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Enculturation Trajectories and Individual Attainment: An Interactional Language Use Model of Cultural Dynamics in Organizations

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How do people adapt to organizational culture and what are the consequences for their outcomes in the organization? These fundamental questions about culture have previously been examined using self-report measures, which are subject to reporting bias, rely on coarse cultural categories defined by researchers, and provide only static snapshots of cultural fit. In contrast, we develop an interactional language use model that overcomes these limitations and opens new avenues for theoretical development about the dynamics of organizational culture. To illustrate the power of this approach, we trace the enculturation trajectories of employees in a mid-sized technology firm based on analyses of 10.24 million internal emails. Our language-based measure of changing cultural fit: (1) predicts individual attainment; (2) reveals distinct patterns of adaptation for employees who exit voluntarily, exit involuntarily, and remain employed; and (3) demonstrates that rapid early cultural adaptation reduces the risk of involuntary, but not voluntary, exit.

Key words: organizational culture, enculturation, cultural fit, attainment, linguistic accommodation

Introduction

Organizational scholars have long recognized the importance of culture in shaping individual, group, and organizational success. For example, culture features prominently in research on the efficacy of newcomer socialization (e.g., Ashforth and Saks 1996), the productivity of groups and teams (e.g., Chatman et al. 1998), and organizational performance following the merger of two firms (e.g., Weber and Camerer 2003). Although the definitions of culture have varied somewhat across these research streams, prior research has tended to treat organizational culture as a *static* construct and therefore emphasize the importance of achieving cultural fit—an informal threshold that an organizational member either ultimately succeeds, or fails, to cross (Van Maanen and Schein 1979, Ashford and Nurmohamed 2012)—for various indicators of performance (O’Reilly et al. 1991, Rivera 2012). Yet organizational enculturation is a *dynamic* and ongoing process.

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Cultural fit, therefore, is an elastic construct. How is the specific temporal pattern of a person's cultural compatibility with colleagues in an organization related to her career outcomes in that setting?

Although some prior work assumes that cultural fit can change over time, especially during early newcomer adjustment to an organization (Bauer et al. 2007, Chatman 1991), compelling theoretical accounts of the dynamics of cultural fit and its consequences remain largely absent from the literature. We trace this paucity of theoretical development to a methodological source: the tools that have heretofore been used to measure culture within organizations—such as participant observation (Kunda 2006, Weeks 2004, Van Maanen 1991) or self-report surveys (e.g., O'Reilly et al. 1991, Jones 1986, Hofstede et al. 2010, Van Maanen 1975)—are simply ill-suited to detecting fine-grained, temporal variation in cultural fit. The absence of such a measurement tool has constrained researchers to assume that a person's compatibility with an organization is fixed, or, at most, monotonically increasing. This conceptualization of cultural fit as threshold crossing, we contend, has impeded theoretical progress on the dynamics of enculturation and has concentrated research attention on either person-organization matching (e.g., Kristof 1996) or on early organizational socialization tactics (e.g., Klein and Weaver 2000, Allen and Meyer 1990).

In contrast, we propose that people can exhibit increases or decreases in cultural fit throughout their tenures in an organization. We introduce the construct of *enculturation trajectory*, which represents an individual's temporal pattern of cultural fit, and argue that the rate and direction of cultural adjustment is consequential for individual attainment. Drawing on previous work on organizational socialization, we propose that understanding how cultural fit waxes and wanes at different stages of a person's tenure can provide a window into two core mechanisms that underpin cultural fit: (1) acceptance of a focal actor by her colleagues; and (2) the focal actor's attachment to her colleagues and the organization as a whole. Thus, we hypothesize that different enculturation trajectories will be associated with different career outcomes—namely retention, voluntary departure, or involuntary departure.

To evaluate these ideas, we propose a novel measurement approach, which is based on the natural language people use in communications with their colleagues in an organization. Language, we contend, provides a window into organizational culture that is less susceptible to reporting biases, less topically constrained, and more granular and scalable than self-report measures. It allows us to observe cultural fit as it unfolds over time, illuminating *enculturation* as a process, rather than an end-state. We apply our measurement strategy to a unique data set, which includes the complete corpus of 10.24 million emails exchanged over five years among 601 full-time employees of a mid-sized U.S. for-profit technology firm.

Whereas prior studies using archived electronic communications in organizations have relied on content-free metadata to infer positions in network structure (e.g., Kossinets and Watts 2006, Kleinbaum et al. 2013, Srivastava 2015, Aven 2015), we have access not only to metadata but also to the natural language of email content. We use the tools of computational linguistics to transform this natural language into time-varying measures of individual-level cultural fit with colleagues in the organization. We then rely on personnel data to explore the relationship between enculturation trajectories and individual outcomes in the organization.

To preview our results, we find that employees with slow enculturation rates in the early stage (i.e., within their first six months in the organization) are more likely to exit involuntarily than those with rapid initial enculturation rates and that positive enculturation can offset the downsides of initial low cultural fit. We also find that cultural fit can *decline* for some employees later in their careers and, when it does, portends their choice to exit voluntarily. Although our measurement approach and empirical analyses are focused on the individual level of analysis, we conclude with a brief discussion of how they can be extended to study the dynamics of cultural fit at the group and organizational levels—in a variety of formal and less formal contexts.

From Cultural Fit to Trajectories of Enculturation

Organizations exhibit remarkable cultural persistence despite turnover, growth, and decline (Kotter and Heskett 1992, Harrison and Carroll 2006). How do newcomers become aligned with an organization’s culture? Existing literature has generally highlighted two distinct yet complementary mechanisms. One emphasizes *cultural matching* that occurs at the hiring stage. This work typically assumes that matching operates on ostensibly fixed attributes relating to individuals’ ingrained psychological characteristics (Kristof 1996, Kammeyer-Mueller and Wanberg 2003) or accumulated cultural capital (Rivera 2012). Thus organizations select (and are concomitantly selected by) individuals whose dispositions fit with the organization’s climate or who are culturally congruent with those who have already joined the organization.

The process of cultural alignment does not, however, end once an individual joins an organization. A second body of work—commonly referred to as organizational socialization theory—focuses on the *enculturation* that occurs post-entry, when newcomers acquire organization-specific cultural knowledge (Wanous 1992).¹ Both cultural matching and enculturation lead to cultural fit, the state

¹ The term “socialization” is typically used to describe several dimensions of individual adjustment, which include role clarification, task mastery, and cultural assimilation (Bauer et al. 2007). As Schneider et al. (2013) point out, the literatures on organizational culture and socialization have grown increasingly apart in recent years. Work on socialization typically does not focus on cultural compatibility (Bauer and Erdogan 2014), whereas work on organizational culture has tended to downplay processes of socialization. We therefore opt to use the term “enculturation” because it specifically denotes the process of cultural adjustment.

of being culturally compatible with one's colleagues in an organization. Organizations differ substantially in the extent to which they actively propagate specific desired cultural features (Sørensen 2002) and the relative emphases they put on cultural matching versus enculturation. Even in the absence of an intentional effort to develop a strong corporate culture, matching and enculturation naturally occur through a combination of homophily and peer influence (Carley 1991, Harrison and Carroll 2006), leading organizations to vary in the levels of cultural homogeneity they exhibit. Some are strongly aligned with a purposefully cultivated organizational culture, whereas others are more fragmented (Martin 1992, Chatman et al. 2014).

While work on cultural fit and enculturation is too vast to be comprehensively summarized here (for reviews, see for example Bauer et al. 2007, Kristof-Brown et al. 2005), we draw on two fundamental assumptions that animate these literatures. The first is that individual cultural fit is positively associated with individual career success. Although the reasons are multifaceted, two explanations are paramount. One is grounded in the psychological benefits of cultural fit. High cultural fit is thought to lead to greater job satisfaction, stronger identification and attachment with the organization, higher motivation, and reduced stress. As a result, people achieve higher levels of performance and a longer tenure with the organization (O'Reilly et al. 1991, Chatman 1991, Meglino et al. 1989). The other is rooted in culture's role as a solution to the complexities and challenges of interpersonal coordination under conditions of uncertainty. Colleagues who fit in culturally with each other are assumed to have more efficient and efficacious interactions with one another, resulting in better coordination and higher productivity (Kreps 1990, Weber and Camerer 2003, Crémer 1993, Van den Steen 2010).

