Enculturation Trajectories: Language, Cultural Adaptation, and Individual Outcomes 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. 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 model of changing cultural fit: (1) predicts individual attainment; (2) reveals distinct patterns of adaptation for employees who exit voluntarily, exit involuntarily, and remain employed; (3) demonstrates that rapid early cultural adaptation reduces the risk of involuntary, but not voluntary, exit; and (4) finds that a decline in cultural fit for individuals who had successfully enculturated portends voluntary departure.

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

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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 emphasized 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. Cultural

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fit, therefore, is an elastic construct. In this paper, we examine the question: 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 and consequences of cultural fit remain largely absent from the literature (Shipp and Jansen 2011). 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, 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 cultural compatibility with an organization is fixed, or, at most, monotonically increasing. According to this view, newcomers remain probationary members of an organization unless and until they cross some threshold level of cultural fit. 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, and involuntary departure.

To evaluate these ideas, we propose a novel measurement approach, which is based on the 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.

From Cultural Fit to Trajectories of Enculturation

Cultural Fit as an End State

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 research on organizational culture has tended to downplay processes of socialization. We 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 in 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 organizations 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 success in the organization. Although the reasons are multifaceted, two explanations for the link between cultural fit and attainment 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, 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.

Enculturation as a Process

To summarize, the process of enculturation is often conceptualized, to use Van Maanen and Schein's (1979) imagery, as a newcomer's radial movement from outside the organization's formal boundary into its cultural core, as illustrated in Panel A of Figure 1. Cultural matching occurs at the point

of entry into the organization during hiring, followed by a probationary period of early cultural adjustment. Once the newcomer passes an informal threshold of acceptance, he or she presumably becomes a full member of the organization.

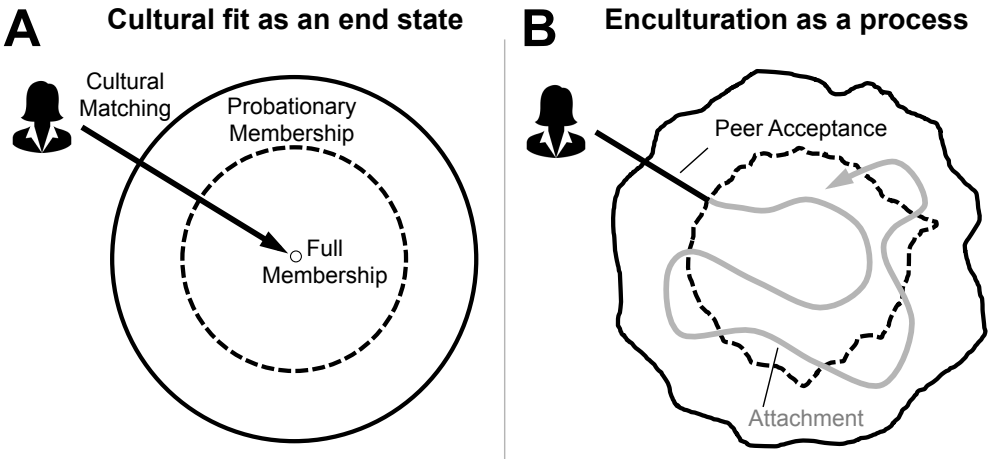

Figure 1 An illustration of cultural fit as an end-state (A) and of enculturation as a process (B). In the end-state framework (A), the newcomer needs to cross the formal organizational boundary (full line) and the informal acceptance boundary (dotted line) in order to attain cultural fit and become a full member. In the process framework (B), the cultural journey is ongoing; the mechanisms of peer acceptance and attachment are consequential during different phases of this journey.

Although enculturation is often assumed to be an ongoing process, empirical studies of socialization have, in practice, tended to treat 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 and post-hire enculturation (e.g., Allen and Meyer 1990). But maintaining cultural alignment requires constant investment. Moreover, culture is known to be an evolving, group-level adaptive response to internal and external pressures (Schein 2010, Ravasi and Schultz 2006), represented by the jagged boundary in panel B of Figure 1. Enculturation, as Panel B illustrates, is therefore better understood as a journey an organizational member takes, rather than as a threshold he or she successfully traverses. This cultural journey, we argue, is as important to understand as the destination.

Thinking of enculturation as a process helps point to two mechanisms through which cultural fit relates to individual attainment: *peer acceptance* and *individual attachment*. Cultural fit can lead to acceptance by colleagues because it is interpreted as a signal that an individual's values, beliefs, and styles of work are compatible with those of her co-workers. It also serves as a manifestation of her attachment to the firm since those who feel they belong in an organization are less likely to adopt counter-cultural behaviors to assert their divergent social identities. Although both

peer acceptance and attachment are consequential for attainment in the organization—one cannot succeed without being accepted by others, and lack of attachment dampens one's impetus to be a productive organizational member—each pathway tends to be more salient at different stages of the enculturation process. We illustrate this in Panel B of Figure 1.

Early enculturation relates to a newcomer's ability to gain acceptance by peers. It is during this probationary phase 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 incentive to conform culturally (Jones 1986). Even if meticulously screened on cultural matching and culturally trained during the organization's formal "onboarding" process, newcomers are still required to tune into and adopt the ineffable aspects of the organizational code (March 1991), to learn which behaviors are appropriate and which are frowned upon, to assess what idiosyncratic rituals and symbols signify, and to infer what implicit assumptions and expectations are informing colleagues' behaviors (Van Maanen 1991). As Schein (2010) points out, making sense of these cultural artifacts is rarely a straightforward task. Yet, 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).

Once this implicit boundary is passed, however, cultural alignment becomes less a matter of gaining acceptance by colleagues and more a challenge of self-maintenance of cultural compatibility. Although individuals vary in the extent to which they buy into the culture and in their ability to take on cultural facades, diffusing the tension between front-stage normative compliance and back-stage identity management requires significant and constant emotional work (Goffman 1959, Hochschild 1979, Cable et al. 2013, Kilduff and Day 1994, Grandey 2003). The employees in Kunda's (2006) ethnography of "Tech," for example, constantly partook in exchanges of cynicism and detachment as a means to reassert their authenticity and membership in the organization while resolving the inherent tension between both identities.

