uniqueness can become a reputational asset rather than a liability.

Unfortunately, our data do not allow us to directly test these mechanisms. We do not measure employees' quality of output independently of how they are evaluated by others. Thus, we cannot differentiate between channels that directly affect productivity and those that affect peer perceptions. Previous work suggests that structural processes also have identity ramifications, whereas cultural processes affect information exchange. Networks function both as pipes and as prisms (Podolny 2001), while culture is part and parcel of how co-workers coordinate tasks and is therefore central to the realization of interpersonal complementarities in organizations (Weber and Camerer 2003). These nuances might lead to the development of additional hypotheses about why the interaction between structural and cultural embeddedness is consequential for attainment in organizations. We leave this endeavor for future work.

Conclusion

For decades, a central tension that has energized sociological research on topics as diverse as job search (Granovetter 1973), creativity (Fleming et al. 2007), immigration (Portes and Sensenbrenner 1993), political voting behavior (Liu and Srivastava 2015), and artistic success (Zuckerman et al. 2003) concerns the dual pressures that people face to fit in to or stand out from their social group. These research strands have mostly examined structural and cultural processes in isolation from one another. Structural accounts have predominantly focused on the tension between brokerage and closure; cultural accounts on the tension between conformity and distinctiveness. We have argued that these different accounts are, in fact, two sides of the same coin: they are the structural and cultural manifestations of the challenge of balancing social belongingness with differentiation, which, we contend, stands at the heart of what Granovetter (1985) termed the “problem of embeddedness” three decades ago.

We integrate these otherwise disparate bodies of research by developing a theory of the tradeoffs associated with two distinct forms of embeddedness: structural and cultural (Zukin

and DiMaggio 1990). In our account, neither form of embeddedness is subservient to the other. Rather, building on previous work, we theorize that each operates autonomously to influence individual attainment. But we also propose a novel conceptual pathway for individuals to resolve the fitting-in-versus-standing-out tension. Unlike prevailing theories that assume people resolve the tension by finding a sweet spot of optimal distinctiveness in one domain of embeddedness (Brewer 1991), we argue that people can gain advantage by occupying a position that is embedded in one domain and disembedded in the other. Consequently, we posit that the effects of structural and cultural embeddedness are inherently contingent on one another.

Analyses of personnel records and a unique corpus of email messages exchanged among employees in a U.S.-based technology firm lent strong support for our theory. Transforming email metadata into network structural measures and employing computational linguistic techniques to translate the unstructured natural language of email communications into a novel measure of cultural fit, we found that, consistent with previous studies, high levels of structural embeddedness—in the form of network constraint—dampened attainment, while high levels of cultural embeddedness—in the form of cultural fit—promoted it. We also found evidence of a tradeoff between the two forms of embeddedness: cultural fit benefited individuals with low network constraint (i.e., brokers) but hurt those who were highly constrained.

Although sociological research such as the present study frequently relies on empirical patterns observed in a particular organization (e.g. Reagans, Zuckerman, and McEvily 2004), care must always be taken in generalizing from such work. The organization we studied was typical in many respects of U.S.-based mid-sized technology firms; however, it remains unclear how the patterns we observed would vary across different types of organizations—for example, those that vary in the strength of their culture (Sørensen 2002) or the extent to which they exhibit heterogeneity in the subcultures of the departments and functional groups they house (Dougherty 1992). We would conjecture that our findings are not limited to organizations or to professional attainment. Rather, we anticipate that the contingent advantages of structural and cultural embeddedness should play out similarly in social settings that are not strictly organizational. Replications of our approach across these varied contexts would help identify the contingencies and boundary conditions of the theory we have developed.

This limitation of generalizability notwithstanding, our work makes a number of note-

worthy contributions, both substantive and methodological. Our theoretical fusion of work on social networks and the cultural underpinnings of economic action makes potential contributions to both literatures. First, it brings fresh insight to research on the contingent effects of structural brokerage (e.g. Podolny 2001; Reagans and McEvily 2003; Vedres and Stark 2010). For example, Burt (1997) identified a structural contingency in the form of the number of a broker’s peers engaged in similar work, while (Xiao and Tsui 2007) uncovered a cultural contingency: the returns to brokerage may fail to materialize in collectivist countries like China and in organizations with clan-like, high-commitment cultures. By contrast, our work highlights a novel kind of contingency that has both structural and cultural components: the returns to brokerage depend on an individual’s level of cultural fit with the peers she communicates with by dint of the structural position she occupies within the firm.