A second common assumption in enculturation research is that the process unfolds in distinct stages. Although they use different terminology and identify slightly different break-points, enculturation models typically include three core stages (Bauer et al. 1998): (1) anticipatory adjustment, which occurs prior to entry, (2) early adjustment, which occurs immediately following entry, and (3) final adjustment, when newcomers are fully accepted as insiders. It is often assumed that the second stage, when newcomers experience high levels of uncertainty and stress as they learn and update their expectations about the organization and try to make sense of its normative order, is the most critical for subsequent attainment. This is presumed to be the period of most consequential organizational learning.

Although enculturation is often conceptualized as an ongoing process (Van Maanen and Schein 1979), empirical studies of socialization have, in practice, often treated organizational culture as fixed and monolithic and conceived of individual-level cultural fit as a static end-state that people either achieve or fail to achieve through processes of selection or post-hire enculturation (e.g., Allen and Meyer 1990). Culture is known to be an evolving, group-level adaptive response to internal

and external pressures (Schein 2010). Yet, as we elaborate below, methodological limitations have led researchers to rely on simplifying assumptions about the fixity of cultural fit. There is strong reason to believe, however, that individuals' cultural fit might vary throughout their tenure in an organization beyond the point of immediate post-hire enculturation—for example, because the organization's culture and its various sub-cultures might evolve, or because an individual might eventually detach from and contemplate exiting the organization. Danescu-Niculescu-Mizil et al. (2013), for example, find that users in an online community exhibit a decline in accommodation to evolving linguistic community norms as a precursor to their disengagement from the community. Thus, both earlier and later post-hire enculturation would appear to be consequential for individual attainment, although we propose that each entails a different form of cultural adjustment.

Early enculturation relates to a newcomer's capacity to tune into and adopt the organizational code (March 1991). It is during this probationary phase that a newcomer is expected to demonstrate commitment to, and the ability to conform to, colleagues' normative expectations.² If successful, this process eventually leads to acceptance as a full-fledged organizational insider. Whatever choices and actions the newcomer takes, the success of this process is ultimately determined by his or her colleagues, who decide whether or not to accept the newcomer as an insider (Wanous 1992, Van Maanen and Schein 1979). Once this inclusionary boundary is passed, however, cultural compatibility becomes less a matter of gaining acceptance by colleagues and more a challenge of self-maintenance of cultural compatibility (Van Maanen 1975). Even in the absence of organizational cultural change, diffusing the tension between front-stage normative compliance and back-stage identity management requires significant emotional work (Hochschild 1979, Cable et al. 2013, Kilduff and Day 1994).

Conceptualizing cultural fit as a static end-state obscures these different processes. Whereas low cultural fit might lead to negative evaluations by colleagues, it could also be an indicator of low attachment to the organization. Just knowing that a person failed to achieve a high level of cultural fit tells us very little about which of these two mechanisms might be operative. Rather, the timing and pattern of enculturation are likely to be crucial in disambiguating these underlying pathways. Cultural fit can lead to acceptance by colleagues because it functions as a signal about one's commitment, membership and values. It is during early tenure that newcomers' identities and behaviors are most heavily scrutinized by their colleagues. And as previous research has shown, it is during this period that newcomers experience heightened anxiety and uncertainty and therefore a strong impetus to conform culturally (Van Maanen and Schein 1979, Jones 1986). An individual who has already gained acceptance by colleagues has more latitude to behave nonconformingly.

² Though organizations vary in the extent to which they tolerate, or proactively encourage, newcomer self-expression and transgressions of the cultural status quo (Van Maanen and Schein 1979, Cable et al. 2013).

Assuming that people who have gained colleagues' acceptance through normative compliance have little reason to change their behavior in response to others' expectations, a decline in cultural fit later on is therefore more likely to be an indicator of their own declining attachment to the organization. Thus, we propose a shift in analytical focus from static conceptions of cultural fit—i.e., whether or not a newcomer achieved a high enough level of fit—to a dynamic focus on *trajectories of enculturation*. The cultural journey, we argue, is as important to understand as the destination.

We hypothesize that different outcomes in the organization leave different enculturation signatures. Two such outcomes are particularly important: voluntary and involuntary exit. Employees voluntarily leave a firm in pursuit of better options elsewhere. We therefore interpret such a departure as an indication of low commitment to the firm in light of other outside opportunities. Involuntary departures, on the other hand, are imposed on the individual and therefore typically indicate the inability to gain acceptance by one's colleagues. Though these different exit types are indicative of different underlying processes—attachment and acceptance by colleagues—previous research on enculturation has often overlooked the distinction between them either by measuring turnover irrespective of exit type (e.g., Kammeyer-Mueller and Wanberg 2003, Cable et al. 2013), or by focusing only on voluntary exit (e.g., Allen 2006, Chatman 1991). This inattention is reflective of a theoretical tendency to conflate the effects of cultural fit on attachment with its effects on evaluations by others, and to treat cultural fit as a boundary that is either crossed, or never traversed. In contrast, we expect that these two different pathways relate to different patterns of enculturation. If the lack of cultural adaptability—particularly in the early stages of a person's tenure in an organization—leads to negative evaluations by colleagues, then we would expect the person to face a greater hazard of involuntary exit. By contrast, if a person succeeds in adapting culturally early in her tenure and gains acceptance by colleagues but then—at a later stage in her tenure—experiences a decline in cultural fit, then we would expect this to signal waning attachment to the group and anticipate the person's impending voluntary exit. In other words, we expect:

HYPOTHESIS 1: *Slow rates of enculturation early in a person's tenure in an organization are predictive of involuntary exit.*

HYPOTHESIS 2: *A decline in cultural fit later in a person's tenure in an organization presages voluntary exit.*

Enculturation and Language Use

Studies of organizational culture have mostly eschewed questions relating to trajectories of enculturation, in large part because culture is a complex construct that is difficult to measure consistently over time (Mohr 1998, Goldberg 2011). Organizational scholars have, of course, studied cultural

processes extensively,³ but methodological limitations have precluded the systematic analysis of enculturation patterns. Participant observation provides rich insight into the workings of enculturation (e.g., Kunda 2006, Van Maanen 1991, Weeks 2004) but, given that a researcher can only be present in one setting at a given time, is limited in scope. Previous work examining individual variability in enculturation has therefore mostly relied on self-reports to operationalize individual cultural fit.

Self-reports are, however, extremely limiting (Greenwald and Banaji 1995, Srivastava and Banaji 2011): they presuppose a small set of cultural dimensions, often overlooking organizationally-specific cultural manifestations; are subject to a variety of social and cognitive reporting biases; and, by their nature, sacrifice qualitative richness for observational breadth, leading to a focus on core cultural dimensions that are often most resistant to change. Most important, self-reports are inevitably limited in scope, given that individuals cannot be surveyed constantly and exhaustively.⁴ Thus, they cannot address fundamental questions that relate to the evolution of individual enculturation over time.⁵

How one measures enculturation invariably relates to how one defines culture. Though scholars have offered a variety of definitions, most agree that organizational culture relates to shared understandings held by members of the organization, and that cultural fit, by extension, is an individual's level of alignment with these shared understandings (Schein 2010, Hofstede et al. 2010, Cr mer 1993). Organizational members discern this alignment by observing an individual's behaviors and assessing the extent to which they are normatively compliant with others' behaviors. Such compliance is often interpreted as indication of a deeper cognitive alignment in beliefs and value orientations. As noted above, culture is assumed to affect individual and organizational success through its impact on individual attachment and motivation (Akerlof and Kranton 2005, Baron and Kreps 2014), through the signals it sends to others about the individual's identity and commitment (Schein 2010, Harrison and Carroll 2006), and through its ability to facilitate tacit coordination, especially under conditions of uncertainty and task complexity (Kreps 1990, Weber and Camerer 2003, Kunda 2006).