Organizational members need to put in work to remain normatively compliant even in the context of a stable organizational culture. Their need to do so is amplified when the organizational landscape itself changes. These changes need not be the result of dramatic shocks or concerted cultural retooling. Rather, the cultural content in organizations constantly and organically evolves as new symbols are introduced and existing ones reinterpreted, as recent events are mythicized and old stories are forgotten, and as new implicit agreements emerge to substitute for old ones (Danescu-Niculescu-Mizil et al. 2013, Rafaeli and Pratt 2006, Ravasi and Schultz 2006). Because keeping apace with the organizational culture requires energy and attention, it also necessitates motivation. Unless prompted by an unusual shift in the organization's culture, a decline in the

level of cultural alignment by an organizational member who has already gained peer acceptance should be reflective of that individual's declining attachment to the organization.

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 has failed to achieve a high level of cultural fit tells us very little about which of these two mechanisms—peer acceptance or attachment—might be operative. Rather, the timing and pattern of enculturation are likely to be crucial in disambiguating these underlying pathways.

We hypothesize that different outcomes in the organization leave different enculturation signatures. Three such outcomes are particularly important: retention, voluntary exit, and involuntary exit. We interpret retention to mean that a person has been accepted culturally by others and remains motivated to stay culturally compliant with others' expectations. We interpret voluntary 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. Although these different exit types reflect different underlying processes—attachment and peer acceptance—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 different pathways relate to different patterns of enculturation and, correspondingly, different individual outcomes. Organizational members who are successfully integrated into the organization should exhibit a capacity to adjust culturally post-entry—and concomitantly gain the acceptance of their peers—as well as continued motivation to increase their cultural alignment after this inclusionary boundary has been traversed. Their cultural fit should increase steadily over time. By contrast, people who fail to adapt culturally in the early stages of their tenure are less likely to be accepted by their peers and therefore face a greater hazard of experiencing involuntary exit. Finally, people who succeed in adapting culturally early in their tenure and gain acceptance by colleagues but then—at a later stage in their tenure—experience a decline in cultural fit are likely detaching from the organization. We posit that such a pattern heralds their voluntary exit from the organization. In other words, we expect:

HYPOTHESIS 1: *A secular increase in cultural fit is predictive of retention.*

HYPOTHESIS 2: *Slow rates of enculturation early in a person's tenure in an organization are predictive of involuntary exit.*

HYPOTHESIS 3: *A decline in cultural fit later in the tenure of a person who was previously enculturated into an organization presages voluntary exit.*

Enculturation and Language Use

Studies of organizational culture have mostly eschewed questions relating to enculturation trajectories, 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, 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) but, given that a researcher can only be present in one setting at a given time, he or she cannot feasibly observe all organizational members on a consistent basis. Previous work systematically examining individual variability in enculturation has therefore mostly relied on self-reports to operationalize individual cultural fit.

Self-reports suffer, however, from a variety of limitations (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.[2] While they provide access to subjective dispositions and perceptions, self-reports are limited in their ability to systematically address fundamental questions that relate to the evolution of individual enculturation over time.[3]

Language as a Signal of Cultural Alignment

How one measures enculturation invariably relates to how one defines culture. Although scholars have offered a variety of definitions, most would agree that organizational culture comprises

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

[3] 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.

two fundamental dimensions: a *cognitive* dimension, relating to organizational members' shared assumptions, beliefs and values, and a *behavioral* dimension, relating to norms and expectations that emerge from these values and that govern interaction in the organization (Schein 2010, Hofstede et al. 2010, Ravasi and Schultz 2006, Chatman et al. 2014). Cultural fit can concomitantly be thought of as an individual's levels of cognitive and behavioral alignment with her peers, namely, the extent to which she shares understandings with her peers and is normatively compliant with their expectations. Cognitive cultural fit is rarely observed in the organization; members have only limited and indirect access to their colleagues' cognition. Instead, people infer their own level of cultural fit, as well as assess the cultural fit of their colleagues, by observing their peers' behavior and comparing it to their own. They interpret behavioral cultural alignment as an indication of cognitive alignment. Such an interpretation is not necessarily correct, as some individuals put on facades that mask their true beliefs and values. Yet, such incongruent "surface acting" is emotionally taxing and is often either resolved by readjusting one's inner thoughts and feelings or by departing from the organization (Hochschild 1979, Grandey 2003).

Language is central to these processes. It is among the most salient organizational indicators of an individual's level of behavioral cultural alignment.[4] At its most basic level, language is a set of conventions that connect symbols with meanings, providing a solution to a complex coordination problem (Lewis 1969). Organizations converge on distinct linguistic conventions that relate to their particular context and the opportunities and challenges they face (Crémer et al. 2007). An individual's level of compliance with these conventions is therefore essential for becoming a productive member of the organization. But language is not merely functional; these conventions also come to signify social identities and roles, and their normative use is an indication of an organizational member's degree of assimilation. Whether conscious or not, people's linguistic choices are crucial for establishing relationships with their interlocutors (Giles et al. 1991, Labov 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.

[4] Our distinction between behavioral and cognitive cultural fit is analogous to Saussure's (1972) distinction between *langue* and *parole*. Interlocutors observe each other's *parole*, the enactments of which are governed by a shared cognitive representation of *langue*. In that vein, spoken language can be thought of as the behavioral manifestation of cognitive cultural fit.

The language people use in their daily interactions can also provide a window into their underlying categories of thought and value systems (Pinker 2007). Take swearing as an example.[5] Organizations—and the various sub-groups they house—vary in the extent to which they condone or reject the use of profanities. A newcomer's ability to comply with the norms concerning the degree and appropriate use of vulgar language serves as a strong signal of her ability to read the organizational code and conform to it. But the use of swear words also taps deeper systems of meanings. In an ethnography of counterculture youth in England in the 1960s, for example, Willis (2014) finds that while *Hippies* use ornate forms of language to signal their defiance of mainstream British society, *Bikers* do the same through pervasive use of profanities. Willis links these different linguistic styles with Hippie's middle-class and Bikers' working-class backgrounds, arguing that the latter's use of vulgar language relates to their celebration of muscularity.