Similarly, our approach sheds new light on work in economic sociology that focuses on the contingent effects of categorical conformity (e.g, Ferguson and Hasan 2013; Hsu, Hannan, and Koçak 2009; Smith 2011; Zuckerman 1999). These studies mostly find that while categorical noncompliance is conventionally frowned upon, actors who already enjoy a prestigious reputation and who partake in cultural novelty are more likely to be perceived as path blazing than as deviant (Phillips and Zuckerman 2001; Rao et al. 2005). Here too our work highlights that the returns to cultural noncompliance depend on one’s structural position: those ensconced in tight-knit networks are more likely to benefit from culturally unconventional behavior.

Methodologically, this study also has important implications for research that seeks to characterize and systematically measure different facets of culture (e.g Goldberg 2011; Mohr 1998). In contrast to prevailing survey-based methods (e.g. O’Reilly et al. 1991) or text mapping tools (e.g. Carley and Palmquist 1992), we develop an analytical approach to measuring cultural fit over time using email data which, while drawing on cultural content to infer cultural similarity among individuals, takes a distributional approach to culture that is ultimately content-agnostic (Harrison and Carroll 2006). We neither theorize about nor model the implications of the cultural meanings being exchanged among organizational members; rather, we examine how these meanings are distributed to derive measures of cultural variance within the organization.

This technique can, in principle, be replicated with relative ease and limited cost in any organization that maintains email archives. Prior research in this vein has used email

metadata (e.g. Kleinbaum 2012; Kossinetz and Watts 2009) or the mapping of individuals to email distribution lists within an organization (Liu, Srivastava, and Stuart 2015) to characterize different facets of individuals' structural position. Studies that utilize email content, rather than just metadata, remain quite rare—typically because of the difficulty of gaining research access to information that is often considered proprietary and sensitive and the challenge of installing adequate safeguards to protect employee privacy and company confidentiality. Those that exist have used email message content to derive measures of information diversity (Aral and Alstynne 2011) but stopped short of using these data to measure facets of culture and cultural fit. In this regard, the present work may represent a substantial methodological advance.

Access to readily available, time-varying measures of cultural fit opens up several avenues for future research that are both conceptually important and practically relevant. For example, one could use such data to address questions such as: (1) What kinds of individuals (based on observable, pre-hire characteristics such as their job application materials) are most likely to enculturate successfully into an organization? (2) What kinds of employees are best suited to different forms of internal mobility (e.g., transfers and rotations across departments or geographic units)? (3) In an organizational restructuring, which organizational subunits would be easier or harder to combine or separate based on considerations of cultural compatibility? and (4) In the interorganizational context, how culturally compatible are two firms that are contemplating merging or forming a joint venture or alliance? The present study represents but an initial foray into questions such as these.

We conclude by returning to Granovetter's (1985) manifesto on embeddedness. Over twenty years ago, Portes and Sensenbrenner (1993, p. 1321) observed that, while embeddedness has been a useful construct for rethinking neoclassical economics, it nevertheless "suffers from theoretical vagueness." We have attempted to inject greater conceptual precision to the term by drawing the distinction between structural and cultural embeddedness and by explicating the tradeoffs inherent within each form of embeddedness and in their intersection. We have also developed an analytical approach to operationalize the two forms of embeddedness as a system of measures that would appear to have widespread applicability. Ultimately, we hope that, by recasting the problem of embeddedness as balancing the tensions of fitting in and standing out, this work will help reinvigorate this concept's analytical purchase and thereby advance the enduring sociological project of uncovering the interplay between structure and culture.

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Appendix

Table A-1: Linguistic Inquiry and Word Count Framework (Pennebaker et al. 2007)

Category	Examples	Words In Category
Total function words		464
Total pronouns	I, them, itself	116
Personal pronouns	I, them, her	70
1st pers singular	I, me, mine	12
1st pers plural	We, us, our	12
2nd person	You, your, thou	20
3rd pers singular	She, her, him	17
3rd pers plural	They, their, they’d	10
Impersonal pronouns	It, it’s, those	46
Articles	A, an, the	3
Common verbs	Walk, went, see	383
Auxiliary verbs	Am, will, have	144
Past tense	Went, ran, had	145
Present tense	Is, does, hear	169
Future tense	Will, gonna	48
Adverbs	Very, really, quickly	69

continued . . .

