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What matters more? The impact of industry and organizational factors on organizational culture

Authors

Anjali Chaudhry, Brennan School of Business, Dominican University, River Forest, Illinois

Ling Yuan, Takeda Pharmaceuticals North America, Inc., Deerfield, Illinois

Jia Hu, Mendoza College of Business, University of Notre Dame, Notre Dame, Indiana

Robert A. Cooke, Department of Managerial Studies, University of Illinois at Chicago, Chicago, Illinois

Abstract

Purpose – Writings on organizational culture suggest that cultural values and norms are influenced by factors at the organizational, industry, and societal levels. While the effects of societal and organizational factors have been researched extensively, those of industry factors have not received commensurate attention. The purpose of this paper is to investigate the relative importance of industry vs organizational variables in explaining the cultural norms reported by individuals within organizations.

Design/methodology/approach – The effects of two industry characteristics, (growth rate and research and development intensity) and two sets of organizational factors (leadership behaviors and human resource practices) on the strength of constructive, passive/defensive, and aggressive/defensive organizational cultural norms were investigated.

Findings – Results of hierarchical linear modeling analysis of survey data from 3,245 respondents in 424 organizations in 12 different industries revealed significant between-organization variation but no significant between-industry variation in the three types of cultural norms measured. Furthermore, while industry-level factors were unrelated to culture, significant variance in the culture measures was explained by leadership behaviors and human resource practices (use of rewards and fairness of performance appraisal).

Research limitations/implications – The strength of cultural norms and expectations within an organization evolve in response to attributes specific to the organization and do not necessarily reflect industry characteristics. The results indicate that organizations using surveys to assess their cultures may learn as much (if not more) by comparing their feedback to data on organizations across a spectrum of industries as opposed to organizations exclusively in their own industry.

Originality/value – Most of the frameworks developed to examine and describe the cultures of organizations delineate specific dimensions or types that are assumed to be relevant to all organizations regardless of the industries within which they operate. The purpose of this paper was to explore the validity of this assumption by investigating the relative impact of industry and organizational factors on organizational culture.

Keywords

Organizational culture, Human resources, Leadership, Industry growth rate, R&D intensity

Since its introduction more than 30 years ago, the concept of organizational culture has received considerable attention from practitioners and researchers alike, emerging as the focus of popular books (Deal and Kennedy, 1982) as well as scholarly publications that examine definitional issues (Pettigrew, 1979; Schein, 1983), its role as a source of competitive advantage (Barney, 1986), and its sometimes dysfunctional consequences (Balthazard et al., 2006). Writings and research on the evolution of organizational culture and its antecedents have progressed along two somewhat distinct streams. The first regards organizational culture as unique and shaped by organizational factors such as the values held by chief executives (Berson et al., 2008), leaders' shared vision and behaviors (Blattner and Walter, 2015; Schein, 1983), and leadership and HR practices within a firm (Jung and Takeuchi, 2010). The second stream takes a contingency approach, with culture shaped by contextual factors such as broader societal values (Hofstede et al., 1990; House et al., 2004) as well as the characteristics of the industries (Dickson et al., 2000a, b; Gordon, 1985) within which organizations operate. However, a review of the literature taking the contingency approach reveals that societal values have been researched extensively but other factors such as those at the industry level have not received commensurate attention. This paper investigates the effects of industry on organizational culture and does so in consideration of the effects of organizational factors in an effort to integrate the two streams of research.

While research to date consistently suggests that organizational-level factors shape the cultures of organizations (Cooke and Szumal, 2000), evidence regarding the impact of industry factors is less clear and consistent. An early study by Chatman and Jehn (1994) identified some significant differences across industries but the generalizability of their results is uncertain. Their study focussed on organizations from only four industries and, in the case of one industry, four divisions of the same organization constituted the sample. The findings of the more recent cross-national and cross-industry GLOBE study, based on a much larger sample, found almost no evidence of industry effects on organizational culture (Brodbeck et al., 2004). In contrast, studies focussing on specific industries assume and/or conclude that the unique attributes of the industry environment lead to, and possibly demand, specific types of cultures at the organizational level. Such studies have focussed on, for example, food retailing chains (Ogbonna and Harris, 2002), manufacturing (Corbett and Rastrick, 2000), human service organizations (Glisson and James, 2002), and nuclear power plants (Shurberg and Haber, 1992).

Possibly due to the weak and inconsistent results of empirical studies regarding industry effects, most of the conceptual frameworks used to understand culture propose dimensions or types that are intended to be relevant to all or most organizations regardless of industry (e.g. Cooke and Rousseau, 1988; Deal and Kennedy, 1982; Killman and Saxton, 1983). However, if systematic studies across industries fail to replicate the findings of the GLOBE study and instead show significant industry-level effects, there may be a need to expand such frameworks to account for industry forces. To address this issue, we conducted an empirical investigation to further investigate whether organizational culture is explained by industry-level factors in addition to organizational-level factors. A data set that includes survey responses from 3,245 members of 424 units of different organizations in 12 industries was analyzed using a multi-level analysis strategy to provide simultaneous estimates of the impact of organizational and industry factors on organizational culture while maintaining the appropriate levels of analysis.