As Pinker (2007) points out, swear words invoke strong emotions and are a form of symbolic violence and power display. By extension, an organizational culture that is tolerant of the use of swear words might indicate a shared value system that accepts aggression and coercion as legitimate forms of interpersonal coordination. Contrast such an organization with the *Body Shop*, where the expression of emotion is normatively encouraged.[6] Such "bounded emotionality" (Martin et al. 1998) is reflective of an underlying belief system that values personal well-being and community and that rejects the assumption that workplace stress enhances productivity. As these examples illustrate, linguistic alignment between an individual and her peers can serve as an indication of that individual's level of cultural fit.

Linguistic Reference Group

Any investigation of cultural fit must contend with the choice of reference group against which to compare a focal individual's degree of fit. The extant literature commonly distinguishes between two levels of fit: person-organization (PO) and person-group (PG) fit, the latter normally conceived as the individual's fit with her department or functional unit. The difference between these two constructs is not merely a matter of level of analysis. While PO fit relates to alignment between the individual and the baseline beliefs and values shared across all members of the organization, PG fit is more attuned to the specific assumptions and norms evolved in one's particular organizational unit. Research indicates that both types of fit tend to be correlated, and are generally predictive of individual attainment and positive group and organization outcomes (Kristof-Brown et al. 2005, Adkins and Caldwell 2004, Elfenbein and O'Reilly 2007).

[5] As we discuss in Appendix B, swearing is the most dominant category of linguistic alignment in the organization that served as the research site for this study.

[6] For a nuanced view of the seeming incompatibility between masculine and emotional cultures, see O'Neill and Rothbard (2015).

Both constructs presume that organizational culture follows the contours of formal organizational structure. This assumption introduces problems for both constructs. First, PO fit assumes a unitary culture across the entire organization. Yet many organizations exhibit cultural differentiation across distinct subcultures (Martin 1992). Under such circumstances, an organizational-level culture is more an analytical fiction than an experienced organizational reality. PG fit, by contrast, allows for cultural variation within the organization but assumes that such variation necessarily follows formal organizational boundaries. Yet research suggests that informal organizational relationships chronically crisscross formal and semiformal boundaries (Biancani et al. 2014, Srivastava 2015). There is no a-priori reason to believe that cultural variation necessarily forms along formal rather than informal fault lines (e.g., occupational ones, see Van Maanen and Barley 1984).

Rather than reifying formal organizational units as meaningful cultural groups, we make two different assumptions. First, we assume that the linguistic manifestations of cultural fit might vary across settings and groups within an organization. Even organizations with strong and uniformly shared beliefs and value systems might exhibit variation in the normative expressions of these shared understandings. Kitchen workers in Gary Alan Fine's (1996) ethnography of restaurant work, for example, converge on a variety of linguistic conventions for expressing flavor (e.g., "cooked to death" vs. "soothing"), even if they have similar conceptualizations of what "good" taste constitutes. Second, we assume that in organizations with a sufficiently large number of employees (e.g., several hundred), people cannot feasibly interact with more than a subset of members. It is the set of colleagues with whom an organizational member interacts on a frequent basis who form an impression of that individual's degree of cultural assimilation and who are most consequential for determining the individual's cultural fit.

Consequently, we shift the focus from formal to informal structure and conceptualize cultural fit as the linguistic alignment between an individual and her interaction partners in the organization. In organizations with a strong homogeneous culture, this operationlization will be very consistent with PO and PG approaches to measuring cultural fit. In more fragmented (and arguably more typical) organizations, however, our approach has the advantage of being robust to cultural heterogeneity within the organization and to mismatches between the culture observed within formal organizational boundaries and that prevailing in informal patterns of interaction.

An Interactional Language-Use Model of Enculturation

We define cultural fit as an individual's level of linguistic compatibility with her interaction partners during a given observation window and an enculturation trajectory as the temporal pattern of individual cultural fit.[7]

[7] Our language-based measure taps into an important facet of behavioral cultural fit. It does not, however, encompass all aspects of culture. For example, organizations have norms regarding dress and other non-verbal cues that are not captured by our measure.

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 in lexicon L (e.g., words, bigrams, noun phrases, emotional categories). 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 categories. LIWC is an established framework for measuring linguistic style (e.g., as reflected in the use of pronouns, swearing or negations) which allows us to measure interlocutors' normative, as opposed to substantive linguistic congruence.[8] Measuring alignment with respect to these linguistic categories helps to ensure that our measure of cultural fit does not merely reflect functional coordination between two individuals. For example, two employees troubleshooting a customer problem may be using the same terminology in email exchanges in which they diagnose the problem, but whereas one interlocutor may be using swear words, the other might not. Such an interaction is culturally incongruent, even if topically aligned.

We segment the data into monthly observation windows to study trajectories of enculturation. To measure the cultural fit of individual i at time T we tokenize each textual record—in our case, email messages—into LIWC category frequencies, and create two probability distributions giving the normalized frequencies for linguistic units in i's outgoing and incoming messages in T. Let $\overrightarrow{m}_{it}$ be a message sent by person i at time t, $\overleftarrow{m}_{it}$ be a message received by person i at time t, and $l \in L$ be the list of 64 LIWC categories. Our procedure iterates over all messages and for each produces $\overrightarrow{m}^l_{it}$ which counts the number of terms relating to LIWC category l contained in message $\overrightarrow{m}_{it}$. It then aggregates over all messages $\overrightarrow{m}_{it}$ sent by person i during period $t \in T$ to produce the normalized probability of category l for person i during period T, as follows:

$$O^l_{iT} = \frac{\overrightarrow{m}^l_{iT}}{\sum_{k \in L} \overrightarrow{m}^k_{iT}} \tag{1}$$

The procedure similarly normalizes over all messages received by person i during period T to produce the normalized probability over LIWC categories in i's incoming messages:

$$I^l_{iT} = \frac{\overleftarrow{m}^l_{iT}}{\sum_{k \in L} \overleftarrow{m}^k_{iT}} \tag{2}$$

We define i's cultural fit at time T as the negative log of the Jensen-Shannon (JS) divergence (Lin 1991) between these two normalized distributions, formally:

$$CF_T(i) = -\log(JS(O_{iT} \| I_{iT})) \tag{3}$$

where the JS-divergence between the two probability distributions is defined as:

[8] For details about the LIWC lexicon, see SM1.

$$JS(O\|I) = \tfrac{1}{2}KL(O\|M) + \tfrac{1}{2}KL(I\|M) \tag{4}$$

and where $M = \frac{1}{2}(O+I)$ and $KL(O\|M)$ is the Kullback-Leibler divergence of M from O:

$$KL(O\|M) = \sum_{l \in L} O(l) \log_2 \frac{O(l)}{M(l)} \tag{5}$$

JS-divergence is a symmetric measure of dissimilarity 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 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).