³ In fact by some counts, they have produced more than 4,500 articles on the topic over the last 35 years, see Hartnell et al. (2011).

⁴ Longitudinal designs typically survey respondents in four to twelve month intervals, leaving much to be missed in between.

⁵ Self-report methods differ as to whether they elicit self-perceptions of cultural fit (e.g., Chao et al. 1994) or use more indirect approaches (e.g., Chatman 1991). But because they invariably rely on data collected through surveys—as opposed to naturally occurring behavioral manifestations of cultural fit—they are all, to varying degrees, susceptible to measurement constraints. Scholars are naturally aware of these limitations (e.g., Bauer et al. 1998) and have devised inventive ways to overcome them. The Organizational Culture Profile (O'Reilly et al. 1991), for example, cleverly uses the Q-sort method to elicit individual value orientations. This approach is nevertheless resource intensive and therefore limited in granularity, relies on prominent informants to devise the parameters of organizational culture, and is ultimately constrained by the dimensions contained in the survey.

Language is central to each of these processes. It is a key component of the organizational code that members use to efficiently coordinate complex and multifaceted tasks (March 1991, Crémer et al. 2007, Chao et al. 1994). In so doing, it also serves as a window to the categories of thought with which these members construe and attribute meanings to their daily experiences (Pinker 2007). Whether conscious or not, people’s linguistic choices are crucial for establishing relationships with their interlocutors (Giles et al. 1991, Giles 2008, Labov 1972, 2001). For example, linguistic compatibility minimizes perceived social distance between interaction partners, whereas linguistic divergence strengthens symbolic boundaries between them (Gumperz 1982, Bernstein 2003, Niederhoffer and Pennebaker 2002, Danescu-Niculescu-Mizil et al. 2012). This happens because an individual’s tendency to accommodate others linguistically both affects others’ evaluations (e.g. Rickford et al. 2015), and is a reflection of her self-perceived similarity with her interlocutors (e.g. Ireland et al. 2011). Thus language-use is intrinsically related to the processes by which individuals fit, or fail to fit, into their social environments.

An Interactional Language-Use Model of Enculturation

We define cultural fit as an individual’s level of linguistic compatibility with others during a given observation window, and an enculturation trajectory as the change in individual cultural fit over sequential observation windows. To measure these constructs, we develop an interactional language-use model of cultural adaptation.

Our measure of cultural fit is defined in terms of textual records of interactional language use (e.g., email exchanges, text messages, phone call transcripts). We assume a method φ for mapping texts to linguistic units (e.g., words, bigrams, noun phrases, emotional categories). To measure the cultural fit of individual i in an interactional text record T , we use φ to create two probability distributions $O_{i,T}$ and $I_{i,T}$, giving the normalized frequencies for linguistic units in i ’s outgoing and incoming messages in T , and then we define the cultural fit (CF) of i as

$$CF_T(i) = -\log(JS(O_{i,T}||I_{i,T})) \quad (1)$$

where JS is the Jensen-Shannon (JS) divergence (Lin 1991) between $O_{i,T}$ and $I_{i,T}$. The JS-divergence between two probability distributions is defined as

$$JS(p||q) = \frac{1}{2}D(p||m) + \frac{1}{2}D(q||m) \quad (2)$$

where $m = \frac{1}{2}(p + q)$ and $D(p||q)$ is the Kullback-Leibler divergence of q from p :

$$D(p||q) = \sum_i p(i) \log_2 \frac{p(i)}{q(i)} \quad (3)$$

JS divergence is a symmetric measure of similarity between two probability distributions. It smooths the KL-divergence values and ensures that they are always finite. As we have defined it here in terms of \log_2 , its values always fall in the interval $[0,1]$. This approach builds on previous efforts to estimate linguistic accommodation using probabilistic language models (Danescu-Niculescu-Mizil and Lee 2011, Danescu-Niculescu-Mizil et al. 2012, Hughes et al. 2012). We have found that the smoothing properties of our measure are particularly well-suited to the sparse, power-law distribution of words in natural language use (Zipf 1949, Baayen 2001, Piantadosi 2014).

We segment the data into monthly observation windows to study trajectories of enculturation. To reduce the effects of domain- and task-specific vocabulary, we use the Linguistic Inquiry and Word Count (LIWC) (Pennebaker et al. 2007) lexicon as the mapping method φ to code each email message relative to a set of semantic and emotional categories. LIWC is an established framework for measuring linguistic style (e.g., as reflected in the use of pronouns or negations) which allows us to measure interlocutors' normative, as opposed to substantive linguistic congruence, making our measure overall robust to terminological similarities that are a result of functional coordination.

An important feature of our measure is that linguistic accommodation is defined with respect to an individual's subset of interaction partners, as opposed to all members of the organization. We employ this approach for two main reasons. First, in medium to large organizations (where members number in the hundreds or more), individuals cannot feasibly interact with more than a subset of members. The colleagues with whom people interact in a given period are most consequential for shaping their perceptions of the organizational culture and are also most likely to make consequential judgments about their cultural compatibility. Second, our measurement strategy is robust to cultural variation within the organization (e.g., across different units, locations or functions) because it does not assume a homogeneous organizational culture. Moreover, consistent with research suggesting that informal organizational relationships can often crisscross formal boundaries (Biancani et al. 2014), it does not necessitate that such variation, to the extent that it exists, overlaps with formal organizational boundaries.

Our language-based approach overcomes the fundamental limitations of self-report measures that are commonly used to measure cultural fit in organizations. First, because language use is a behavioral outcome, our method is not subject to reporting bias, particularly that which is affected by implicit social cognition. Second, in relying only on naturally occurring unstructured textual exchanges, it is not limited to the cultural dimensions assumed by the researcher and contained in a survey instrument, nor is it required to sacrifice richness for breadth; this allows us to observe fairly subtle cultural differences. Third, since language use is pervasive, we can measure cultural fit at scale and at high granularity over time. Fourth, as noted above, measuring cultural fit with respect to one's interaction partners allows for the possibility of cultural heterogeneity across people

within the organization, as well as over time within individuals. Together, these features enable us to measure enculturation trajectories with high resolution and in a consistent manner that enables comparisons across individuals.

Because our measure is new, questions naturally arise about whether and how it relates to established measures of cultural alignment—such as the Organization Culture Profile (O’Reilly et al. 1991). Although we do not have access to self-report measures from our research setting to enable such a comparison, we began our analyses (reported below) with establishing the predictive validity of our interactional language use measure of cultural fit by assessing its relationship to two indicators of attainment: positive attainment in the form of promotions and negative attainment in the form of involuntary exit.

Data

We obtained access to the complete corpus of electronic messages—including metadata and content—exchanged among the full-time employees at a mid-sized, for-profit technology company between 2009 to 2014. To protect employee privacy and company confidentiality, we stored all data on secure research servers that we purchased and installed at the firm, eliminated messages exchanged with parties external to the firm, excluded messages exchanged with any of the company’s attorneys, and deleted message content and all identifying information about employees after applying our natural language processing algorithms. The resulting data set included 10,236,668 distinct messages.

In addition to email data, we obtained human resource records that included employee age, gender, tenure and, for employees who departed the company, whether this departure was voluntary or involuntary. To establish the predictive validity of our measure, described below, we also had to draw inferences about when newcomers were promoted from individual contributor roles to managerial roles in which they supervised the work of others. Because the company had only recently installed a human resource information system, data on hierarchical rank and department affiliation were not available on a consistent basis. To identify promotion events, we therefore relied on email distribution lists. The company maintained distribution lists for all employees who supervised the work of other employees. We identified the date of an employee’s promotion by his or her first appearance on one of these distribution lists. This method yielded 118 promotion events. We similarly used distribution lists to identify an employee’s departmental affiliation and then used department controls to account for heterogeneity in cultural adaptation and fit across these formal subunits of the organization.

