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James Lincoln and Bernadette Doerr

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Author:

[Lincoln, James R.](#), University of California, Berkeley
[Doerr, Bernadette](#), University of California, Berkeley

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CULTURAL EFFECTS ON EMPLOYEE LOYALTY IN JAPAN AND THE U. S.:

INDIVIDUAL- OR ORGANIZATION-LEVEL?

An Analysis of Plant and Employee Survey Data from the 80's

James R. Lincoln

(lincoln@haas.berkeley.edu)

Bernadette Doerr

(bernadette.doerr@haas.berkeley.edu)

Walter A. Haas School of Business

University of California, Berkeley

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ABSTRACT

This paper uses 1980's survey data on large samples of American and Japanese factories and their employees to examine how organization (factory) cultures then differed between Japan and the U. S. and how they affected employee loyalty – intention to leave or stay. Central to the analysis is the idea, taken from Blau's seminal 1962 paper, that cultural effects may operate at the individual-level through the values, beliefs, and norms employees accept and "internalize" but also at the group- (including organization-) level through the mechanism of social pressure aimed at inducing conformity. Following Benedict's classic attribution of a "shame" culture to Japan and "guilt" culture to the U. S., we predict and find that cultural dimensions pertaining to company paternalism/familism and group work shape employee loyalty chiefly at the organization-level in Japan and chiefly at the individual-level in the U. S. This conclusion is qualified, however, by the finding that in both countries the "strength" (within-plant variance) of the culture conditions the size of the cultural effects. They are larger when the culture is stronger. Apart from question of the level at which cultural effects operate, we find, consistent with most expectations, that Japanese employees are more loyal (that is, less inclined to quit) in the presence of organization cultures favoring

paternalism/familism, groupism, and vertical cohesion (close/frequent supervision). The reverse is in general true of the American employees.

INTRODUCTION

Culture— values, beliefs, norms—that emerge spontaneously within a group or community and ideologies—similar forms but consciously devised by one group or stratum for the purpose of influencing the thinking and actions of others—shape the attitudes and behaviors of individuals within those groups and communities in two ways. First, individuals accept as their own, presumably through a socialization and identification process (which may be anticipatory of actual entry or selection into the group), the cultural content of the group. This process of individual acceptance and internalization of cultural elements can come about through two broad mechanisms. One is a micro-process, operating on individuals. It subsumes the following: (1) the individual is deterministically socialized by the group; (2) the individual self-selects into a group whose cultural patterns are akin to those s/he had previously embraced; (3) the individual interactively has a hand in creating the group via the ties s/he develops with others and to whom, in turn, s/he passes on his or her values and beliefs. Through each of the above channels, the individual comes to internalize and thus personally accept and identify with the culture/ideology, consciously or not, and consequently thinks, feels, and acts on it.

The second distinct mechanism through which cultures/ ideologies condition individuals' attitudes and behavior is of a very different sort. There is no presumption here that the focal person has internalized the culture of the group— woven it into his or her sense

of self. Rather, the “cultural effect” comes from the pressures to which s/he is subjected from those members who have so internalized it to act or comport him/herself in ways consistent with it. The canonical example in the sociology literature of such an effect appears in Durkheim’s classic study of suicide (Durkheim, 1966). For reasons having to do with doctrines of sin but also with individual choice his data showed Protestants killing themselves more frequently than individual Catholics. But Protestants residing in predominantly Catholic countries were less inclined to suicide than were their counterparts in predominantly Protestant countries. Such pressures from others to conform with cultural patterns to which the individual did not personally subscribe or accept is the primary and most obvious ways in which culture can be said to have an existence that is outside or separate from the values, beliefs, and sentiments of individual persons.

An early paper by Peter Blau (1962) was the first to address the problem in and apply Durkheim’s methods to a formal organizational setting. Blau observed that the behavior of case workers in an employment agency varied both with their own individual values and beliefs regarding the treatment of clients— some more pro-client, others leaning pro-agency (in terms of minimizing costs, expediting throughput, etc.) but also with the representation of such values and beliefs among their coworkers. Blau reported on a number of distinct configurations of such group- and individual-level orientations. In some, the client orientation of the group supplemented or augmented the orientation of the caseworker. In others, the two

effects shifted behavior in opposite directions.