Table A-1 (continued)

Category	Examples	Words In Category
Prepositions	To, with, above	60
Conjunctions	And, but, whereas	28
Negations	No, not, never	57
Quantifiers	Few, many, much	89
Numbers	Second, thousand	34
Swear words	Damn, piss, fuck	53
Social processes	Mate, talk, they, child	455
Family	Daughter, husband, aunt	64
Friends	Buddy, friend, neighbor	37
Humans	Adult, baby, boy	61
Affective processes	Happy, cried, abandon	915
Positive emotion	Love, nice, sweet	406
Negative emotion	Hurt, ugly, nasty	499
Anxiety	Worried, fearful, nervous	91
Anger	Hate, kill, annoyed	184
Sadness	Crying, grief, sad	101
Cognitive processes	cause, know, ought	730
Insight	think, know, consider	195
Causation	because, effect, hence	108
Discrepancy	should, would, could	76
Tentative	maybe, perhaps, guess	155
Certainty	always, never	83
Inhibition	block, constrain, stop	111
Inclusive	And, with, include	18
Exclusive	But, without, exclude	17
Perceptual processes	Observing, heard, feeling	273
See	View, saw, seen	72
Hear	Listen, hearing	51
Feel	Feels, touch	75
Biological processes	Eat, blood, pain	567

continued . . .

Table A-1 (continued)

Category	Examples	Words In Category
Body	Cheek, hands, spit	180
Health	Clinic, flu, pill	236
Sexual	Horny, love, incest	96
Ingestion	Dish, eat, pizza	111
Relativity	Area, bend, exit, stop	638
Motion	Arrive, car, go	168
Space	Down, in, thin	220
Time	End, until, season	239
Work	Job, majors, xerox	327
Achievement	Earn, hero, win	186
Leisure	Cook, chat, movie	229
Home	Apartment, kitchen, family	93
Money	Audit, cash, owe	173
Religion	Altar, church, mosque	159
Death	Bury, coffin, kill	62
Assent	Agree, OK, yes	30
Nonfluencies	Er, hm, umm	8
Fillers	Blah, I mean, you know	9

Accessed on May 8, 2015 from <http://www.liwc.net/descriptiontable1.php>

Table A-2: Cox Proportional Hazard Models of Exit (Top 1000 Words)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	terminated	terminated	terminated	terminated	voluntary	voluntary	voluntary	voluntary
Age	1.438*** (4.71)	1.272** (2.59)	1.357** (3.02)	1.331** (2.82)	0.994 (-0.07)	0.959 (-0.39)	1.040 (0.36)	1.048 (0.42)
Age ²	0.996*** (-4.03)	0.998 (-1.89)	0.997* (-2.34)	0.997* (-2.15)	1.000 (-0.05)	1.000 (0.32)	0.999 (-0.41)	0.999 (-0.48)
Female	1.563* (2.24)	1.322 (1.09)	1.539 (1.57)	1.520 (1.53)	1.472 (1.68)	1.909* (2.10)	2.075* (2.32)	2.086* (2.34)
Manager	1.260 (0.63)	1.406 (0.75)	2.087 (1.57)	2.019 (1.52)	1.672 (1.32)	1.207 (0.38)	1.531 (0.88)	1.515 (0.86)
Centrality	0.114*** (-7.01)		0.253** (-3.00)	0.282** (-2.93)	0.128*** (-5.70)		0.471* (-2.01)	0.454* (-2.03)
Network Constraint	1.133* (2.15)		0.869 (-0.75)	1.423 (1.52)	1.233*** (3.37)		1.294 (1.81)	1.173 (0.63)
Cultural Fit		0.372*** (-8.08)	0.470*** (-6.04)	0.485*** (-5.66)		0.480*** (-5.97)	0.590*** (-3.54)	0.592*** (-3.51)
Network Constraint x Cultural Fit				1.455** (2.67)				0.935 (-0.49)
Dept. Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	11809	9879	9879	9879	11809	9879	9879	9879
χ^2	137.170	129.362	122.890	120.912	151.838	57.492	66.345	68.325
Log-Likelihood	-682.515	-343.167	-332.254	-329.858	-435.415	-226.869	-222.067	-221.985

Exponentiated coefficients; *t* statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A-3: Fixed Effects Conditional Logit of Performance Evaluation (1000 Words)

	(1)	(2)	(3)	(4)
	Favorable Rating	Favorable Rating	Favorable Rating	Favorable Rating
Manager	4.014** (2.80)	3.765* (2.53)	3.944** (2.61)	3.900* (2.48)
Network Centrality	0.977 (1.42)		0.811 (1.04)	0.919 (1.12)
Network Constraint	-0.883 (-1.36)		-1.498 (-1.78)	-2.196* (-2.50)
Cultural Fit		0.634 (1.45)	0.500 (0.98)	0.191 (0.42)
Network Constraint x Cultural Fit				-0.965* (-2.00)
<i>N</i>	176	166	166	166
pseudo R^2	0.142	0.117	0.169	0.186
Log-Likelihood	-54.581	-52.858	-49.754	-48.760

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$