The intuition behind JS is fairly straightforward. The term $\log_2 \frac{O(l)}{M(l)}$ in eq. 5 equals 0 when $O(l) = M(l)$ (that is, when the probability of linguistic unit l is equal in both distributions). The product $O(l) \log_2 \frac{O(l)}{M(l)}$ increases as $O(l)$ grows and $O(l) \gg M(l)$. Thus the summation in eq. 5 grows when high probability units in O have significantly lower probability in M.[9] KL-divergence can be interpreted as the amount of information necessary to translate one distribution into another; when it equals zero, the two distributions are identical. Because M is the average between the two distributions O (i's outgoing messages) and I (i's incoming messages), then if the two are identical both perfectly predict their average, leading to $JS(O\|I) = 0$. As O and I diverge their averaged dissimilarity in eq. 4 increases, and therefore i's cultural fit in eq. 3 decreases.[10]

Our language-based measurement 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 self-report bias. Second, in relying on naturally occurring unstructured textual exchanges, it is not limited to cultural dimensions assumed by the researcher and contained in a survey instrument. A language-based approach does not require the researcher to make the usual trade off between the richness of ethnographic research and the reach of survey research. It instead taps into more subtle forms of cultural difference among people. 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 a person's interaction partners allows for the possibility of cultural heterogeneity across groups within the organization, as well as over time within individuals. Together, these features enable us to measure

[9] When $O(l) \to 0$ the contribution to the summation nears 0 because $\lim_{x \to 0} x \log_2 x = 0$.

[10] We provide further illustration in Appendix A.

enculturation trajectories with high resolution and in a consistent manner that enables comparisons across individuals.

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 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. We inferred departmental affiliations and promotions from distribution lists and applied additional refinements to the data. The resulting dataset includes 9,885 person-month observations for 601 full-time employees. These form the basis of the analyses reported below.[11]

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.[12] 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 2 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 SM3.1 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. 2A), 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. 2B): 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.

[11] Descriptive statistics as well as additional details about the data are provided in SM2.

[12] For ease of presentation, we report only results of interest throughout this section. For complete information about the models used and the estimates they produce, see SM3.

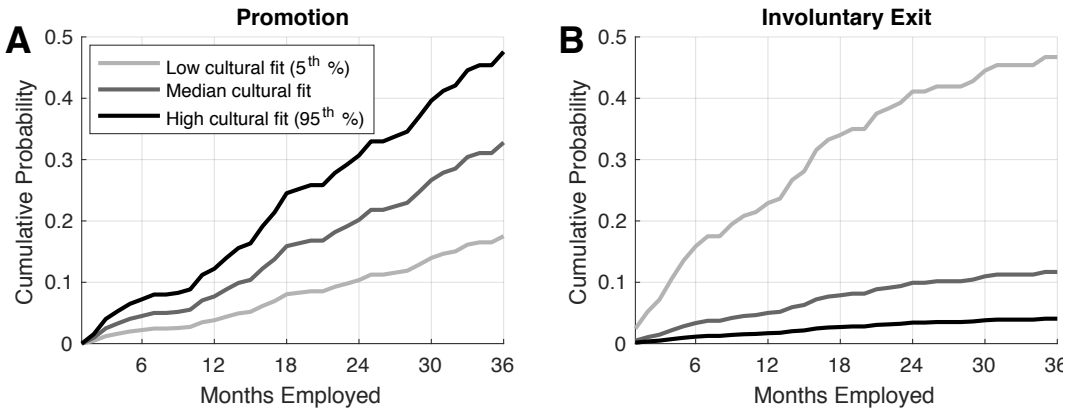

Figure 2 Cumulative probability of (A) being promoted to a managerial position and (B) exiting involuntarily, as estimated by separate Cox proportional hazard models.

Consistent with our expectations, cultural fit is not, however, a static personal attribute. Rather, for the average employee, cultural fit follows an upward sloping trend, as depicted in Figure 3. For ease of interpretation, cultural fit is standardized 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 level in the firm 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 that assumes enculturation entails distinct phases.

Yet the general trend illustrated in Figure 3 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 3 (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, although 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 remained employed; (b) those who left the firm involuntarily; and (c) those who left voluntarily. As noted above, we interpret involuntary departure as indication of rejection by colleagues and voluntary departure as an indication of weakened attachment. Figure 4 reports the marginal effects

Figure 3 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 (gray 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.

of tenure on cultural fit for these different employee types as estimated by several fixed-effects models.

The first model, reported in Panel A, estimates cultural fit as a function of months of employment. Tenure in months, and its square term, are interacted with dummy variables for voluntary and involuntary exit, such that non-departed employees serve as the omitted category. We include period (monthly) fixed-effects to account for 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, departure and entry rates, or individual outcomes. We constrain the sample to 3 years of employment to enable a comparison between employee types.[13] The results are consistent with our hypotheses, namely, retained employees exhibit an increase in cultural fit, involuntarily departed employees do not exhibit a statistically significant increase in cultural fit and those departing voluntarily follow an inverted U-shaped pattern of ecnulturation.

But the estimates reported in Panel A exhibit a degradation in confidence intervals as time goes by because departed employees drop out of the sample. Moreover, as Figure 3 illustrates, we observe that employees differ not only in their enculturation trajectories but also in their rates of enculturation: among those who enculturate, some do so quickly whereas others take longer to meet

[13] 8% of employees are observed for longer than 3 years in our data, of which only 3 individuals departed, either voluntarily or involuntarily, after more than 3 years.