Blau labeled the phenomenon he observed a “structural effect,” although his only conceptualization and measurement of “structure” was the attachment of the individual caseworker to his or her professional colleagues within the agency. “Cultural effect” is arguably a better label for what he observed, as both his theory and his data spoke to how the values, beliefs, and norms of groups—in Blau’s research human service agencies—conditioned the behavior of their members. Of course, as noted above, the influences of culture on individuals’ actions and orientations may operate through individual-level mechanisms such as the socialization and selection and creation or institutionalization processes noted above. Indeed, most contemporary research and theorizing on organizational culture by social psychologists focus on the internalization of and thus sharing by a set of individuals of cultural contents. What was structural in the effects analyzed by Blau was not the cultural or ideological content but the mechanism—peer pressure or peer pressure or social influence—that seemed to modify behaviors directly without being mediated by individuals’ hearts and minds.

Blau’s “structural effects” are known in the sociological and education literatures as “contextual’ or “compositional” effects but they are also referred to, particularly in a recent and influential stream of modeling, as “exogenous social effects” (Manski, 1993). By contrast, an “endogenous social effect,” also termed a “contagion effect,” concerns the much

less empirically tractable influence on an individual's behavior of the distribution (typically average) of that same behavior in a group of which that individual is a member or, more broadly, a network of others to which s/he is tied.

Beginning with the "Coleman report" in the 1960's on educational opportunity in the U. S. (Coleman et al., 1966), a very large number of studies by sociologists, educational psychologists, and economists have investigated endogenous as well as exogenous effects of schools, classes, and grades on student academic achievement. Another sizable body of multidisciplinary work examines neighborhood and peer group effects on crime and poverty (Quigley and Raphael, 2008). An important stream of organizational research, most of it framed by neo-institutional theory, examines contagion as the mechanism whereby an innovative organizational form or practice diffuses through an organizational population, field, or network (Burt, 1987; Davis, 1991).¹ Most recently a series of high-profile studies by

1 The difference between "group" effects of the sort Blau studied and "network" effects of the sort Burt, Davis, and Christakis and Fowler have studied is really a small one both conceptually and in terms of the modeling involved (Erbring and Young, 1979; Friedkin, 1990). The usual exogenous/endogenous "group effects" model relating an individual-level response variable to the group averages of one or more individual-level explanatory variables is in fact a special case of the more general "network effect" models wherein the matrix mapping ego's ties to alters contains blocks of cells that are all "1" (in the group) or all "0" (out of the group). The network effects model allows for each ego to be tied to his/her own "group" (ego network) (Friedkin, 1990).

public health scholars have examined social contagion effects on obesity, divorce, smoking, even mental/emotional states such as happiness. All these streams of research address important, interesting, and intuitively compelling issues in how people and organizations influence one another and all, particularly in recent years, have come in for a great deal of tough methodological criticism (for a sampling see, e.g., Manski, 1993; Moffitt, 2001; Shalizi and Thomas, 2011; VanderWeele, 2011).

Despite the large cross-disciplinary literature addressed in general to exogenous and endogenous social effects in a variety of problem areas, since Blau's canonical piece there has been next to no subsequent research on the specific problem that interested him: how the distribution of values, norms, and beliefs among a set of persons might through group and network mechanisms condition and channel those persons' attitudes and behaviors (for an exception that uses the contextual effects modeling apparatus of the time see Lincoln and Zeitz, 1980). Yet the question that concerned Blau is still a very timely and important one for student of organizational behavior: the extent to which the culture of a group, network, organization, even community or society determines the attitudes and behaviors its members through a process of social influence or pressure to conform as opposed to a process (emphasized in most of the organizational culture literature to date) of individuals through socialization coming to share the culture of the group by psychologically internalizing it and

identifying with it as their own individual system of values and beliefs.² This is the focus of the present study.

The present study: cultural effects in Japanese and U. S. factories in the 80's

We study cultural effects as contextual effects using a unique data set collected in the 1980's on over 100 Japanese and U. S. manufacturing plants and representative samples of their employees. The role played by culture in forming the attitudes and behaviors of individuals takes on multiple overlapping dimensions in a study of how American and Japanese factory employees are motivated by the cultures and social structures of their countries, the cultures, structures, and compositions of their companies, and the jobs, ranks, training levels and types, and demographics that that differentiate them within those companies.