Organizational culture framework

Though there has not been agreement on a single definition, there is consensus that organizational culture: is holistic, historically determined, and socially constructed; involves assumptions, beliefs, and expectations for behavior; exists at a variety of levels and manifests itself in a wide range of features of

organizational life (Hofstede et al., 1990). Culture typically is considered to have multiple components or layers including basic assumptions, espoused values, and behavioral norms (Schein, 2010). This study utilizes a conceptual framework that emphasizes behavioral norms and underlies the Organizational Culture Inventory (OCI) (Cooke and Lafferty, 1987; Cooke and Szumal, 2000), an instrument that has been used for the development of organizations in a variety of industries and to assess organizational culture in academic studies carried out in a number of countries (Guidet and Gonzalez-Roma, 2011; Herrero et al., 2013; Murphy et al., 2013; Simosi and Xenikou, 2010; Xenikou and Furnham, 1996). The framework delineates 12 different yet inter-related sets of behavioral norms. These norms are defined and organized in terms of: first, behaviors reflecting a concern for people and those reflecting a concern for tasks; and second, behaviors directed toward fulfilling higher-order satisfaction needs and those directed toward protecting and maintaining lower-order security needs. Based on these two general dimensions, the 12 norms are placed around a circumplex and categorized into three general clusters or types of organizational cultures (see Figure 1). Constructive cultures are characterized by norms for achievement, self-actualizing, humanistic-encouraging, and affiliative behaviors. These norms encourage organizational members to interact with people and approach tasks in ways that will help them to meet their higher-order satisfaction needs. Passive/defensive cultures, characterized by approval, conventional, dependent and avoidance norms, encourage or implicitly require members to interact with people in ways that will not threaten their own personal security. Aggressive/defensive cultures, encompassing oppositional, power, competitive, and perfectionistic norms, drive members to approach tasks in forceful ways to protect their status and security.

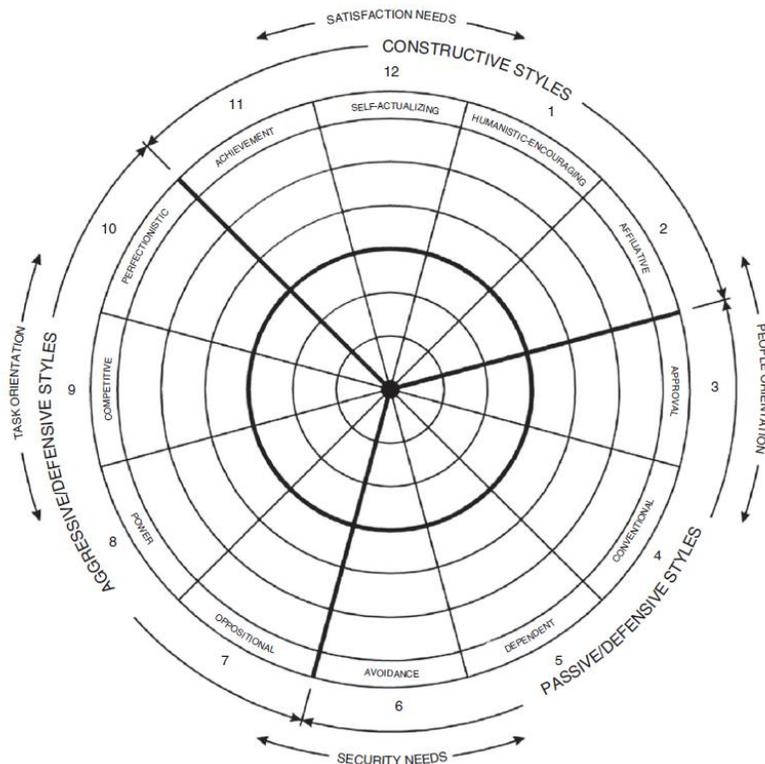


Figure 1.
Organizational
culture circumplex

Source: From Cooke and Lafferty (1987), Copyright © 1987, used by permission

Research utilizing this framework and the culture survey has shown that constructive cultures are positively related to positive outcomes across industries – including quality in manufacturing organizations (Corbett and Rastrick, 2000), client outcomes in human service organizations (Glisson and James, 2002), and effective problem solving in nuclear power plants (Shurberg and Haber, 1992).

Similarly, constructive cultures have been found to have a positive impact on organizational members, including trust in their supervisors and their organizations (Weidner, 1997), individual well-being (Van der Velde and Class, 1995), and motivation, job satisfaction and performance (Rousseau, 1990). Passive/defensive and aggressive/defensive cultures have been shown to be negatively related or, at best, unrelated to such outcomes (Cooke and Szumal, 2000; Williams, 2007).

Industry and organizational effects on culture

As noted above, the empirical research on culture has frequently focussed on organizational factors with an emphasis on leadership – including top management leadership (Jung and Takeuchi, 2010), CEO behaviors and values (Berson et al., 2008; Tsui et al., 2006), and the systems and structures leaders put into place. For example, Ulrich (1997) has elaborated on the way in which human resource management systems shape and change organizational culture and Kerr and Slocum (2005) have shown how different reward systems reinforce different cultural values and norms.

In contrast, relatively little is known about the specific industry-level factors that determine the strength of cultures in organizations – constructive, defensive, or otherwise. Such factors potentially include the rate of growth of the industry (Hambrick and Finkelstein, 1987) and investments in research and development (R&D) (Cohen and Levinthal, 1990). Dickson and his colleagues contend that these types of contextual factors should influence culture through the constraints they place on the behavior of members of organizations operating within a given industry (Dickson et al., 2000a, b). It follows that such effects can arise due to the fact that specific practices are required for organizations to survive in their respective industries.