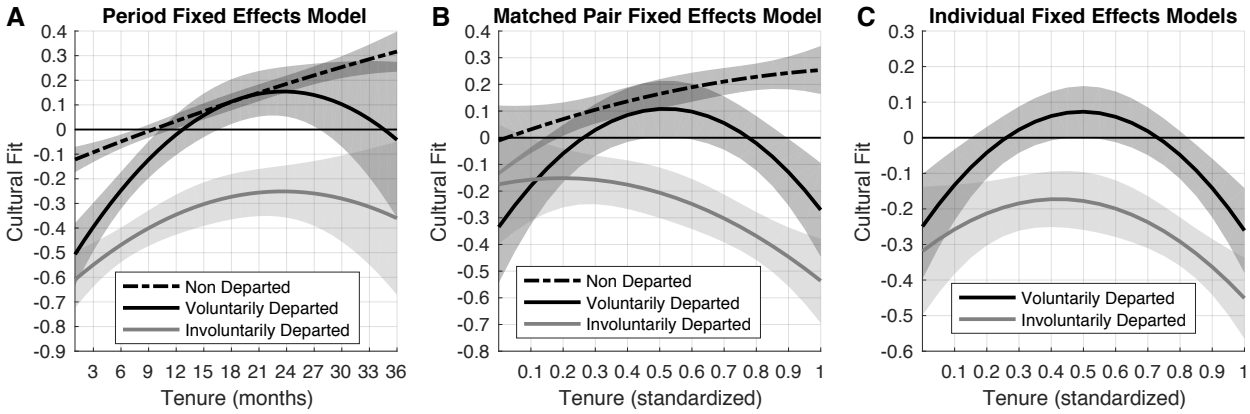

Figure 4 Marginal effect of tenure on cultural fit (standardized), as estimated by: (A) period fixed-effects model, (B) matched-pair fixed-effects model and (C) two independent individual fixed-effects models. Effects plotted by employment status. Shaded areas correspond to 95% confidence intervals.

their peers' level of cultural fit. We assume that the consequences of enculturation are affected by these differences in individual tempo—that is, that cultural adaptation and its relationship with individual outcomes 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. Because 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, once again, use interaction terms to differentiate between exit types (with non-departed employees serving as the omitted category, see SM3 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 time-related heterogeneity.

Panel B of Figure 4 illustrates the marginal effects of standardized tenure on cultural fit as estimated by this matched pairs model. The three employee types exhibit distinct enculturation

trajectories. Confirming extant literature on the relationship between cultural fit and attainment, and consistent with Hypothesis 1, individuals who are retained by the organization exhibit a gradual increase in their level of cultural alignment. Not only do these individuals seem to gain their colleagues' acceptance; we interpret their consistent positive enculturation as an indication of a strong attachment to the organization.

In contrast, and consistent with Hypothesis 2, those who eventually leave involuntarily fail to accommodate their colleagues linguistically from the moment they join the organization. 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, Jones 1986); regardless, these individuals' inability to enculturate portends their failure to gain their peers acceptance and 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 3, this late decline in cultural compatibility with colleagues appears to foreshadow an intention to leave the organization.[14]

Although 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 4B are attributable to stable differences among individuals (such as those related to human capital or to psychological capabilities that facilitate cultural assimilation). 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 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

[14] To rule out the possibility that this decline is caused by cultural change at the organizational level, rather than at the individual level, we conducted an additional analysis with organizational cultural self-consistency as a control. We operationalize organizational cultural self-consistency as the organization's cultural fit in the current period relative to itself in the prior period. The estimates reported in Figure 4B are unaffected by this specification.

on cultural fit, net of an individual's baseline cultural fit. The marginal effects estimated by these models are illustrated in Panel C of Figure 4.[15] They reproduce the trends illustrated in Panel B of Figure 4, suggesting that the differences in enculturation trajectories by exit type cannot be explained merely by differences in individual baseline capacity for cultural fit.

The different trajectories depicted in the three panels of Figure 4 are striking. But because we do not have access to the cognitive processes producing these results, only to their behavioral 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 Figure 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 3). 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 (Panel A), because there is great variability in initial cultural fit and in tenure lengths, employee types are statistically indistinguishable when they are properly matched (Panel B). The different enculturation signatures depicted in Figure 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, as our non-standardized estimates (Panel A) and previous evidence (Bauer et al. 1998) suggest, is the critical period during which early enculturation unfolds. 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

[15] We conducted an additional analysis to help rule out the possible effects of changes in time-varying unobserved heterogeneity in individuals' capacity to enculturate. We proxy this capacity with a measure of cultural self consistency, which is operationalized as an individual's cultural fit in the current period relative to him- or herself in the prior period. We find that adding this measure as a control to the model reported in Figure 4B does not substantially affect the results.

risk of involuntary and voluntary departure as a function of this slope and various control variables. As the results in Table 1 demonstrate, initial cultural fit and early enculturation reduce the risk of involuntary, but not voluntary, departure: a 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%.[16] 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 (black solid line) or low (black dashed line) enculturation rates, newcomers with high initial cultural fit and either high (gray solid line) or low (gray dashed line) enculturation rates, and newcomers at the median level of initial fit and with median enculturation rate (light gray sparsely dashed 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 black line) fare better than those entering with median fit and who adapt at a median rate (gray sparsely dashed line), or even those entering with high cultural fit but who are culturally inadaptable (dashed gray line). It appears that one's capacity to enculturate is at least as important as one's initial level of fit.

Discussion and Conclusion

The past three decades have seen the proliferation of a vast and multifaceted literature on cultural fit and enculturation in organizations. Across these studies, one theme appears to be pervasive: 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 unfolded over time. Lending further support to the claim that cultural compatibility leads to attainment, our findings

[16] When only departed employees are included in Model 1 the coefficients for initial cultural fit and enculturation rate remain significant, suggesting that early fit and enculturation rate are significantly more consequential for involuntary exit than they are for voluntary exit.