We made certain refinements to the data, such as excluding temporary employees and summer interns, and excluded observations with missing data (see Appendix A for details). The resulting

dataset includes 9,885 person-month observations for 601 full-time employees. These form the basis of the analyses reported below. Descriptive statistics are reported in Table A1.

Results

Before testing our hypotheses related to enculturation trajectories, we sought to establish whether our interactional language use measure of cultural fit is predictive of individual attainment.⁶ We reasoned that, if our measure is reflective of cultural fit, it should be positively associated with individual career success (O'Reilly et al. 1991). Consistent with this expectation, our measure of cultural fit strongly predicts both positive and negative attainment in the organization. Figure 1 reports the cumulative probabilities of being promoted to a managerial position (positive attainment), and being asked to leave involuntarily (negative attainment), as estimated by two separate Cox proportional hazard models (each including controls for sociodemographic and organizational attributes, see Table B1 for details). Rank-and-file employees with high cultural fit have a cumulative probability of 48% of being promoted to a managerial position by the end of their third year at the firm (Fig. 1A), which is 1.5 and 2.7 times greater than their counterparts who exhibit median or low cultural fit, respectively. The implications of low cultural fit for involuntary exit are particularly dramatic (Fig. 1B): at 46%, the cumulative probability of involuntary exit after three years is four times greater for an employee with low cultural fit than it is for one with median cultural fit.

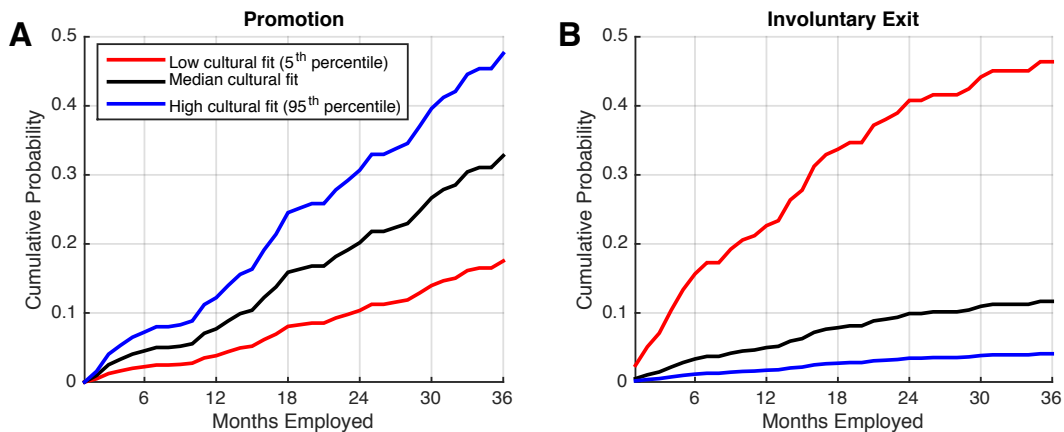


Figure 1 Cumulative probability of (A) being promoted to a managerial position and (B) exiting involuntarily, as estimated by separate Cox proportional hazard models.

However, consistent with our expectations, cultural fit is not a static personal attribute. Rather, for the average employee, cultural fit follows an upward sloping trend, as depicted in Figure 2.

⁶ For ease of presentation, we report only results of interest throughout this section. For complete information about the the models used and the estimates they produce, see Appendix B



Figure 2 Cultural fit (standardized) as a function of number of months employed. The main diagram plots a cubic linear fit with 95% confidence interval (black line) and mean observed values (blue dots). The inset plots enculturation trajectories of varying lengths of tenure at the firm, for 30 randomly sampled employees.

Highlighted employees vary in employment status.

For ease of interpretation, cultural fit is standardized to have a zero mean and standard deviation of one, such that zero cultural fit corresponds to the average employee at the firm. As the figure illustrates, newly hired employees initially exhibit rapid linguistic accommodation, reaching the mean firm level by the end of their first year. The growth rate of their cultural fit gradually decreases thereafter. In other words, our method demonstrates that newcomers to the firm are, on average, culturally adaptable; they achieve cultural assimilation despite initially being culturally distant from their colleagues. It is also consistent with previous work which assumes that enculturation entails distinct phases.

Yet the general trend illustrated in Figure 2 masks considerable heterogeneity. Employees vary significantly in their average and peak levels of linguistic accommodation, as well as in their overall enculturation trajectories, as the inset of Figure 2 (plotting a random sample of individuals) illustrates. While the average employee at the firm exhibits positive enculturation throughout her career, some employees experience a decline in cultural fit. Moreover, though the firm in question puts a strong emphasis on hiring on cultural fit (as discerned from conversations we conducted with its Chief People Officer), newcomers exhibit large variation in initial levels of fit. If cultural fit relates to a person's ability to integrate successfully with her colleagues, as we hypothesized earlier, then we should find that different enculturation trajectories explain differences in individual outcomes in the firm.

We test our hypotheses by differentiating among three types of employees: (a) those who left the firm voluntarily; (b) those who left involuntarily; (c) and those who remained employed. As noted above, we interpret voluntary departure as an indication of weakened attachment, and involuntary exit as indication of rejection by colleagues. As Figure 2 illustrates, employees differ not only in their enculturation trajectories, but also in their rates of enculturation. We therefore assume that different people follow different rates of enculturation—that is, that cultural adaptation is related to an individual’s life cycle at the firm rather than to that person’s absolute number of months at the firm. Consequently, we standardized time by employees’ tenure at the firm, such that it ranges from 0 to 1. Let e_i be the month of entry for individual i and d_i be the month of departure for that individual. We calculate standardized tenure as $\tau_i = (t_i - e_i)/(d_i - e_i)$, where t_i corresponds to the month individual i is observed at the firm.

While departed employees are observed throughout their tenure in the firm, observations of non-departed employees are right censored: some may leave in the future. Concomitantly, as we do not observe their departure, we cannot standardize their tenure. To address these problems, we employ a matched pairing approach. We randomly pair each departed employee with one non-departed employee in the month of arrival to the firm, and we model both employees’ cultural fit only throughout the departed employee’s tenure. We standardize the non-departed employee’s tenure by the departed employee’s. That is, for each departed individual i we randomly matched a non-departed individual i' such that $e_i = e_{i'}$, and define $\tau_{i't} = \tau_{it}$. Thus, we compare departed employees’ cultural fit to that of their counterparts who had joined the firm at the same time and have remained in the firm since. We model cultural fit as a function of standardized tenure, and use interaction terms to differentiate between exit types (with non-departed employees serving as the omitted category, see Appendix B for more details). We also include matched pair fixed effects. Our modeling strategy allows us to account for heterogeneity in individual tenure lengths among the departed, as well as address unobserved heterogeneity that is time-related—for example, firm-level (e.g., growth, contraction, or changes in hiring practices) and market-level (e.g., supply of job applicants) variation that might systematically affect cultural fit or individual outcomes.