At the same time, models of organizational culture suggest that the link between the assumptions and values of founders and leaders, on the one hand, and the more visible aspects of culture such as norms, on the other, is far from perfect (Trompenaars and Hampden-Turner, 1998). This disconnect can result from the implementation of structures, technologies and systems (including human resource management systems) that are out of alignment with values and reinforce behaviors that are inconsistent with those that leaders would actually prefer and believe are appropriate for the industry (Cooke and Szumal, 2000). Similarly, the skills and styles of organizational leaders may vary greatly, and these differences can result in very different operating cultures from one organization to the next – even within the same industry.

Thus, variability in cultures due to industry as well as organizational factors is expected. It is proposed that factors at both levels, industry as well as organizational, influence the strength of the three types of cultures – constructive, passive/defensive, and aggressive/defensive – described above:

H1. The strength of constructive, passive/defensive, and aggressive/defensive cultures will vary across both organizations and industries.

The impact of industry characteristics on organizational culture

We consider the potential effects of two industry-level factors, industry growth rate and R&D intensity, on organization culture. In high-growth industries, the environment of any given organization is characterized by change, uncertainty, and volatility in competition and organization turnover. Such organizations, in turn, are characterized by opportunities for new initiatives, decision-making freedom, and reduced tendencies toward inertia (Hambrick and Finkelstein, 1987). Higher growth rates are

associated with greater market opportunity and competitive variation, providing managers and employees with more discretionary opportunities (Datta et al., 2005). Organizations in industries with moderate growth rates have been cited as having significantly stronger innovative and team-oriented cultures than organizations with low growth rates (Chatman and Jehn, 1994). This suggests that high and moderate growth rates would require and lead to constructive cultures in terms of self-actualizing norms (which support innovation and experimentation) and affiliative norms (which support teamwork and cooperation).

In contrast, organizations in low-growth industries may have limited resources to allocate to developmental activities – whether directed toward the organization, markets, or products. Ironically, even successful organizations in low-growth situations may be subject to inertia and prone to emphasize standard operating procedures, rigid controls, and stability (Nadler et al., 1997). Unless concerted efforts are made by management, organizations in such industries may gravitate toward cultures that promote uncertainty avoidance, work against risk taking, and accentuate procedures and conformity to achieve efficiency – all characteristic of passive/defensive cultures (cf. Williams, 2007, on the newspaper industry). Furthermore, limitations on resources for system maintenance and development may lead to pressures for competitive and aggressive behaviors to secure those scarce resources:

H2. Industry growth rate is positively related to the strength of (a) constructive cultures and negatively related to the strength of (b) passive/defensive cultures, and (c) aggressive/defensive cultures.

R&D intensity has been viewed as a key determinant and indicator of the technological progressiveness of firms and industries. Technological progressiveness, in turn, has been found to be related to organizational culture and other criteria of organizational performance (Chatman and Jehn, 1994). Investments in R&D are related to product innovation (Cohen and Klepper, 1996) and can have a strong impact on organizational learning (Cohen and Levinthal, 1990). An emphasis on innovation sends cues to organizational members to think and behave in adaptive and constructive ways (Kotter and Heskett, 1992; Suellen and Coote, 2014). Similarly, organizational learning and creativity may implicitly require and reflect constructive behaviors, particularly achievement and self-actualizing styles (Pratoom and Savatsomboon, 2009).

Organizations in industries with low R&D intensity, on the other hand, are more likely to be characterized by a conventional work environment where stability and maintaining the *status quo* are expected and required (passive/defensive culture). Aggressive norms may also emerge as members find that, rather than performing in ways that would help the organization adapt to external changes, they are better off protecting their positions through internally power-oriented and confrontational behaviors (aggressive/defensive culture). These forces possibly translate into organizational strategies and explain, for instance, Symeonidis' (2002) finding that firms in low R&D intensity industries are more likely to take protective actions such as collusive pricing (agreement among companies to fix prices) than firms in high R&D-intensive industries:

H3. R&D intensity is positively related to the strength of (a) constructive cultures and negatively related to the strength of (b) passive/defensive cultures and (c) aggressive/defensive cultures.

The impact of organizational factors on organizational culture

For the purposes of this study, we focus on two types of organizational-level factors that potentially shape cultures: first, leadership styles; and second, human resource systems and practices including the

use of rewards and the fairness of performance appraisal. The impact of leaders' assumptions and personal values on organizational culture has been discussed extensively by Schein (2010) among others and will not be reviewed here. Instead, we will focus more specifically on the ways in which task-oriented and people-oriented leader behaviors lead to and reinforce constructive, passive/defensive, and aggressive/defensive cultures.

Leadership models accentuating people-oriented and task-oriented behaviors date back to the work of Bowers and Seashore (1966) and Stodgill et al. (1962). Bowers and Seashore proposed four dimensions of leadership – two oriented toward people (supportiveness and interaction facilitation) and the other two oriented toward tasks (goal emphasis and task facilitation). Practiced together, these behaviors represent a balanced focus on performance and human resources and have a positive impact on culture (Klein et al., 2013). On the people side, supportive behaviors enhance employees' feeling of personal worth, accentuate humanistic norms, and model the constructive styles (Ledimo, 2014). Interaction facilitation entails behaviors that encourage employees to cooperate with each other and reinforce the affiliative component of constructive cultures. On the task side, goal emphasis and task facilitation emphasize attaining results and achieving high standards of performance through goal setting, planning, and problem solving (Fuda, 2013). These leadership behaviors communicate, model, and reinforce the achievement behaviors associated with constructive cultures. In contrast, managers who do not exhibit these people- and task-oriented behaviors may inadvertently promote more defensive styles among their direct reports. For example, lack of clear goals can lead to avoidance tendencies which are associated with passive/defensive cultures; lack of planning and support can lead to mistakes, the need to defend oneself and oppositional reactions, associated with aggressive/defensive cultures:

H4. Task- and people-centered leadership behaviors are positively related to the strength of (a) constructive cultures and negatively related to the strength of (b) passive/defensive cultures and (c) aggressive/defensive cultures.