One of the earliest and most famous characterizations of how the motivational

² A sizable number of recent studies, sometimes using laboratory and simulation techniques, have examined the related question of how whereby cultures emerge and take shape in organizations as a function of their members' composition and networks. (Carroll and Harrison, 1998; Berger and Luckman, 1966; Frank and Fahrback, 1999; Carley and Hill, 2001; Krackhardt and Kilduff; 2002; Lincoln and Guillot, 2006). However, because of their conceptual and technical complexity and their attention to dynamics these models are of relative limited utility as guides to the nonexperimental and often cross-sectional empirical research that comprises the bulk of the social effects literature.

constraints and drivers (see Vaisey, 2009) of culture diverge between Japan and the West culture is Ruth Benedict's (1946) classic distinction between "guilt" and "shame" cultures. For Benedict, drawing heavily as did sociologist Parsons on the fashionable Freudian thinking of the time, socialization infuses into Westerners hearts and minds ethical/normative codes, such that people feel pangs of conscience—guilt—when they stray from the directions of their moral compasses. In Japanese 'shame' culture, by contrast, behavior is guided, less by the normative programming acquired through the nurture, upbringing, conditioning, etc., more by how others react when it fails to meet (or perhaps exceeds) their expectations. Blau's structural effects article did not take up the question of cross-national differences, but he framed the problem for his study with a very similar distinction:

“The common values and norms in a group have two distinct kinds of effect upon the conduct of its members. Ego's conduct is influenced by his own normative orientation for fear of his conscience, and ego's conduct is also influenced by alters' normative orientation for fear of social sanctions. In other words, people conform to prevailing norms partly because they would feel guilty if they did not and partly because they gain social approval and avoid disapproval by doing so.”

Thus, for Blau, the client- versus bureaucratic- orientations of professional staff in an American social services agency might be influenced either through an individual-level

mechanism (“guilt’), a group-level mechanism (“shame;” i.e., social pressure and sanctions approval), or—as some his findings testified—some interaction of the two. Yet for Benedict and later generations of cross cultural social psychologists (Markus and Kitayama, 1991), the individual-level “guilt” mechanism whereby cultural values and beliefs bear on individual attitudes and behavior operate is more prevalent in the Anglo-American West, whereas the group-level “shame“ mechanism predominates in Japan.

A seeming weakness in the Benedict’s attribution of the “shame” mechanism to Japan is that it is not obvious how a shame culture can come about unless some sizable number of persons has internalized and thus genuinely feels and “believes in” the cultural codes they seek to impose on others. Benedict’s theory attributes to Japan a sociologically interesting pattern in which no one feels in his/her heart of hearts that a course of action is the right one but in sensing that it is the normatively correct one they participate willingly in efforts to pressure and sanction nonconformists.³ “Group think” comes to mind, amusingly

³ An interesting experimental design study by Willer, Kuwabara, and Mach (2009) addresses the question of why people will sanction offers to who deviate from norms that they themselves do not subscribe to. Note that the “social effects” phenomenon they and we study is the logical opposite of the collective action problem analyzed by Olson (1965) and other micro-economists: group efforts generally collapse because individuals defect to pursue their individual self-interests.

illustrated at the extreme by the ‘Abilene paradox,’ whence a Texas family wastes a Sunday driving to and from the town of Abilene, not one of them wanting to go but each deferring to the erroneously perceived preferences of the others.

Our approach to identifying and disentangling individual and aggregate (group-level) cultural effects of these sorts follows Blau’s seminal analysis, suitably updated to reflect as best we can the current state of the art in social effects modeling. We first select items from our survey that appear to tap a generally acknowledged normative and value dimensions on which Japanese and Americans, workers in particular, have been argued to differ and might also be expected to vary with the organizational cultures of their employing manufacturing plants. We then ask whether such normative and value items relate to the employee’s *loyalty* to the employer—specifically, his or her intent to look for another job in the next year or remain with the firm. The “lifetime commitment” model around which the Japanese employment system was tightly organized in the 80’s was one of reciprocal commitments. It changed with the significant economic and political change ushered in by the bubble economy and the ensuing “lost decade” of stagnation and recession). The employer guaranteed the regular employee a job until a relatively early retirement and the employee reciprocated with loyalty, commitment, and cooperation. Temporary contract employees enjoyed no such guarantees and provided the firm with a flexible workforce buffer that could be raised or lower flexibly.

We have chosen cultural variables that we believe from past research are indicative of rather deep-rooted Japan- U. S. differences in employment and work organization culture and, in addition, vary from firm to firm (or plant to plant) within the respective countries. At least since James Abegglen's classic work, the Japanese Factory, Japanese workplace and employment culture has been seen as distinctive from those Western—in particular, Anglo-American counterparts in the following ways.