Figure 3 illustrates the marginal effects of standardized tenure on cultural fit as estimated by this model. The three employee types exhibit distinct enculturation trajectories. Those who eventually leave involuntarily fail to accommodate their colleagues linguistically. The first third of their tenure is characterized by consistently low cultural fit, which is then followed by a gradual decline that moves them culturally further apart from their non-departed counterparts. This lack of cultural adaptability has many causes, which vary across individuals and situations, and that may be related to individual motivation or to capabilities (Weber and Camerer 2003, Harrison and Carroll 2006,

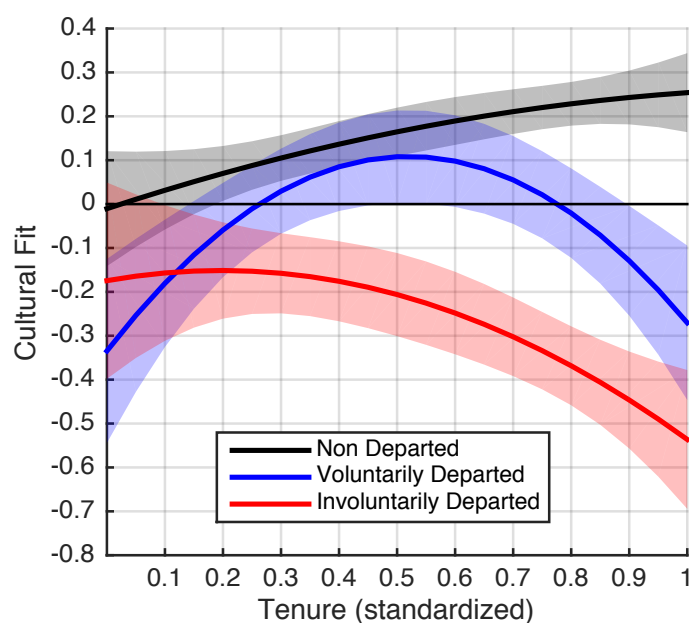


Figure 3 Marginal effect of tenure (standardized by person) on cultural fit (standardized), as estimated by a matched-pair fixed-effects model. Effects plotted by employment status. Shaded areas correspond to 95% confidence intervals.

Jones 1986); regardless, consistent with Hypothesis 1, these individuals' inability to enculturate portends their failure to integrate successfully into the firm.

Those departing voluntarily, on the other hand, follow a different trajectory. Initially, they are statistically indistinguishable from non-departed colleagues who had joined the firm at the same time. Both groups follow the same upward trajectory of enculturation. Once they peak in cultural fit, roughly at their half-life in the firm, those who depart voluntarily begin to exhibit a decline. Unlike those who end up leaving the firm involuntarily, those who exit voluntarily are clearly capable of adapting. It appears that at some point in their tenure they cease to accommodate their colleagues linguistically. Consistent with Hypothesis 2, this late decline in cultural compatibility with colleagues appears to foreshadow an intention to leave the organization in pursuit of better options.

Though our modeling strategy allows us to compare non-departed employees to those departing voluntarily or involuntarily within the same model, it precludes usage of individual fixed-effects (given that exit type is fixed per person). We therefore cannot rule out that the different patterns depicted in Figure 3 are attributable to stable differences between individuals. To address this limitation, we model cultural fit by standardized tenure using an individual fixed-effects model estimated separately for voluntary and involuntarily departed individuals (excluding non-departed individuals). Individual fixed-effects models account for unobserved heterogeneity across individuals

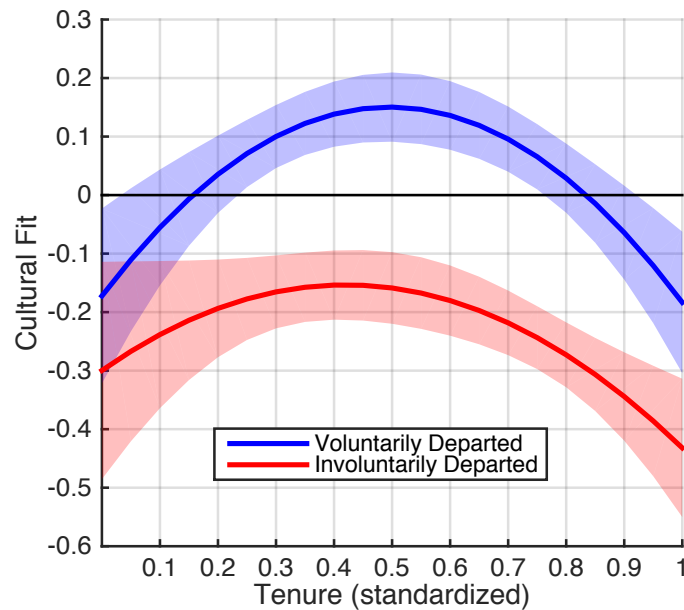


Figure 4 Marginal effect of tenure (standardized by person) on cultural fit (standardized), as estimated by two separate employee fixed-effects models. Effects plotted by employment status. Shaded areas correspond to 95% confidence intervals.

and therefore mitigate concerns about omitted variable bias (Greene 2012). They allow us to isolate individual enculturation trajectories by examining the relationship of within-person tenure change on cultural fit, net of an individual's baseline cultural fit. The marginal effects estimated by these models are illustrated in Figure 4. They reproduce the trends illustrated in Figure 3, suggesting that the differences in enculturation trajectories by exit type cannot be explained merely by differences in individual baseline cultural fit.

The different trajectories depicted in Figures 3 and 4 are striking. But because we do not have access to the cognitive processes producing these results, only to their linguistic manifestations, we cannot determine their causes. It is nevertheless evident that whereas the voluntarily departed are capable of enculturation, the involuntarily departed are either incapable of cultural adaptation, or unwilling to adapt. Given that involuntary departure is imposed on the individual, while voluntary departure is a choice, we interpret these results as suggesting that lack of cultural adaptability relates to a negative reception by colleagues, whereas a drop in cultural fit for previously encultured individuals is indicative of a decline in an individual's attachment to the organization.

The results in Figures 3 and 4 also point to the importance of enculturation, relative to initial cultural fit. By the time the departed leave the firm, the three employee types exhibit different levels of cultural fit: those still employed by the firm are significantly above average; those voluntarily exiting are significantly below average; and those leaving involuntarily exhibit dramatically low

levels of cultural fit, significantly lower than the average newcomer's (-0.52 compared to -0.3, see Figure 2). This is not the case upon arrival at the firm, however. Although the non-departed exhibit relatively high levels of cultural fit when they join the firm, because there is great variability in initial cultural fit, employee types are statistically indistinguishable from one another at time zero. The different enculturation signatures depicted in Figures 3 and 4 strongly suggest that employees' fates are not merely the result of their pre-hire cultural fit, but also their capacity for enculturation. As we hypothesized, initial enculturation seems particularly consequential for successful integration: those who do not adapt to their colleagues early on appear to be at high risk of being asked to leave.

To explore this further, we calculated the enculturation rate for each employee during her first six months at the firm which, previous evidence suggests, is the critical period during which early enculturation unfolds (Bauer et al. 1998). We do so by fitting a simple linear model, effectively measuring the slope of cultural fit during a newcomer's first six months. We estimated two Cox proportional hazard models, estimating the risk of involuntary and voluntary departure (Table 1). As the results in Table 1 demonstrate, initial cultural fit and early enculturation reduce the risk of involuntary, but not voluntary, departure: one third standard deviation increase in cultural fit per month (which roughly corresponds to the 90th percentile of enculturation rate) decreases the hazard ratio of involuntary exit by 30%. In other words, failure to assimilate early on appears to be related to a failure to receive acceptance by others, but not to one's attachment to the organization.

We report the results from Model 1 in Table 1 as cumulative hazards in Figure 5. We distinguish between different levels of initial cultural fit and early adaptation rates, depicting hazard for newcomers with low initial cultural fit and either high (red solid line) or low (red dashed line) enculturation rates, newcomers with high initial cultural fit and either high (blue solid line) or low (blue dashed line) enculturation rates, and newcomers at the median level of initial fit and with median enculturation rate (gray line). Although those entering the firm with high cultural fit are at lower risk of being asked to leave (with one standard deviation increase in initial fit reducing the overall risk of involuntary exit by more than 40 percent, Table 1), the rate of initial enculturation can offset the consequences of initial cultural fit. Newcomers with initially low cultural fit who are quick to adapt (solid red line) fare better than those entering with median fit and who adapt at a median rate (gray line), or even those entering with high cultural fit but who are culturally inadaptible (dashed blue line). It appears that one's capacity to enculturate is at least as important as one's initial level of fit.