Table 1 Cox Proportional Hazard Models of Exit

	(1) Involuntary	(2) Voluntary
Enculturation Rate	0.086**	0.281
	(-2.66)	(-1.40)
Initial Fit	0.575**	0.681
	(-2.97)	(-1.57)
Age	1.119	0.967
	(1.00)	(-0.25)
Age^2	0.999	1.000
	(-0.49)	(0.07)
Female	1.286	1.927*
	(0.88)	(2.10)
Manager	0.857	1.098
	(-0.31)	(0.21)
Department Controls	Yes	Yes
N	8238	8238
χ^2	37.370	20.386
Log-Likelihood	-2003.94	-1656.18
Number of Exits	68	56

Exponentiated coefficients; t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

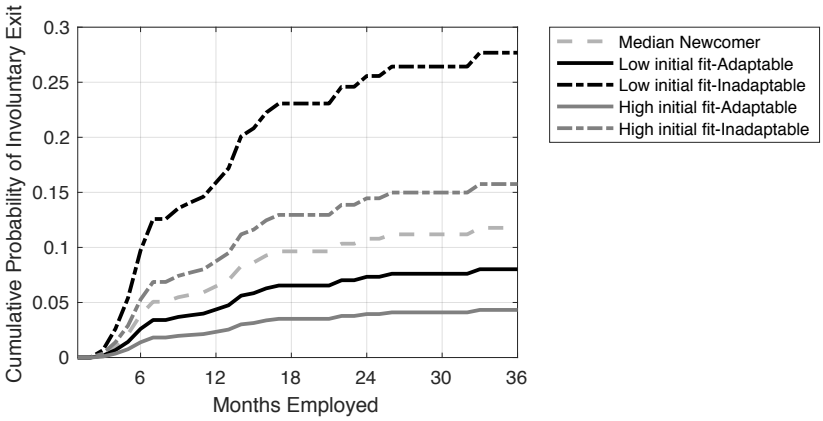

Figure 5 Hazard of involuntary exit as a function of initial cultural fit and rate of enculturation during a newcomer's first 6 months, estimated with a Cox proportional hazard model. Cumulative probability is plotted for different levels of employee's initial cultural fit (low at the 25th percentile,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

are consistent with a large body of work on cultural fit in organizations. Building on this vast literature, we use a language-based measure to provide further evidence that cultural alignment is consequential for individual survival and success in an organization.

Yet 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 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 appear to detach from the organization and subsequently exit 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 has been viewed 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, is 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 Panel C, 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 inadaptable 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: Illustration of the Cultural Fit Model

To illustrate how our cultural fit measure works, we provide two email examples. To protect the company's and its employees' identities, we draw these emails from two publicly available data sources: the WikiLeaks Sony Archive (available at https://wikileaks.org/sony/emails) and the Enron email archive (available at http://www.ferc.gov/industries/electric/indus-act/wec/enron/info-release.asp). For comparison, we include one email sent by Amy Pascal, who was chairperson of the Motion Pictures Group at Sony Pictures Entertainment at the time, and another by Kenneth Lay, Chairman and CEO of Enron at the time. The email contents and their normalized frequencies over LIWC categories are illustrated in Figure A1. The two emails clearly differ in content, tone, and style, which translates into different normalized frequencies.

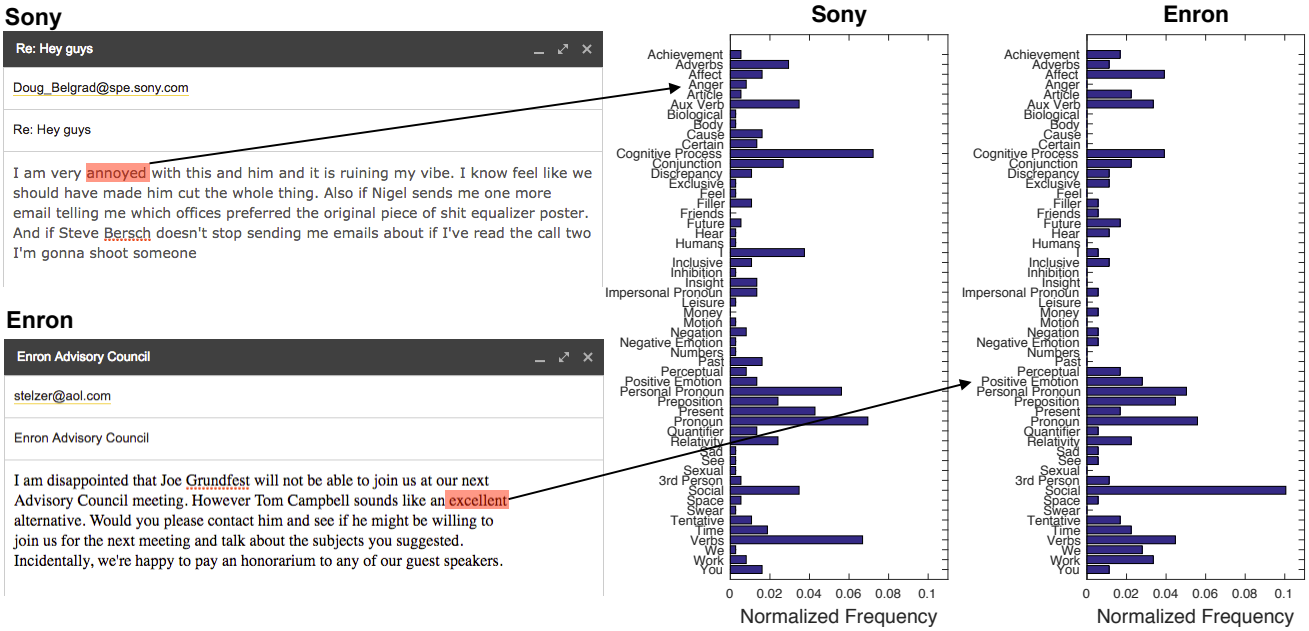

Figure A1 Examples of emails and their normalized frequencies over LIWC (for ease of presentation we omit the "total function word" category). For illustration, two words are highlighted and mapped to their corresponding LIWC categories.