1. **Corporate paternalism/familism:** the company is expected to look after the employee and his/her family, providing secure employment and regular career advancement with salaries rising at life cycle junctures such as marriage, child birth, college. The company offers many welfare benefits and services.
2. **Groupism.** Employees are organized in and strongly oriented to work groups, both production teams and off-line problem solving teams such as quality circles. In addition, work units such as *ka* or sections are highly cohesive, members doing much after-hours socializing with one another.
3. **Vertical cohesion.** In the spirit of paternalism, supervisors are expected care and look out for subordinates, mentor them, counsel them in their personal affairs, attend family events such as weddings and childbirth.⁴ As we shall see from the data analysis, “close

⁴ A cogent treatment of the centrality of vertical cohesion or integration in Japanese social structure can be found in cultural anthropologist Chie Nakane's important 1967 book, *Tate shakai no ningen kankei (Human Relations in a Vertical Society)*.

supervision” in the Japanese work setting has a quite different meaning from that which it has in the U. S.

By contrast, the somewhat stereotypical portrayal of American workers and firms, particularly in the early 80’s when these data were collected, is at the opposite end of these same dimensions. The relationship between employee and company was relatively arms-length and contractual: 40 hours of work a week for a wage and benefits. After hours and on weekends the employee went home to his or her family. The Japanese traditions of jumping jacks and chanting to prep for the workday; after-hours drinking parties with coworkers; even crowding on to tour buses sans families to spend a weekend at a hot springs resort—all were hard to imagine from an American standpoint. In addition, U. S. workers were skeptical of Japanese-style small group activities such as self-managing teams and quality circles and generally preferred supervisors who kept their distance-- didn’t breathe down workers’ necks.

Scholarly and journalistic accounts of Japanese worklife often that, given the tight-knit structuring of the Japanese firm and the high dependence of employees upon it, these aspects of factory culture were not so much embraced by and subscribed to by individuals but were rather experienced as external (if informal) norms with which employees had little choice but to comply (see Rohlen’s, 1974, ethnographic account of the all-encompassing conformity-inducing “ideology” at *Ueadagin*, a Japanese bank). That does not mean it was

resisted or ridiculed in the way Gideon Kunda (1992) describes employees of American “Tech Corporation” doing, bombarded endlessly by upbeat and gung-ho management propaganda regarding the wonders of “Tech culture.” American-style cynicism and passive resistance in the face of blatant management attempts to control employees’ hearts and minds were not the Japanese way. More importantly, however much it may have been experienced as external pressure rather than deeply-held shared values, Japanese corporate culture was rarely viewed even from the bottom of the company as manipulative ideology contrived by corporate HR staffs to brainwash workers into submission.

We propose the following three hypotheses on how the substance and the form of cultural effects differed between Japanese and U. S. factories in the 80’s:

Hypothesis 1:

In Japanese factories but not in US factories, the Japanese-style workplace culture patterns of company familism/paternalism, groupism, and supervisor-subordinate cohesion increase employee loyalty (reduce the propensity to leave).

Hypothesis 2:

In Japanese factories these culture effects operate primarily at the group level (the “shame” hypothesis). In the U. S. they operate primarily at the individual level (the “guilt” hypothesis).

Hypothesis 3:

In both countries, these culture effects are conditioned on (moderated by) the strength of the culture; i.e., they are increased when the culture is widely shared, decreased when it is not.

Culture strength as moderator of cultural effects

The arguments behind Hypotheses 1 and 2 have been laid out in preceding sections. The A second, more general perspective on the problem of fixing the level of the cultural effect is the following. We should expect any group-level (contextual) effect of the three workplace culture dimensions to be enhanced the greater the “strength” of the culture within the group. Where there is little consensus as to norms, values, and beliefs the cultural group-level effect should be attenuated. Pressures to conform to the preferences and expectations of others will be diminished to the degree that those others do not present a united front.⁵ (The cultural effect at the individual level may also be diminished, although this is a more tenuous proposition. Where a culture is “strong”, socialization will presumably be more intensive and individuals are therefore more likely to internalize the culture and act on it).

The hypothesis that the strength of the culture of the group will enhance the

⁵ In famous 1950’s Solomon Asch conformity studies, the presence of just one confederate deviating from the consensus (false) view sharply reduced the tendency for subjects to conform to it. See: http://en.wikipedia.org/wiki/Asch_conformity_experiments.