Like leadership, human resource management systems and practices have been frequently cited as critical culture-bearing and culture-shaping factors (Kerr and Slocum, 2005; Nadler, 1998; Sharkey and Eccher, 2011). Given that they can be used to change culture (Ulrich, 1997), we propose that the quality of the human resource practices and systems that have emerged in organizations are related to differences in their cultures in terms of the norms reported by members. Specifically, we focus on the extent to which appraisal systems evaluate employees' performance fairly and the extent to which reward systems properly recognize their achievements.

The proper use of rewards not only reinforces good performance, but also sends cues to employees that they are expected to think and behave in constructive ways (Chan et al., 2004). Praise and monetary rewards communicate that good work is (and should be) recognized and therefore reinforce a strong orientation toward achievement, characteristics of a constructive culture. On the other hand, when rewards are not forthcoming, people may come to believe that more passive or aggressive behaviors are appropriate. For example, norms may gravitate toward behaviors such as doing as little work as possible or just following the rules (passive/defensive) or trying to look good and outperforming others to get the few rewards available (aggressive/defensive).

The degree to which organizational performance appraisal systems are fair and equitable is likely to have similar effects. Evaluations that are truly based on performance rather than on factors such as favoritism communicate constructive values and norms. Inadequate and unfair appraisals, in contrast, signal to people that their efforts do not make a difference, which can promote passive behaviors (such as simply trying to please others) or aggressive behaviors (such as criticizing others). Thus, our

hypotheses regarding the effects of human resource practices directly parallel those proposed for leadership behaviors:

H5. Effective human resource practices related to rewards and performance appraisal are positively related to the strength of (a) constructive cultures and negatively related to the strength of (b) passive/defensive cultures and (c) aggressive/defensive cultures.

Method

Sample and data collection

Survey data were made available to the authors by Human Synergistics International, the publisher of the OCI, for secondary analysis. Though the OCI is available in more than 30 languages and used throughout the world, the data provided for this study were collected exclusively through the administration of the English version of the survey in North American organizations. The data file includes records from over 520 subunits or departments of different organizations. The sample of survey respondents includes 3,600 members of organizations from a broad spectrum of industries, in both the manufacturing and service sectors, ranging in size from small businesses with a few employees to major corporations with tens of thousands employees. Overall, the 520 units cover 12 industries: communications and publishing ($n = 38$), computers/information technology (47), construction (11), consulting (23), education (42), financial (53), healthcare (67), hospitality (18), insurance (29), manufacturing (95), retail (60), and transportation and distribution (37).

The units were sorted into the 12 industries based on respondents' answers to a survey item asking them about the industry within which their organization operated. Certain units were excluded due to missing or inconsistent data on this item and therefore the data set used to test the hypotheses consisted of 3,245 employees working in 424 units of different organizations. Of the respondents providing background data, 46.2 percent were female and 53.8 percent were male; 29.3 percent were under the age of 29, 34.1 percent between 30 and 39, 24.3 percent between 40 and 49, and 12.4 percent above 50; and 17.4 percent had worked for their organization less than one year, 33.9 percent between one and four years, 24.7 percent between four and ten years, and 24.1 percent for more than ten years.

Measures

Organizational culture. The OCI measures constructive, passive/defensive, and aggressive/defensive cultures in terms of 12 specific sets of behavioral norms and expectations. Each of the 12 sets of norms is measured by ten items describing behaviors that might be expected or implicitly required of members of an organization. Constructive cultures are measured in terms of the strength of expectations for achievement behaviors (sample item, "pursue a standard of excellence"), self-actualizing behaviors (sample item, "think in unique and independent ways"), humanistic behaviors (sample item, "help others to grow and develop"), and affiliative behaviors (sample item, "deal with others in a friendly, pleasant way"). Passive/defensive cultures are assessed in terms of the strength of expectations or implicit requirements for behaviors related to approval (sample item, "be liked by everyone"), conventionality (sample item "always follow policies and practices"), dependence (sample item "please those in positions of authority"), and avoidance (sample item "wait for others to act first"). Finally, aggressive/defensive cultures are measured in terms of norms for oppositional behaviors (sample item, "point out flaws"), power (sample item "demand loyalty"), competition (sample item, "never appear to

lose”), and perfectionist behaviors (sample item, “keep on top of everything”). Respondents are asked to think about whether each of the behaviors “helps people to ‘fit in’ and meet expectations” within their organization and, using a scale ranging from “1” (not at all) to “5” (to a very great extent), indicate the extent to which the behaviors are expected or implicitly required of people like themselves (Cooke and Lafferty, 1987).