Discussion and Conclusion

It would be impossible to summarize with one sentence the vast and multifaceted work done on cultural fit and enculturation in organizations over the last three decades. Nevertheless, one pervasive

Table 1 Cox Proportional Hazard Models of Exit

	(1)	(2)
	Involuntary	Voluntary
Enculturation Rate	0.086** (-2.66)	0.281 (-1.40)
Initial Fit	0.575** (-2.97)	0.681 (-1.57)
Age	1.119 (1.00)	0.967 (-0.25)
Age ²	0.999 (-0.49)	1.000 (0.07)
Female	1.286 (0.88)	1.927* (2.10)
Manager	0.857 (-0.31)	1.098 (0.21)
Department Controls	Yes	Yes
<i>N</i>	8238	8238
χ^2	37.370	20.386
Log-Likelihood	-2003.94	-1656.18

Exponentiated coefficients; *t* statistics in parentheses

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

theme appears to be consistent throughout this literature: those who are able to fit culturally enjoy significant benefits, whether in psychological well-being, increased performance, favorable perceptions by colleagues or likelihood of retention. Indeed, these benefits accrue not only to the individual in question but also to the organization as a whole; contemporary firms consequently invest considerable resources in cultural matching and enculturation. Using a language-based method for measuring cultural fit that is more scalable, more easily generalized across settings, higher in resolution and less susceptible to biases than existing self-report measures, we were able to discern these difficult-to-observe effects as they unfold over time, lending further support to the claim that cultural compatibility leads to attainment.

Our results go beyond reaffirming that cultural fit matters; importantly, they also shed light on the processes by which individuals adapt to their colleagues within the organization. Measuring cultural fit over time enables us to theorize about and empirically test propositions related to a novel construct in socialization research: enculturation trajectories. We find that people are, on average, highly capable of enculturation, and that different outcomes in the organization are associated with unique enculturation trajectories. In other words, *how* people enculturate, not merely *whether* they enculturate, matters for their integration into the firm. Previous literature has tended to conflate

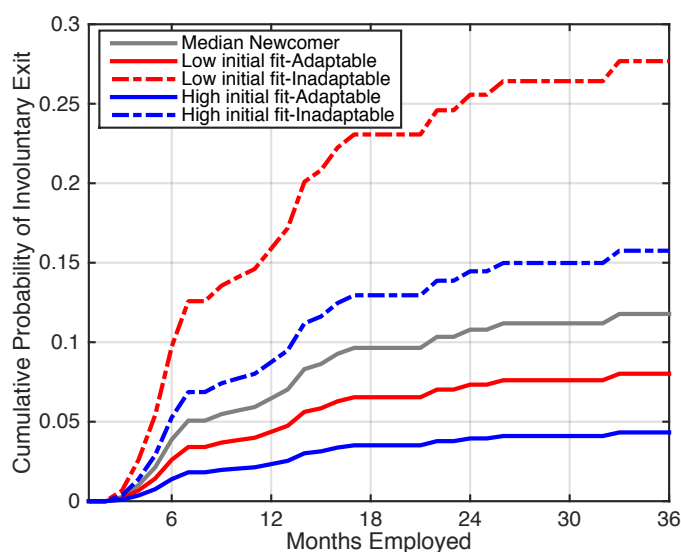


Figure 5 Hazard of involuntary exit as a function of initial cultural fit and rate of enculturation during a newcomer's first 6 months, estimated with a Cox proportional hazard model. Cumulative probability is plotted for different levels of employee's initial cultural fit (low at the 25th percentile, median, and high at the 75th percentile, color coded) and rate of enculturation (low at the 5th percentile, median, and high at the 95th percentile, line styling).

enculturation processes related to acceptance by others and those related to intrinsic attachment by treating turnover as a one dimensional outcome. In contrast, we distinguish between voluntary and involuntary exits, and identify their different enculturation signatures. Newcomers who do not rapidly conform to cultural norms are rejected by their colleagues and ultimately forced to exit, whereas those who had successfully enculturated earlier in their careers but subsequently exhibited a decline in cultural fit appeared to be detaching from the organization and subsequently exited voluntarily.

Organizational scholars have theorized extensively about the dynamics and consequences of enculturation in organizations (Van Maanen and Schein 1979, Harrison and Carroll 2006, Wanous 1992, Bauer et al. 1998). Because individual enculturation is difficult to measure reliably and consistently, however, empirical work has often treated cultural fit as a static end-state. Thus, cultural matching has typically been studied as a selection process whereby an individual either fits, or does not fit culturally with an organization, and enculturation as an early post-entry process whereby an individual either adapts successfully, or fails to do so. Our findings are not inconsistent with the view that a-priori cultural fit, or early enculturation, are consequential for eventual integration into a firm. Rather, we too find that initial cultural fit and early enculturation predict longevity at the firm. Yet the implications of cultural compatibility are not limited to entry. Variation in cultural fit at different stages in a person's tenure in an organization can provide a

window into different underlying mechanisms. Early in an individual's tenure, low cultural fit is likely to be associated with the failure to gain social acceptance by colleagues; later on, it is likely to be a reflection of low attachment. This suggests that researchers and practitioners alike should pay more attention to enculturation trajectories as signatures of acceptance and attachment, and as differentiated predictors of integration and attainment.

Organizational leaders have not been blind to corporate culture. To the contrary, some argue that the prevailing tendency to cultivate strong corporate cultures constitutes a managerial fad (Abrahamson 1996). Popular depictions of cultural management have tended to focus on screening on cultural fit or on early cultural training (for a recent example, see Bouton 2015), but, as our findings show, enculturation is an ongoing process. It therefore requires continuous cultivation. In an organization that consciously invests significant time and effort to hire on cultural fit, it is striking that we observe tremendous variability in initial cultural fit. This seems to suggest that the individual differences in cultural compatibility observed in the literature may not be merely a function of person-organization fit but also of variance in *enculturability*—an individual's capacity for and susceptibility to enculturation. It remains unclear whether enculturability is a fixed individual trait that newcomers bring with them to any new organization, whether it varies by individual experience (for example, if newcomers without previous work experience are more amenable to cultural transmission, see Battilana and Dorado 2010), whether it is context dependent and therefore a property of the person-organization relationship, or whether it changes during “sensitive periods” when people are especially likely to be imprinted by their social environments (Marquis and Tilcsik 2013). Although we cannot explore these questions further in our data, our findings suggest that identifying antecedents to enculturability may be as effective as hiring on cultural fit or post-hire cultural training.

Questions naturally arise about the causal relationships among individual enculturation, linguistic accommodation, and attainment. It is conceivable, for example, that unobserved attributes of individuals are associated with their tendency to enculturate and linguistically accommodate others, as well as their likelihood of achieving success in the organization. Although we cannot conclusively rule out these possibilities, the individual fixed-effects models reported in Figure 4, which account for time-invariant, unobserved heterogeneity among individuals, partially mitigate such concerns about spuriousness. At the same time, however, and in keeping with general findings in sociolinguistics that language use and social identity are inseparable (Rickford and Eckert. 2001), it is likely that anticipated attainment outcomes have reciprocal effects on enculturation and linguistic accommodation. Language use is both an outcome and a cause: it reflects self-perceptions about one's social standing, and it acts as an identity signal that affects others' judgments. Our findings are consistent with such a mutually constitutive interplay among language, identity, and

social outcomes. We treat language use as the behavioral signature of the complex processes that underlie organizational integration.

Although one should take caution in generalizing findings based on observational data from a single setting, we suspect that these patterns are likely to extend to other for- and non-profit organizations. Whether because of measurement difficulty or theoretical focus, economic research has tended to downplay the effects of cultural fit and adaptation on organizational success. Our findings suggest, however, that variability in cultural adaptability is consequential for individual outcomes and, as others have shown, influences organizational effectiveness (Weber and Camerer 2003, Harrison and Carroll 2006, Van den Steen 2010).