(especially the group-level)) cultural effects will, however, depend on the designation of the reference group. It need not be the organization (here, factory) as a whole. It might be that an intra-organizational collectivity such as production unit or managerial stratum is the reference group and thus the locus of the culture from which conformity pressures and sanctions flow. If the reference group is upper management, for example, cultural heterogeneity of the factory because the values of management differ from those of workers should matter less for the magnitude of cultural effects than were the reference group the factory as a whole, its production departments, or the stratum of direct workers. In this scenario—a realistic one in many work organizations—employees are chiefly attuned to what management values, believes, and expects and are less attuned to the cultural orientations of their occupational peers or work unit.

The “reference group” for present purposes is that set of alters to whom ego is tied and whose behaviors and attributes (including beliefs and values) are thought through the media of those ties to influence the behavior of others. As noted above, the reference group in the usual contextual effects model is a special case of the more general network effects model

(Friedkin, 1990; Manski, 1993).⁶ In the former model, the presence of a tie is defined by membership in the group. Thus, every member is directly and symmetrically “tied” to every other. In the more general network effects model, the ties may be more variable such that every ego is tied to a different set of alters; those ties vary in “strength,” multiplexity, symmetry, etc.; and the alters may or may not be directly tied to one another

MODELS AND METHODS

Problems in the specification and identification of social effects models

As we have noted, correct identification and estimation of social effects models present a number of challenges, and much methodological criticism has been directed at the studies in which such models appear. First and foremost is the problem of selection bias. It looms large in the school effects and neighborhood effects research in which these models figure prominently. Families sort themselves into neighborhoods and school districts based in part on the success, behavior, values, and other attributes of the populations already there. A

⁶ The general network effects model incorporating both exogenous and endogenous network effects is written as: $Y_{ij} = \rho \sum_j w_{ij} Y_j + \sum_k \gamma_k \sum_j w_{ij} X_{kj} + \sum_k X_{ijk} + \epsilon_{ij}$, where w_{ij} is the probability or strength of i 's tie to j (Friedkin, 1990; Manski, 1993). In model (c) of Figure 1, $\sum_j w_{ij} Y_j$ becomes $\sum_j w_{ij} X_j$ becomes as the “ties” in $\{w_{ij}\}$ then represent membership or nonmembership in “groups.”

correlation between individual students' test scores or GPAs and the averages of these over classrooms, schools, or districts could reflect, not genuine social effects of the group on the individual, but sorting homophily—people are assigned to groups based on the similarity of their attributes to the preexisting composition of the groups (Noel and Nyhan, 2011; Shalizi and Thomas, 2011).

Clearly, such sorting or selection effects are difficult to control and eliminate, although panel data give a researcher some handle on the problem, and a few studies have contrived quite ingenious solutions by exploiting esoteric features of the setting or the population (Durlauf, 2001; Hanushek et al., 2003; Quigley and Raphael, 2008).

We cannot rule out the possibility of selection biases arising from the process whereby factory employees in our Kanagawa and Indiana surveys came to take jobs in their respective plants. But, particularly for the rank-and-file production workers in both samples, there can be no question that such biases are smaller than those troubling the school or neighborhood studies reviewed above. Factories draw hourly labor from the local labor market. For the unskilled or semiskilled workers hired into such workplaces, such heavily unionized factory jobs are good jobs indeed, and companies have long queues of applicants to draw from.⁷ Moreover, in response to our question at the time the survey was conducted as to

⁷ Some researchers of neighborhood and school effects reason similarly that endogenous sorting is less likely to bias estimates of endogenous and exogenous (contextual) peer effects among long-term residents (Hanushek et al., 2003; Quigley and Raphael, 2001). This has implications for our investigation of quitting intentions and behavior. High rates of quitting

how hourly employees were screened and chosen, we were told that in most cases the first minimally qualified applicant was hired. The reason given for this lack of selectivity was the correlation of any performance or ability related screening criterion with with applicants' demographic attributes, which would subject the firm to the risk of equal opportunity litigation.