Reliability and validity statistics for the OCI have been reported as part of various studies (Kwantes et al., 2010). Cronbach α internal consistency coefficients from two studies are shown in Table I. The first column shows results for the 12 styles as reported by Cooke and Szumal (1993), based on data from 859 respondents. α coefficients range from 0.75 to 0.91, with an average of 0.85 for the 12 styles. The second column, based on

OCI style	Internal consistency reliability of the 12 OCI scales	
	Cronbach α coefficient	
	1993 study ^a ($n = 859$)	2006 study ^b ($n = 60,690$)
<i>Constructive</i>		
Humanistic-encouraging	0.90	0.91
Affiliative	0.91	0.91
Achievement	0.91	0.85
Self-actualizing	0.89	0.80
<i>Passive/defensive</i>		
Approval	0.84	0.80
Conventional	0.85	0.84
Dependent	0.77	0.83
Avoidance	0.85	0.86
<i>Aggressive/defensive</i>		
Oppositional	0.75	0.73
Power	0.84	0.85
Competitive	0.86	0.85
Perfectionistic	0.79	0.77
Average	0.85	0.83

Table I.
Reliabilities of
culture measures

Sources: ^aFrom Cooke and Szumal (1993); ^bfrom Balthazard *et al.* (2006)

data from 60,690 respondents, shows coefficients ranging from 0.77 to 0.91, with an average α of 0.83 (Balthazard et al., 2006). Analyses reported by Cooke and Szumal (1993) and Murphy et al. (2013) show acceptable levels of inter-rater reliability and agreement using η^2 statistics and the $R_{wg(j)}$ coefficient as proposed by James et al. (1984). Results of factor analyses by Xenikou and Furnham (1996) and Cooke and Szumal (1993) and correlational analyses by Kwantes her associates (2010) confirm that the 12 OCI scales load onto three factors corresponding to constructive, passive/defensive, and aggressive/defensive cultures.

Industry factors. Data on each of the 12 industries using NAICS industry codes were extracted from the COMPUSTAT database, which contains extensive organizational-level information on companies in various industries. Growth rate was derived by dividing changes in annual sales by the annual sales for each COMPUSTAT organization within the 12 industries. The median across companies within each industry was then identified to represent growth rate at the industry level. R&D intensity was derived for each company for each year by dividing annual R&D expenditures by annual sales. We then calculated the mean for each company and computed the median across companies within each industry.

Organizational factors. Leadership behaviors and human resource practices were measured by means of the Organizational Effectiveness Inventory (Cooke, 1997; Murphy et al., 2013), which was administered to respondents along with the OCI. Leadership was assessed with 12 “to what extent” items focussing on behaviors like “[...] maintains high standards of performance” (goal emphasis), “[...] offers ideas to help you solve work-related problems” (task facilitation), “[...] frequently holds group meetings with you and your co-workers” (interaction facilitation), and “[...] is friendly and easy to approach” (supportiveness). The average of each member’s responses to these 12 items was calculated to represent the extent to which his or her supervisor exhibited both person-centered and task-centered leadership. Respondents’ scores were aggregated by averaging to the unit level, and these unit-level averages were assigned back to each individual within the respective units.

Three items measured the fairness of performance appraisal by asking, for example, how likely it is that “[...] decisions will be based on performance rather than on favoritism?” Use of rewards was measured by four items including “In your department, when you do your job particularly well, how likely is it that you will be praised?” Response options for the performance appraisal and reward items ranged from “1” (not likely at all) to “5” (almost certain). Again, as for the leadership measure, individual members’ responses were aggregated to the unit level and the aggregated scores were assigned back to the individual-level records. The α coefficients for the measures were 0.94, 0.84, and 0.85, respectively, indicating acceptable internal consistency.

Aggregation

Two different types of tests were carried out to check the appropriateness of aggregating individual-level survey responses to create organizational-level measures of leadership behaviors, use of rewards, and the fairness of performance appraisal. First, following James and his associates (1984), within-group agreement was estimated by computing $R_{wg(j)}$ coefficients for the units along each variable. We obtained mean values of 0.91 for leadership behaviors, 0.90 for the use of rewards, and 0.90 for the fairness of performance appraisal. All of these values were above 0.70, which is the value generally accepted to justify aggregation (Bliese, 2000).

Second, based on Bliese’s (2000) suggestion, the inter-rater reliability index (ICC1) and the reliability of group mean index (ICC2) were used as alternative checks for aggregation. We first conducted one-way analyses of variance and found significant between-group variance for all three variables at the 0.01 level. We then obtained ICC1 and ICC2 index values for the three organization-level measures: leadership behaviors, 0.21 and 0.67; use of rewards, 0.23 and 0.70; and fairness of performance appraisal, 0.17 and 0.63. These results meet or exceed the recommended ICC index values, and therefore, provide further justification for aggregation.

Analysis strategy

Our theoretical model is hierarchical, consisting of constructs at the individual, organizational, and industry levels. The sample data are similarly multilevel, with individual employees (level-1) nested in different organizations (level-2) which in turn are nested in different industries (level-3). Therefore, we conducted hierarchical linear modeling (HLM) analysis which allowed us to simultaneously estimate the impact of factors at different levels on individual-level reports of culture norms and maintain the appropriate level of analysis for the predictors (Raudenbush and Bryk, 2002). We applied the three-level HLM (HLM3) analyses to examine all of the hypotheses to control for the variance in the individual-level

outcomes explained by factors at different levels and, thus, avoid inflated effect sizes and spurious findings. Deviance tests were used to assess whether the addition of the hypothesized predictor improved the model fit (Raudenbush and Bryk, 2002), which is similar to the R^2 test in ordinary least squares regression.

Results

Table II provides descriptive statistics for the variables as well as correlation coefficients for all sets of variables. Before presenting the results of the analyses related to the hypotheses, we briefly discuss the results of a test focussing on possible common method variance across the measures.