Our procedure iterates over all emails sent and received by focal individual i during period T to create outgoing and incoming probability distributions, as described above. We illustrate a probability distribution over LIWC categories for a hypothetical set of incoming messages, as well as two distributions of outgoing messages for two hypothetical people in Figure A2 (for illustration purposes we choose uneven distributions). We also report the Jensen-Shannon divergences (JS) between these two outgoing distributions and the incoming distribution, and their corresponding levels of cultural fit (CF). As is easily visible, Person B's distribution is more congruent with the incoming reference group's and consequently has lower JS and higher CF than Person A's.

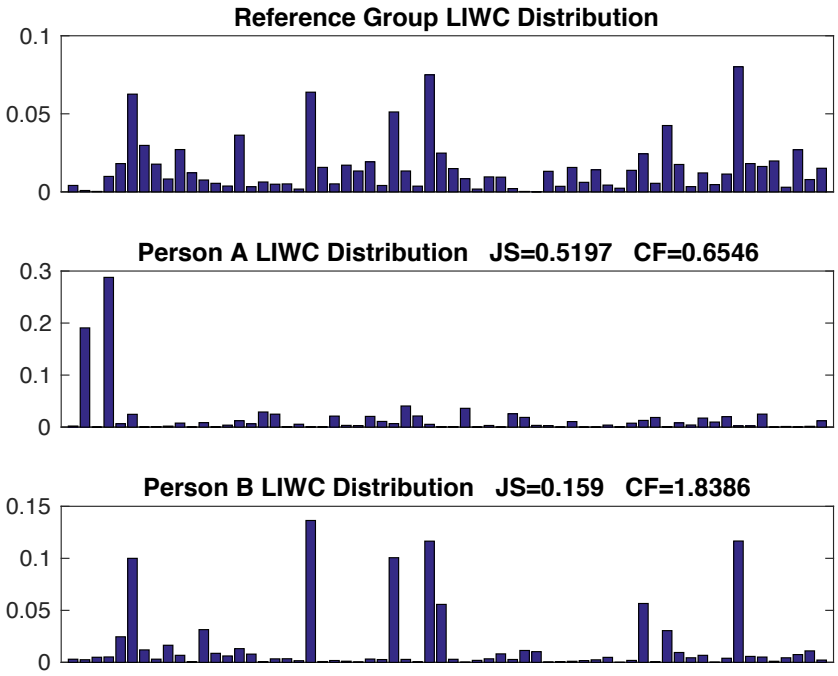

Figure A2 Examples of normalized distributions over LIWC categories during a given month for a hypothetical reference group and two hypothetical individuals.

The examples above are illustrative. To help validate our measure of cultural fit, we conducted a supplemental analysis using another publicly available data set: the Corpus of Contemporary American English (COCA; http://corpus.byu.edu/coca/). We applied our cultural fit model to the entire 2010-2012 "spoken" sub-corpus, which consists of speech fragments from television and radio shows. Our analysis, reported in full in Goldberg et al. (forthcoming), demonstrates that TV networks exhibit distinctive cultures.

Appendix B: Cultural Content

Our approach is generally agnostic to the cultural content being exchanged, such that different individuals might be determined to have similar levels of cultural fit even if the content and styles of their conversations are different. What matters are these individuals' levels of alignment with their respective sets of interlocutors, as reflected in their word distributions over LIWC categories.

Nevertheless, to provide further face validity to our approach, we implemented a backward selection analysis to identify the LIWC categories that matter most for cultural fit in the specific organization we study. The backward selection procedure identifies the LIWC categories in the order in which they contribute to variance in individual cultural fit within the firm. The iterative procedure removes LIWC categories one by one, by order of their contribution to variance, until all categories have been removed. In each step, the procedure identifies the highest contributor to variance by running multiple regression analyses. Each regression estimates cultural fit with a

modified measure of cultural fit, which is produced using all remaining LIWC categories, excluding a different category at a time. The LIWC category whose exclusion contributes to the greatest decline in R^2 is then determined as the greatest contributor to variance for that step. At the end of the procedure we arrayed the LIWC categories by the magnitude of the decline in R^2 their removal produced. The result of this procedure is reported in Table B1.

Removing the "Swear Words" category resulted in the biggest drop in R^2. Removing "Religion" resulted in the second biggest drop in R^2, and so on. After category 19 ("Third Person Plural") the subsequent declines in R^2 were no longer statistically significant. Thus, we consider these 19 categories as the most important for cultural fit. The fact that categories such as "Swear Words," "Religion," "Family," "Anger," "Sadness," and "Feel" are on the list supports the view that our measure is measuring normative compliance, and potentially tapping more fundamental cognitive orientations, and is therefore indicative of cultural fit. Organizational cultures (and subcultures) vary in the extents to which they implicitly allow or frown upon the use of swear words, discussions of religion, opening up about one's family, or displaying emotions in email communication (as the illustrative examples in Appendix A also demonstrate). Thus, it appears our measure is indeed tapping into an important facet of organizational culture.

Table B1 Backward Selection Analysis

Column	LIWC Category
1	Swear Words
2	Religion
3	Family
4	Third Person Singular
5	Friends
6	Ingestion
7	Anger
8	Nonfluencies
9	Body
10	Sadness
11	Assent
12	Filler
13	Humans
14	Health
15	Biological Processes
16	Feel
17	Hear
18	Inhibition
19	Third Person Plural

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Supplementary Material

1 Linguistic Inquiry and Word Count (LIWC)

Table SM1.1: Linguistic Inquiry and Word Count (LIWC)

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
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

continued ...

Table SM1.1 (continued)

Category	Examples	Words In Category
Feel	Feels, touch	75
Biological processes	Eat, blood, pain	567
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, Imean, youknow	9

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

2 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. 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 individual-month observations for individuals who sent and received a minimum of 20 emails per month. We then applied the Jensen-Shannon divergence-based method

Table SM2.1 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.

for calculating cultural fit to these structured data. Overall, this procedure resulted in 10,924 person-month observations.

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 SM2.1.