As Erbring and Young (1979) and many methods critics since have argued, a correctly specified social effects model needs to incorporate both endogenous and exogenous effects. Figure 1 presents simplified linear models for the cases of: (a) the individual-level model – no social/group effects specified; (b) the group effects models (which include individual-level effects)– one specifying exogenous (contextual) group effects; the other specifying endogenous group effects; (c) the combined model of individual, exogenous, and endogenous group effects. But as Manski's (1993) careful modeling demonstrates,

Figure 1 about here

econometric identification of the two effects simultaneously is not possible absent longitudinal data or stringent assumptions (Durlauf, 2001; Hanushek et al., 2003). A common

above a certain threshold may motivate others to “go along with the crowd.” Social effects – peer influences—thus exacerbate or amplify individual commitment behavior. My propensity to leave is amplified if most others are leaving. My propensity to stay is amplified if most others are staying (few are leaving).

solution has been to assume away the existence of one type of effect in order to identify and estimate the other (Quigley and Raphael, 2008). The sociological and educational literatures, beginning with Coleman et al. 1966, mostly ignored endogenous effects (see Hauser, 1972). Consistent with the methodological individualism of their paradigm, economists have been generally reluctant to acknowledge the existence of social effects of any sort (other than those implied in market models of supply and demand), but in recent years more economists have become interested in them and have invested considerable effort in modeling them (e.g., Manski, 1993; Durlauf, 2001; Moffitt, 2001). A number of the economics papers embrace the solution of assuming away the exogenous or contextual effects as theoretically substantive causal processes, while exploiting empirical evidence of them to instrument the endogenous effects.

Figure 2 uses two key findings from this analysis to illustrate how organizational-

Figure 2 about here

and individual-level effects of a questionnaire item we study, *CoTakCare*, which was designed to get at core value in Japanese employment culture—company paternalism or familism. The Likert-scaled item with which the employee is asked to indicate agreement is: “A company should take care of its employees, because a company and its employees are like a family.” The dependent variable is the employee’s response to another item measuring the likelihood that s/he will look for a job in another company in the next year (see Table 1). Our

hypothesis 1 states what Figure 2a shows. In the Japanese sample the regression of *Lookfor* on *CoTakCare* occurs entirely between-plants or through the means of the variables. The corresponding within-plant regression is zero. In the American sample, on the other hand, the reverse pattern shown in Figure 2a holds. The regression is entirely between-individuals and within-plants. There is a nonzero regression through the means; i.e., $\beta > 0$. But, because $\beta = \beta_{\text{within}} + \beta_{\text{between}}$, this plant-level association is entirely explained by the within-plant regression. In the standard contextual effects OLS regression $\beta = \beta_{\text{within}} + \beta_{\text{between}}$. That is, the coefficient on the group mean is equal to the difference in the between-groups (aggregate) slope and the within-groups slope. As the figure suggests, if the between-groups slope and the within-groups slopes two are equal, no contextual effect exists.

SURVEY DESIGN AND DATA

The survey data we analyze were collected in 1982-83 by a research team led by Lincoln and Kalleberg (1990). Figure 3 provides a summary of the survey and the data.

Figure 3 about here

Interviews were conducted with general and personnel managers in 51 U. S. factories in six manufacturing industries in central Indiana and in 46 Japanese factories in Kanazawa Prefecture (chiefly the cities of Atsugi and Isehara) in Japan. Detailed information concerning the sampling, the instrument design, the composition of the regions, and other

methodological aspects of the surveys can be found in Lincoln and Kalleberg (1990).

EMPIRICAL FINDINGS

Table 1 presents means and standard deviations for all variables. Some of them may

Table 1 about here

seem surprising given the usual prior assumptions Japanese and American employee behaviors. The Japanese employees report a slightly higher likelihood of searching for a new job in the next year (although the difference is not significant). The plant-level quit rate taken from factory personnel records is similar: 6% of the Japanese voluntarily left in the prior year; 4% of the Americans did. Lincoln and Kalleberg (1990) discuss possible reasons for these differences, an important one being that the U. S. economy in the early 80's was in a severe recession, unemployment rising to nearly 11% by the end of 1982. In this labor market, few workers were voluntarily abandoning their jobs, a pattern particularly true of the heavily unionized (85%) plants included in our Indiana sample. The corresponding downturn in Japan was much less severe.

Other averages are more consistent with expectations. The Japanese are more favorable to working in groups. They are also much less likely to report that their supervisors "leave them alone" and are more likely to confide in their supervisors. They also report more close friends at work (two versus the Americans' one), an indicator of within-plant cohesion.