Common method variance

Given that our measures of culture and the organizational-level variables were from the same source, we addressed the possibility of common method variance by computing Harman's single-factor test (Podsakoff et al., 2003) through confirmatory factor analysis. The results of the one-factor model showed a poor model fit ($\chi^2(464) = 53079.16$, normed fit index = 0.80, incremental fit index = 0.79, comparative fit index = 0.81, root mean square

	Mean	SD	1	2	3	4	5	6	7
1. Constructive cultures	35.39	6.5							
2. Passive cultures	26.13	5.97	-0.23**						
3. Aggressive cultures	24.59	5.81	-0.04*	0.71**					
4. Growth rate	3.51	0.74	0	-0.05**	-0.06**				
5. R&D intensity	0.1	0.1	-0.03	-0.08**	-0.05**	0.77**			
6. Leadership behaviors	3.69	0.89	0.45**	-0.22**	-0.12**	0.01	-0.02		
7. Rewards	3.2	0.89	0.38**	-0.28**	-0.14**	0.05**	0.12**	0.60**	
8. Performance appraisal	3.77	1	0.37**	-0.31**	-0.20**	0.05**	0.06**	0.52**	0.56**

Notes: At the individual level, $n = 3,245$. * $p < 0.05$; ** $p < 0.01$

Table II.
Means, standard deviations, and correlations of measures

error of approximation = 0.19, and standardized root-mean-square residual = 0.15). The lack of fit of the single-factor model indicates that common method variance was not a serious problem.

Hypotheses

To test $H1$, the significance of both the between-organization variance and between industry variance via the level-2 and level-3 residual variances of the intercept (τ_{00}) and ICC1 was tested. ICC1 measures the portion of the variance in the outcome that is explained between level-2 or level-3 units (Raudenbush and Bryk, 2002). The analyses showed satisfactory results: for constructive cultures, $\tau_{00} = 5.33$, $p < 0.001$, ICC1 = 0.13 at the organizational level of analysis and $\tau_{00} = 0.44$, $p < 0.001$, ICC1 = 0.01 at the industry level of analysis. For passive/defensive cultures, $\tau_{00} = 3.92$, $p < 0.001$, ICC1 = 0.12 at the organizational level and $\tau_{00} = 0.62$, $p < 0.001$, ICC1 = 0.02 at the industry level. For aggressive/defensive cultures, $\tau_{00} = 4.65$, $p < 0.001$, ICC1 = 0.15 at the organizational level and $\tau_{00} = 0.37$, $p < 0.01$, ICC1 = 0.01 at the industry level. These results suggest that between-organization variation in constructive, passive/defensive, and aggressive/defensive cultural norms was 13, 12 and 15 percent, respectively; while between-industry variation was 1, 2, and 1 percent, respectively. Therefore, though the data support $H1$, the variance explained by industry is not of practical significance.

Table III presents the HLM results testing the effects of organizational-level and industry-level factors on members' individual reports of the cultural norms. For *H2*, a series of HLM3 analyses was conducted to control for the effects of organizational membership when testing the impact of industry growth rate on individual-level reports of culture. As shown in Model 1a-1c (Table II), the coefficient associated with industry growth rate was not significant for constructive cultural norms ($\gamma_{001} = -0.11, p > 0.05$), but the coefficients were significant for passive/defensive ($\gamma_{001} = -0.31, p < 0.01$) and aggressive/defensive norms ($\gamma_{001} = -0.33, p < 0.05$). However, the deviance tests suggest that the addition of industry growth rate did not improve the model for passive/defensive cultural norms ($\Delta\chi^2(1) = 1.20, p > 0.05$) nor the model for aggressive/defensive norms ($\Delta\chi^2(1) = 2.03, p > 0.05$). Therefore, *H2a-H2c* are not supported.

Similarly, support for *H3* was marginal as Model 2a-2c (Table II) shows that R&D intensity was not significantly related to constructive cultural norms ($\gamma_{001} = 0.01, p > 0.05$) and only weakly related to passive/defensive ($\gamma_{001} = -0.08, p < 0.05$), and aggressive/defensive norms ($\gamma_{001} = -0.10, p < 0.05$). Again, the deviance test demonstrated that the addition of R&D intensity did not improve the model for either passive/defensive ($\Delta\chi^2(1) = 0.02, p > 0.05$) or for aggressive/defensive cultural norms ($\Delta\chi^2(1) = 1.91, p > 0.05$) as the outcomes.

HLM3 analyses provided support for the effects of the organizational-level predictors while controlling for industry-level effects (Models 3-5 focussing on leadership, rewards, and performance appraisal, respectively). The results for Model 3a (Table II) indicate a significant and positive relationship between leadership and the strength of constructive norms ($\gamma_{010} = 3.84, p < 0.001$), with the deviance test suggesting the addition of leadership behaviors into the model produces a significant improvement in the model fit ($\Delta\chi^2(1) = 182.67, p < 0.001$). Likewise, in Model 3b and 3c, leadership behavior is significantly and negatively related to passive/defensive ($\gamma_{010} = -1.81, p < 0.001$) and aggressive/defensive cultural norms ($\gamma_{010} = -1.01, p < 0.01$). Again, the deviance tests indicate that the inclusion of leadership behaviors results in a significant improvement for both models $\Delta\chi^2(1) = 45.39, p < 0.001$ and $\Delta\chi^2(1) = 12.74, p = 0.001$, respectively). Therefore, *H3a-H3c* are supported.