3 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 2 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:

$$P(t|X) = \lambda_0(t) \exp(X\beta) \tag{SM3.1}$$

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 2 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. SM3.1. The estimated coefficients are reported as hazard ratios in Table SM3.1. 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 2 are calculated for mean values of the control variables and for the median, 5^{th} and 95^{th} percentiles of cultural fit.

Table SM3.1 Cox Proportional Hazard Model of Attainment

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

Exponentiated coefficients; t statistics in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Cultural Fit by Time Elapsed Figure 3 reports a simple ordinary least squares model of the form

$$Y = \beta_0 + \beta_1 x + \beta_2 x^2 + \beta_0 x^3 + \epsilon \tag{SM3.2}$$

where Y is cultural fit and x is time elapsed (in months) since joining the firm. Table SM3.2 reports the coefficients estimated by this model. The inset in Figure 3 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 SM3.2 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)
N	9044
R^2	0.024

t statistics in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Cultural Fit by 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 3 (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:

$$Y_{it} = X_{it}\beta + \alpha_i + \epsilon_{it} \tag{SM3.3}$$

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 3).

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 SM3.3. Panel C of Figure 4 plots the marginal effects of tenure on cultural fit, as well as their 95% confidence intervals, as estimated by these models.

Table SM3.3 Individual Fixed-Effects OLS Models of Cultural Fit

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

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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 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:

$$Y_{it} = \gamma_1 T_{it} + \gamma_2 V_i T_{it} + \gamma_3 IV_i T_{it} + X_{it}\beta + \alpha_p + \epsilon_{it} \tag{SM3.4}$$

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 SM3.4. 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 SM3.3 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 SM3.4 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 Panel B of Figure 4 correspond to this model.

Finally, we sought to investigate whether these enculturation trajectories are tenure invariant beyond individual differences in enculturation tempo. To do so we replicate Model 3 in Table SM3.4 but use tenure in months, rather than standardized tenure, as the main covariate. Because we no longer need to standardize tenure, we do away with the matched-pairs model. This allows us to include all individuals in the model. We include month fixed-effects to account for period-dependent fluctuations in cultural dynamics, and limit our sample to three years of tenure, so as to prevent biasing the results by non-departed individuals (who are significantly over-represented beyond 3 years of tenure). Once again, we used non-departed employees as the omitted category, and added interactions for exit type. We estimated the following model:

Table SM3.4 Fixed-Effects Models of Cultural Fit

	Matched-Pair Fixed-Effects			Period Fixed-Effects
	(1)	(2)	(3)	(4)
Tenure	0.249***	0.558*	0.436	0.015***
	(3.82)	(2.34)	(1.59)	(3.48)
Tenure^2			-0.172	-0.000
			(-0.70)	(-0.56)
Voluntary	-0.050	-0.301*	-0.324**	-0.430***
	(-0.62)	(-2.46)	(-2.59)	(-5.45)
Voluntary x Tenure	-0.269*	1.143*	1.270*	0.046***
	(-2.12)	(2.25)	(2.41)	(3.74)
Voluntary x Tenure^2		-1.637***	-1.470**	-0.001**
		(-3.93)	(-3.05)	(-3.13)
Involuntary	-0.076	-0.071	-0.164	-0.505***
	(-0.92)	(-0.87)	(-1.24)	(-6.92)
Invoulntary x Tenure	-0.666***	-0.665***	-0.201	0.018
	(-5.35)	(-5.36)	(-0.38)	(1.56)
Involuntary x Tenure^2			-0.425	-0.001
			(-0.90)	(-1.71)
Female	-0.198***	-0.200***	-0.199***	0.045*
	(-3.99)	(-4.05)	(-4.01)	(2.18)
Manager	0.217***	0.219***	0.218***	0.621***
	(3.83)	(3.86)	(3.84)	(20.94)
Age	0.014	0.012	0.012	0.048***
	(0.88)	(0.77)	(0.77)	(6.24)
Age^2	-0.000	-0.000	-0.000	-0.001***
	(-0.83)	(-0.73)	(-0.72)	(-6.22)
Intercept	-0.098	-0.121	-0.094	-1.001***
	(-0.33)	(-0.40)	(-0.31)	(-6.81)
Department Controls	Yes	Yes	Yes	Yes
Matched-Pairs FE	Yes	Yes	Yes	No
Period FE	No	No	No	Yes
N	3052	3052	3052	9044
R^2	0.522	0.525	0.525	0.202

t statistics in parentheses

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

$$Y_{it} = \gamma_1 T_{it} + \gamma_2 V_i T_{it} + \gamma_3 IV_i T_{it} + X_{it}\beta + \alpha_t + \epsilon_{it} \tag{SM3.5}$$

where Y_{it} is cultural fit for individual i observed at time t, T_{it} are 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_t is the unobserved monthly fixed effect, and ϵ_{it} is the error term. The estimated coefficients are reported in Model 4 in Table SM3.4. The marginal effects illustrated in Panel A of Figure 4 correspond to this model.

Early Enculturation The results in Table SM3.4 Model 4, as well as rhe trends depicted in Figure 4, 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 3 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. They exclude a number of individuals who leave the firm less than six months after joining it, but not enough to undermine statistical power. 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]). Note that because some individuals depart the organization before six months, especially involuntarily, and because others have missing initial cultural fit values at time of entry due to early low activity, the number of exit events reported in Table 1 is lower than the overall number of exits observed in the dataset.

We next estimated a Cox proportional hazard model as in eq. SM3.1, 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 95^{th} 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 75^{th} percentile of initial fit and those with low fit as those entering at the 25^{th} percentile of fit. We defined highly adaptable employees as those at the 95^{th} percentile of enculturation and those highly inadaptable at the 5^{th} percentile. We then calculated hazard functions for median newcomers (at median levels of initial

fit and adaptation), high initial fit-adaptable (at 75^{th} percentile of initial fit and 95^{th} percentile of adaptation), high initial fit-inadaptable (at 75^{th} percentile of initial fit and 5^{th} percentile of adaptation), low initial fit-adaptable (at 25^{th} percentile of initial fit and 95^{th} percentile of adaptation) and low initial fit-inadaptable (at 25^{th} percentile of initial fit and 5^{th} 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.