The dependent variable is a measure of employee "loyalty" to the firm: "*LookFor*," a

trichotomously scored questionnaire item addressing the employee's intent to look for another job in the coming year. In their work with these data in the 90's, Lincoln and Kallberg (1990) devised a factor-weighted "organizational commitment" index based on six items of which the *LookFor* questionnaire item was one (all six items were taken from a longer battery of commitment items constructed by Lyman Porter and his colleagues). *Lookfor* has the advantage for our purposes of being more "behavioral" than the other items in the Porter commitment battery (such as "pride" in the firm or agreement with its values). It signals the employees intention intent to take the action of quitting the firm. Most importantly, *Lookfor* is the attitude item contained in the survey that approximates whether the employee actually quits or not, which would be the individual-level counterpart to our measure in the prior year of the quit rate for the plant as a whole, which was obtained from interviews with the plant and personnel managers.

In fact, the correlations between the plant specific means of the *LookFor* item and the officially recorded quit rate of the plant compiled for the preceding fiscal year are quite high and nearly identical in the two samples (.401 in Japan and .40x in the U. S.). This pattern in the data our confidence that the subjective measure, *LookFor*, as a reasonable proxy for the actual likelihood of the employee quitting.

Our core hypotheses are addressed with the three lengthy regressions for the *LookFor* item reported in Table 2. Given the trichotomous dependent variable, the regression

Table 2 about here

specification is ordered logit. Robust standard error estimates adjusted for clustering by plant are presented.⁸ Equation 1 is for the total sample of surveyed employees in all plants in each country, which includes production and nonproduction departments and nonsupervisory, supervisory, and managerial categories. Entered as regressors are all the individual-level variables we assume to be explanatory as well as all “global” (nonaggregate) firm-level variables. The latter were obtained from the plant manager interview survey.

Another regression often reported in cross-level analyses of this sort is identical to Equation 1 but substitutes dummy variables (or, near-equivalently, plant-specific means on the dependent variable) for the global firm-level measures. We ran such a regression but the within-plant effects – the coefficients on the individual-level regressors—differed so little from those shown in Equation 1 that we elected not to report it.

Equation 2 differs from Equation 1 in its further inclusion of the aggregate variables—the plant-specific means of individual-level variables obtained from the employee questionnaire survey. A comparison of column 1 with 3 and 2 with 4 reveals that the addition of these regressors brought about little adjustment in the individual-level regression coefficients. An exception is the log of employee pay in the U. S. sample. With the inclusion

⁸ Allowing for clustered standard errors gives estimates that are essentially identical to the random effects estimates generated with hierarchical linear modeling.

in the regression of the plant-specific mean of pay and other aggregate variables, its negative effect on *LookFor* is reduced in magnitude almost by half. Thus, part of the pay effect in Equation 1 may be attributable to the plant-level mean and variance of pay.

The third regression has the same specification as Equation 2 but is calculated on the subsample of employees of all ranks (manager, supervisor, worker) employed in “line production” and “technical production” departments. The remaining departments coded for each plant include: R&D, sales, finance, planning, personnel, and ‘other.’ This restriction of the sample enables us to test the hypothesis that the relevant “reference group” to which employees are attuned and which is thus the source of any “social effects” is not the workforce of the plant as a whole but rather the production component of it.

At the outset we comment first on the results for the global plant-level variables, which differ little across the three regression equations. Most important given our modeling strategy is the effect of the quit rate for the plant in the last full fiscal year. It is positive and significant in each equation. This is our estimate of the “endogenous social effect” on an employee’s propensity to quit. An individual employee reports him or herself more likely to voluntarily leave the firm if more of his or her peers have in fact left in the preceding period.

Beyond the quit rate effect, an important plant-level predictor of *LookFor* is the welfare services index. In both countries, employees in the survey reported themselves less inclined to quit the greater the number of plant-sponsored welfare/social services. Lincoln

and Kalleberg (1990) took this as evidence for the proposition that Japanese-style management explained the “commitment gap” between Japanese and U. S. workers. Company practices and services such as newspapers, retirement ceremonies, training programs and the like raised commitment in both countries. Higher employee commitment in the Japanese factories thus could be attributed to the consequence of the greater prevalence of those practices there.

Finally, American employee loyalty is higher in large plants and lower in unionized plants; associations that are absent in the Japanese sample.