Table III results for Model 4 show that, after controlling for industry membership in the HLM3 analyses, the use of rewards is significantly and positively related to the strength of the constructive cultural norms reported by individual members ($\gamma_{010} = 2.98, p < 0.001$, Model 4a), significantly and negatively related to passive/defensive norms ($\gamma_{010} = -1.85, p < 0.001$, Model 4b), and only marginally related to aggressive/defensive norms ($\gamma_{010} = -0.70, p = 0.066$, Model 4c). The deviance tests show improved fit for each culture type: constructive ($\Delta\chi^2(1) = 136.33, p < 0.001$), passive/defensive ($\Delta\chi^2(1) = 62.00, p < 0.001$), and aggressive/defensive ($\Delta\chi^2(1) = 8.04, p < 0.01$), providing support for *H4a-H4c*.

Finally, the results for Model 5 (Table III) reveal that fairness of performance appraisal is significantly and positively related to the strength of constructive cultural norms ($\gamma_{010} = 3.18, p < 0.001$, Model 5a) and negatively related to the strength of passive/defensive ($\gamma_{010} = -2.36, p < 0.001$, Model 5b) and aggressive/defensive norms reported by individual respondents ($\gamma_{010} = -1.41, p < 0.01$, Model 5c). Furthermore, deviance tests suggest that the addition of performance appraisal results in significant improvements in the fit of the models for all three types of norms: constructive ($\Delta\chi^2(1) = 138.04, p < 0.001$), passive/defensive ($\Delta\chi^2(1) = 90.61, p < 0.001$), and aggressive/defensive ($\Delta\chi^2(1) = 29.26, p < 0.001$). These findings for performance appraisal provide support for *H5a-H5c*.

	M1a	M1b	M1c	M2a	M2b	M2c	M3a	M3b	M3c	M4a	M4b	M4c	M5a	M5b	M5c
	CC	PC	AC	CC	PC	AC	CC	PC	AC	CC	PC	AC	CC	PC	AC
Growth rate, γ_{001}	-0.11	-0.31**	-0.33**	0.01	-0.08*	-0.10*									
R&D intensity, γ_{001}							3.84***	-1.81***	-1.01*						
Leadership behaviors, γ_{010}										2.98***	-1.85***	-0.70***	3.18***	-2.36***	-1.41**
Rewards, γ_{010}															
Performance appraisal, γ_{010}															
Decrease in model deviance ($\Delta df = 1$)	0.15	1.2	2.03	0.01	0.02	1.91	182.67***	45.39***	12.74***	136.33***	62.0***	8.04**	138.04***	90.61***	29.26***

Notes: At the individual level, $n = 3,285$; at the organizational level, $n = 424$; at the industry level, $n = 12$. CC, constructive cultures; PC, passive/defensive cultures; AC, aggressive/defensive cultures. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; **** $p < 0.10$

Table III.
Summary of
hierarchical
linear modeling
analysis results

Discussion

Various books and articles explicitly state or implicitly assume that organizational cultural values and norms are influenced by factors at the organizational, industry, and societal levels (Dickson et al., 2000a, b). However, most of the frameworks developed to examine and describe the cultures of organizations delineate specific dimensions or types that are assumed to be relevant to all organizations regardless of the industries within which they operate. The purpose of this paper was to explore the validity of these assumptions and practices by investigating the relative impact of industry and organizational factors on organizational culture. A multi-level empirical examination of data provided by 3,245 respondents in 424 organizations in 12 different industries suggests that while cultures might vary across industries as well as organizations, the differences are much greater across the latter than the former. The strength and direction of cultures within an organization appear to evolve mainly in response to attributes specific to the organization and do not necessarily reflect industry characteristics and trends. These results run counter to the position taken by, for example, Chatman and Jehn (1994) but are consistent with the conclusions of the GLOBE study (House et al., 2004).

A second and closely-related purpose of our study was to test whether organizational cultures are shaped by specific characteristics of organizations and the industries within which they operate. Our results do not support the hypotheses that organizations operating in industries with high growth rates and high R&D intensity exhibit stronger constructive cultures while those within industries with low growth rates and low R&D intensity exhibit stronger passive/defensive and aggressive/defensive cultures. Instead, the results of our analyses indicate that industry context is not as important as factors at the organizational level in shaping and sustaining organizational cultures.

The two general sets of organizational-level factors we considered, leader behaviors and human resource management practices, demonstrate strong effects on the cultural norms reported by members of organizations – after controlling for possible effects of industry factors. Our finding that leaders have a powerful influence on cultures underscores and parallels the conclusions of numerous qualitative studies, beginning with the work of Schein (1983). Task-centered as well as people-centered behaviors model, encourage and shape constructive norms while the absence of these behaviors lead to, necessitate, or permit the emergence of passive/defensive and aggressive/defensive norms. Similarly, our results indicate that human resources practices with respect to performance appraisal and rewards play a critical role in shaping individual normative beliefs and shared behavioral expectations. The active use of rewards and equitable performance appraisal systems contribute to a positive achievement-oriented culture in which people believe that their efforts count. Unfair systems and the absence of rewards engender negative cultures characterized by avoidant and dependent cultures (in which it does not seem worthwhile to take initiative) or oppositional and aggressive cultures (in which negative feedback or the lack of positive reinforcement breeds oppositional behaviors).