Although firms are particular types of social systems, we expect that our results will also apply in other, less formal group settings (e.g., Fine 1987). For example, like culturally inadaptible employees, school children incapable of cultural adaptation are probably at higher risk of being rejected by their classmates. An inverted U-shaped trajectory of cultural adaptation, on the other hand, would likely indicate a child's transition into a different social milieu at school, similar to an employee's imminent voluntary departure. Indeed, the interactional language use model we have developed can be readily adapted to analyzing not only school socialization but also a wide range of other social dynamics, and their implications for productivity. For example, analyses of the communication patterns of scientists could help research centers in selecting individuals for, and constructing teams that engage in, interdisciplinary research projects.

Individual-level measures of cultural fit and adaptation can also be aggregated to higher levels of analysis and, in similar fashion, have the potential to pave new theoretical pathways about culture change in groups and organizations. For example, cultural fit can be calculated not between a focal actor and a reference group of all active interlocutors but instead between all pairs of individuals that constitute the organization. This dyad-level measure could then be aggregated to the level of functions, departments, or teams. Group-level measures of fit could be used to inform organization design choices—for example, determining which subunits would be most culturally compatible with one another if they were combined or which departments actually consist of multiple, culturally fragmented subgroups. In a similar fashion, dyad-level measures of cultural fit could be aggregated to the level of organizations as a whole. Such measures could, for example, yield useful diagnostic information about the relative ease or difficulty of merging two firms. Computational sociolinguistic techniques will continue to provide us with novel ways of understanding these cultural processes and their impact on organizational dynamics.

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Appendix A: Data Processing

The electronic mail corpus includes 10,236,668 distinct messages exchanged over a period of five years, between 2009 and 2014. Before producing our measure of cultural fit, we applied a set of procedures to clean and structure the textual data contained in these messages. We began by removing all message headers and footers, eliminating concatenated messages from earlier iterations in the email thread, and extracting non-conversational metadata such as email addresses and timestamps. We mapped multiple email aliases of the same person to a unique person identifier and discarded messages that were missing email addresses or timestamps (these constituted less than 0.001% of messages). We also discarded all messages exchanged with outside parties and with the firm’s lawyers. In addition, we eliminated messages that were sent through a distribution list. We then segmented the data into monthly windows, tokenized the text into unique word stems, and mapped these tokens to LIWC categories (Pennebaker et al. 2007). We enumerated the frequency over LIWC categories for each person’s incoming and outgoing monthly messages, respectively, and then normalized by person. To reduce the measure’s susceptibility to outliers, we included only individuals who sent and received a minimum of 20 emails per month. We then applied the Jensen-Shannon divergence-based method for calculating cultural fit to these structured data. Overall, this procedure resulted in 10,924 person-month observations.

Table A1 Descriptive Statistics

	Observations	Mean	Standard Deviation	Min.	Max.
Individual Attributes					
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	0.240	0.427	0	1
Female	601	0.333	0.471	0	1
Person-Month Observations					
Cultural Fit	9885	2.101	0.452	0.228	3.39
No. emails received [†]	9885	1411.68	1255.60	20	21702
No. emails sent	9885	374.48	343.63	20	2610
Events					
Promotion to manager	118				
Departures (total)	224				
Voluntary Exit	89				
Involuntary Exit	135				

[†]On average, an email has more than one recipient. We count an email with multiple recipients as sent only once, hence the difference between total number of emails sent and received.

After producing the cultural fit measures, for the purpose of the multivariate analyses described below, we further excluded observations for the 36 interns included in the data (for whom departure date was predetermined) and for individuals whose demographic data (gender, age, or date of

arrival/departure) was missing. This process excluded 1,039 person-month observations (which constituted 9.51% of the sample). Overall, our data processing procedure resulted in 9,885 person-month observations, comprising 601 full-time employees, which formed the basis of the analyses reported in the main text and detailed below. Descriptive statistics are provided in Table A1.

Appendix B: Multivariate Analyses

We conducted a variety of multivariate analyses to model the relationship between cultural fit and individual outcomes, as reported in the main text. In this appendix we describe the models in full and report estimated coefficients.

Hazard of Promotion

Figure 1 plots the cumulative hazards of being promoted to a managerial position, or exiting involuntarily, estimated by two separate Cox proportional hazard models with time-varying predictors (Cox 1972). The hazard function has the form:

$$P(t|X) = \lambda_0(t) \exp(X\beta) \quad (\text{B1})$$

where, $P(t|X)$ is the hazard (probability) at time t that an individual will experience an event (promotion) that excludes her from the risk set, X is a set of explanatory variables and β is a set of estimated coefficients. The exponentiated coefficients can be interpreted as hazard ratios, or the ratio between the hazard rates of an event when the explanatory variable increases by 1 unit.

In Figure 1 we report the cumulative hazards of promotion to managerial position (Model 1), and of voluntary exit (Model 2), as estimated by the model in eq. B1. The estimated coefficients are reported as hazard ratios in Table B1. An increase in 1 unit of cultural fit (corresponding to 1 standard deviation, given that the measure is standardized) increases the hazard of promotion by more than 44%, and reduces the hazard of involuntary exit by 65%, suggesting that our measure of cultural fit is strongly predictive of individual attainment in the organization. We included individual (age, gender and managerial status in model 2) and organizational (department indicators) variables as controls. The hazard functions plotted in Figure 1 are calculated for mean values of the control variables and for the median, 5th and 95th percentiles of cultural fit.

Cultural Fit by Time Elapsed

Figure 2 reports a simple ordinary least squares model of the form

$$Y = \beta_0 + \beta_1 x + \beta_2 x^2 + \beta_3 x^3 + \epsilon \quad (\text{B2})$$

where Y is cultural fit and x is time elapsed (in months) since joining the firm. Table B2 reports the coefficients estimated by this model. The inset in Figure 2 plots the 3-month smoothed cultural fit values for 30 randomly selected individuals who are observed in the dataset for less than 36 months.

Table B1 Cox Proportional Hazard Model of Attainment

	(1)	(2)
	Promotion	Involuntary Exit
Cultural Fit	1.444** (3.03)	0.445*** (-6.85)
Age	1.324* (2.35)	1.260* (2.53)
Age ²	0.997* (-2.15)	0.998 (-1.79)
Female	0.950 (-0.21)	1.196 (0.71)
Manager		1.087 (0.19)
Department Controls	Yes	Yes
<i>N</i>	8270	9885
χ^2	110.240	95.936
Log-Likelihood	-523.068	-358.065

Exponentiated coefficients; *t* statistics in parentheses

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

Table B2 OLS of Cultural Fit During First 36 Months

	(1)
	Cultural Fit
Months	0.056*** (5.80)
Months ²	-0.002*** (-3.70)
Months ³	0.00004** (3.11)
Intercept	-0.365*** (-9.97)
<i>N</i>	9044
<i>R</i> ²	0.024

t statistics in parentheses

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

Cultural Fit by Relative Tenure

Next, we estimated the different enculturation trajectories for those who remained in the organization and for those who departed either voluntarily or involuntarily. We observe departed employees throughout their tenures at the firm and can therefore model their trajectories in straightforward

manner. Departed employees vary in the length of their tenure at the firm. We assume that different people follow different rates of enculturation and, as we explain in the main text, consequently standardized time by employees' tenure at the firm, notated as τ_i .

As illustrated in Figure 2 (inset), there is great heterogeneity in individuals' initial and peak levels of cultural fit. To account for this variability, we estimated a simple individual fixed-effects model of the form:

$$Y_{it} = X_{it}\beta + \alpha_i + \epsilon_{it} \quad (\text{B3})$$

where Y_{it} is cultural fit for individual i observed at time t , X_{it} are individual-time observed predictors, β are estimated coefficients, α_i is the unobserved time-invariant individual fixed effect, and ϵ_{it} is the error term. This model assumes that all individuals follow the same trajectory but vary in initial levels of cultural fit (i.e., their cultural adaptation functions have similar shapes but different intercepts). We included τ_i and τ_i^2 among the predictors in X to account for the curvilinearity of cultural adaptation trajectories (as implied by Figure 2).

We estimated two separate models, one for voluntarily departed and one for involuntarily departed employees. (Because departure type is time-invariant, we could not estimate a single individual fixed-effects model with interaction terms for departure type). We included time-varying controls (namely, department and managerial status). The estimated coefficients are reported in Table B3. Figure 4 plots the marginal effects of tenure on cultural fit, as well as their 95% confidence intervals, as estimated by these models.

Individual fixed-effects models account for unobserved heterogeneity across individuals and therefore mitigate concerns about omitted variable bias (Greene 2012). In other words, these models estimate cultural fit trajectories net of fixed individual traits, thus addressing endogeneity related to time-invariant individual attributes (namely, differences in cultural fit trajectories that are explained by stable differences among individuals, rather than by tenure). Because these models are estimated separately for different exit types, they do not reliably estimate differences between exit types. Moreover, it is unclear whether these trajectories differ from those of individuals who have not left the organization. Unlike with departed employees, we do not know the relative position in the individual life cycle for employees who have not exited the firm. We therefore cannot standardize their tenure.

To address these problems, we employed a matched-pairing approach. We paired each departed employee with exactly one non-departed employee who joined the firm in the same month. Where there was more than one pairing candidate, we randomly assigned a non-departed employee. Departed employees who could not be matched and unmatched non-departed employees were thus

	(1)	(2)
	Involuntary Exit	Voluntary Exit
Tenure	0.696 (1.85)	1.302*** (3.99)
Tenure ²	-0.829* (-2.50)	-1.313*** (-4.39)
Manager	0.060 (0.75)	0.049 (0.59)
Intercept	-0.347*** (-3.65)	-0.388*** (-4.76)
Department Controls	Yes	Yes
<i>N</i>	1119	961
<i>R</i> ²	0.655	0.710

t statistics in parentheses

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

excluded from this analysis. The matched-pairing approach allowed us to observe pairs of individuals in the same time frame and compare non-departed and departed employees' enculturation paths. By matching on month of entry, we also addressed unobserved heterogeneity that is time-related. In particular, we included matched-pair fixed effects in our model. We estimated the following model:

$$Y_{it} = \gamma_1 T_{it} + \gamma_2 V_i T_{it} + \gamma_3 IV_i T_{it} + X_{it} \beta + \alpha_p + \epsilon_{it} \quad (\text{B4})$$

where Y_{it} is cultural fit for individual i observed at time t , T_{it} are standardized tenure parameters, V_i and IV_i are dummies for voluntary and involuntary departure, respectively, X_{it} are individual-time observed predictors, β and γ are estimated coefficients, α_p is the unobserved time-invariant matched-pair fixed effect, and ϵ_{it} is the error term. Because departure status is a fixed individual attribute, this specification does not allow for individual fixed-effects; however, it enables comparisons across departure statuses.

The estimated coefficients are reported in Table B4. We estimated three models. In the first, we assumed linear tenure effects. The estimated coefficients imply a positive effect of tenure on cultural fit for non-departed individuals, a negative effect for involuntarily departed, and an effect insignificantly different from 0 for voluntarily departed. The individual fixed-effects model reported in Table B3 suggests that this flat linear effect is a result of a curvilinear relationship between tenure and fit for voluntarily departed. Indeed, in Model 2 in Table B4 we included a square term for tenure and interacted it with voluntary departure. This interaction term is significant. In Model

3, we added the square terms for all departure statuses. The interactions are only significant for voluntary departures. The marginal effects illustrated in Figure 3 correspond to this model.

	(1)	(2)	(3)
	Cultural Fit	Cultural Fit	Cultural Fit
Tenure	0.249*** (3.82)	0.558* (2.34)	0.436 (1.59)
Tenure ²			-0.172 (-0.70)
Voluntary	-0.050 (-0.62)	-0.301* (-2.46)	-0.324** (-2.59)
Voluntary x Tenure	-0.269* (-2.12)	1.143* (2.25)	1.270* (2.41)
Voluntary x Tenure ²		-1.637*** (-3.93)	-1.470** (-3.05)
Involuntary	-0.076 (-0.92)	-0.071 (-0.87)	-0.164 (-1.24)
Involuntary x Tenure	-0.666*** (-5.35)	-0.665*** (-5.36)	-0.201 (-0.38)
Involuntary x Tenure ²			-0.425 (-0.90)
Female	-0.198*** (-3.99)	-0.200*** (-4.05)	-0.199*** (-4.01)
Manager	0.217*** (3.83)	0.219*** (3.86)	0.218*** (3.84)
Age	0.014 (0.88)	0.012 (0.77)	0.012 (0.77)
Age ²	-0.000 (-0.83)	-0.000 (-0.73)	-0.000 (-0.72)
Intercept	-0.098 (-0.33)	-0.121 (-0.40)	-0.094 (-0.31)
Department Controls	Yes	Yes	Yes
<i>N</i>	3052	3052	3052
<i>R</i> ²	0.522	0.525	0.525

t statistics in parentheses

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

Early Enculturation

The trends depicted in Figure 3 suggest that early enculturation is particularly important. Is there a time window during which, if cultural adaptation is unsuccessful, the likelihood of failed integration increases? We explore this by measuring cultural fit during an individual's first six months at the firm. As Figure 2 demonstrates, individuals on average reach mean cultural fit by the end of their first year at the firm; the increase is particularly steep during the first six months immediately post entry. This is consistent with previous research on enculturation (Bauer et al. 2007). Six months provide enough data points to estimate a trend, while excluding an insubstantial number of individuals who leave the firm less than six months after joining it. We estimate an individual's rate of enculturation by fitting the following simple linear model $Y_{it} = \beta_0 + \beta_1 t + \epsilon_{it}$, where Y_{it} is cultural fit, t is month, and β_1 , the slope of the fitted line is the rate of enculturation. A rate of 1 implies an increase of one standard deviation in cultural fit per month (though this is an especially high rate; the interquartile range is [-.095 .134]).

We next estimated a Cox proportional hazard model as in eq. B1, where predictors include enculturation rate during the first six months and initial cultural fit (observed during the individual's first month at the firm). We estimated two models, one for involuntary and one for voluntary exit, as reported in Table 1. Enculturation rate strongly predicts involuntary exit but not voluntary exit: a one standard deviation increase in cultural fit per month decreases the hazard ratio of involuntary exit by 91% (or 35.1 percentage points for an individual at the 95th percentile of enculturation). In Figure 5 we plot cumulative hazard functions for involuntary exit for different newcomers. We defined newcomers with high cultural fit as those at the 75th percentile of initial fit and those with low fit as those entering at the 25th percentile of fit. We defined highly adaptable employees as those at the 95th percentile of enculturation and those highly inadaptible at the 5th percentile. We then calculated hazard functions for median newcomers (at median levels of initial fit and adaptation), high initial fit-adaptable (at 75th percentile of initial fit and 95th percentile of adaptation), high initial fit-inadaptible (at 75th percentile of initial fit and 5th percentile of adaptation), low initial fit-adaptable (at 25th percentile of initial fit and 95th percentile of adaptation) and low initial fit-inadaptible (at 25th percentile of initial fit and 5th percentile of adaptation). We are particularly interested in low initial fit-adaptable newcomers, who, despite entering the organization with low initial cultural fit, are able to adapt culturally at a fast rate and overcome the negative implications of initial low fit. These individuals' hazard of involuntary exit is lower than that of the median newcomer or that of newcomers entering the organization with high fit but an exceptionally low cultural adaptation rate.

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