Limitations

The results of our study should be considered in light of its limitations. The first is the cross-sectional design which does not allow us to draw definitive conclusions regarding causality. While we propose, for example, that factors such as leadership behaviors and human resource practices shape cultures, it is possible that norms and other aspects of culture shape those behaviors and practices to the same extent. A second limitation is that the observed relationships between the organizational factors and culture norms might be accentuated by common source variance. This issue was addressed in part by using two different surveys and applying confirmatory factor analysis to ensure that this was not a

serious problem. Nevertheless, these measures are not independent; in contrast, those of the industry characteristics were obtained from a completely different source and it is possible that this accentuated the very weak results around these factors.

It is also noted that culture was assessed through the use of a single quantitative measure, a survey focussing on norms and, more specifically, norms for behaviors that either promote or detract from members' motivation, work performance, growth on the job, and work relationships. It is possible that different types of culture measures, including those that focus on values, assumptions, or culture types (cf. Cameron and Quinn, 1999) could yield different findings. Similarly, the survey we used is designed to be general and relevant to all types of organizations; surveys with scales that are strictly relevant to specific types of organizational tasks, clients or criteria of performance might produce different results regarding the effects of industry-level variables. Finally, the culture survey was administered to members in various occupations and positions within the organizations studied (rather than, for example, only teachers in educational organizations or physicians in healthcare organizations). Thus, the results focus on organizational rather than occupational cultures and do not exclude the possibility that the latter exist.

Implications

Our study has a number of implications for future research. First, in consideration of the limitations just mentioned, it would be useful to examine the effects of other industry characteristics beyond those measured here and to consider members' perceptions of their industries and environments. Second, future studies could incorporate longitudinal designs to investigate relationships between these variables and provide stronger insights into the direction of causality. Third, given that the present study focussed on North American organizations, it would be informative to replicate this research with the OCI in other countries – particularly those characterized by different societal values and norms. Results of the GLOBE study suggest that such cross-national studies would show that the effects of industry are outweighed not only by those of organizational factors but societal factors as well. Finally, though possibly tempered by administrative forces and the diverse functional specializations characterizing complex organizations, occupational cultures should be considered in the design of future studies.

Our results also have a number of practical implications, particularly with respect to organizational development and change and the ways in which survey feedback is provided to organizations. First, the results underscore the importance of focussing on internal factors such as performance appraisal and reward systems as well as management styles and behaviors to reinforce desired cultural norms. Second, the results support the use of generic cross-industry averages, benchmarks, and profiles to plot and assess the scores for any organization using a culture survey. Differences in cultures across industries appear to be minimal and, as such, there is little to be gained by comparing an organization's composite scores on a survey like the OCI to "industry norms."

Third, the results corroborate previous research indicating that the organizational-level factors considered in this study (i.e. leadership and human resource management systems) are associated with positive and constructive cultures, and can serve as levers for cultural change, in many different industry settings. More generally, constructive (as well as defensive) cultures can be found in all types of organizations. Thus, organizational leaders might benefit from looking outside their industry for role models and appropriate change levers. Their tendency might be to focus on "industry trends" and to look primarily or exclusively at similar organizations to learn about high-performance cultures and the factors that promote and reinforce them. However, it could be just as useful – and much less expensive

– to learn more about an effective organization in a different industry across the street than an effective organization in the same industry across the country.

Looking outside one's constellation may be especially critical when organizations within an industry are going through a cycle during which they are collectively moving away from a "normal" balance of constructive and defensive cultural norms. This is exemplified by the movement of many financial institutions, just prior to the global recession, toward cultures that were significantly more aggressive than was historically the case. Studies and documentaries attribute this trend toward aggressiveness (and even greed and corruption) to such factors as leadership detached from organizational values, incentives out of alignment with mission statements, and ambiguity around what is (and what is not) acceptable (see, e.g. Waytz and Kilbarda, 2014). While such changes are likely to be temporary, it is much more difficult for any particular institution to catch and break the cycle if members are comparing themselves only to organizations in the same industry, experiencing the same momentary internal and external forces and aberrations, rather than to organizations in general.

In conclusion, the objective of our research was test to the premise that organizational culture is influenced by factors at the industry as well as organizational and societal levels. While there is sufficient evidence about the role of societal characteristics, there is paucity of research on the role of industry characteristics. So it begs the question whether the conceptual frameworks used to understand culture should continue to emphasize dimensions or types that are intended to be relevant to all or most organizations regardless of industry (e.g. Deal and Kennedy, 1982) or whether such frameworks should be expanded to account for industry factors (Chatman and Jehn, 1994; Reynolds, 1986). It is also worth noting that the influence of industry characteristics on different culture types as well as those related to organizational characteristics on different culture types have been supported by previous studies, however, the question, what matters more, industry in which an organization is embedded or organizational characteristics that are unique to an organization was yet to be addressed. Our primary contribution comes from the testing of the effects of both industry characteristics as well as organizational characteristics in one study. While our study partialled out only two industry factors, growth intensity and R&D intensity, it is a step in right direction to determine whether the much studied organizational factors, leadership and human resource practices have an impact on culture above and beyond any effects of the industry factors. Our primary contribution to the organizational culture theory and literature comes from testing the explicitly stated as well as implicitly assumed premise that cultural values and norms are influenced by factors not only at the organizational and societal levels (Dickson et al., 2000a, b) but also industry-level. Our results demonstrate that while organization cultural norms might vary across industries as well as organizations, the differences are much greater across the latter than the former. More importantly, the strength and direction of cultural norms within an organization appear to evolve mainly in response to attributes specific to the organization and do not necessarily reflect industry characteristics and trends.

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