Next we focus on the contextual effects—those of the plant means in Equation 2. Our results are strong ones that speak directly to our arguments for workplace culture effects at individual- and plant-level in Japan and the U. S. Of greatest interest and importance are the individual- and plant-level effects of the culture value dimensions, company paternalism (*CoTakCare*) and preference for group work (*PrfGrpWk*). In Japan, the individual-level effects of these items are essentially zero, *but the plant-level effects are significant and they are negatively signed*. This is strong evidence, we believe, that cultural dimensions long thought to be integral to Japanese workplace culture do in fact increase employee loyalty (diminish intention to leave) but do so through a organization-level peer influence or social effect causal mechanism.

The pattern in the U. S. sample is quite different. Paternalism/familism has an effect

that is individual-level only and is opposite in sign to the corresponding value in the Japanese case: employees are prone to leaving if they score high on this measure. This probably means that they wish to quit because they personally subscribe to the belief that a company has an obligation to take care of its employees better than they feel their present employer actually does. *PrfGrpWk*, the employee's preference for group work, has no individual-level effect but a weak association, significant at the .10 level, materializes at the plant level in the production department subsample only. (In general, we see that the plant-level contextual effects—the cultural effects in particular—are larger in the production subsamples than in the total samples that also include nonproduction departments. This is consistent with the suggestion that the relevant reference group to which the employee is attuned is less the plant as a whole than the functional department within it). In line with common images of Japan and the US, it seems that a workplace culture valuing group or team work, while bolstering loyalty among the “collectivistic” Japanese (Markus and Kitayama, 1991), tends to drive the individualistic Americans away.

The final workplace culture dimension – vertical cohesion (close supervisor-subordinate relations)—conditions employee loyalty entirely through an individual level mechanism. No plant-level (contextual) effects are in evidence. One of the two supervisory relations measures reveals Americans and Japanese responding similarly: employees in both countries (but more so in Japan) report themselves less likely to seek another job when they

feel they can confide in their supervisors. As to the item pertaining to supervisory style, a notable contrast materializes. Rather akin to our finding that they quit factories that stress group work, American employees exhibit more loyalty to the plant when their supervisors “leave them alone” (*SpvrLvAlone*). This effect is altogether absent in the Japanese sample.

Culture “strength” (homogeneity) and culture effects

We hypothesized and have found that American and Japanese employees will respond differently in terms of their loyalty to the firm to the organizational culture dimensions of factory familism/paternalism, groupism, and vertical cohesion. Our third major hypothesis on culture effects is whether they are larger when the culture within the factory is a “strong” one, smaller when it is “weak.” The meaning of strong and weak varies in the literature on organizational culture but common to most writings on the topic, we believe, is the idea that a culture is stronger if it is widely shared; i.e., there is little variance among employees in their acceptance of component values, norms, and beliefs. A weak culture, on the other hand, is one of little sharing; i.e., there is wide variance in the degree to which employees embrace its component values, etc.

In terms of our data analysis, the empirical prediction is that there are effects on the dependent variable, employee loyalty (*LookFor*), of a statistical interaction between each cultural dimension and the plant-specific standard deviation of that dimension. Table 3 presents the

Table 3 about here

coefficients on the plant means, standard deviations, and the interaction of the two from a logistic regression for *LookFor* identical to Equation 3 in Table 2 save for the addition of the standard deviation and mean-SD product terms. We do not show in the table the other terms in that regression. Note also that the table only includes interactions between the means and the SD's of *CoTakCare* and *PrfGrpWrk*, not between the SD's and the individual-level scores on those items.⁹

Clear evidence that the plant-level culture effects are attenuated in plants with weaker (higher SD) cultures appears in both the Japanese and U. S. samples. The table shows that every such interaction of mean and SD takes a coefficient that is opposite in sign to the effect of the mean alone. This testifies that the effect of the plant mean of the cultural variable

⁹ We also tested for interactions between the individual scores on the culture dimensions and plant means and SD's. Blau (1962) argued that "structural" (in his terms; "cultural" in ours) and individual effects may interact. An employee whose value orientations are aligned with those of the group might show a degree of commitment to the group in excess of what the sum of the two effects would cause. We estimated a number of such interactions between the individual scores on our culture items and the plant means but none proved significant. Similarly, following the discussion of Hypothesis 3 above, we tested for interactions between the individual-level culture item scores and the plant-specific SD's of those items. These, too, proved nonsignificant.

is diminished in plants wherein the standard deviation of that variable is high. Specifically, in Japan, the aforementioned negative plant-level effects on *LookFor* of *CoTakCare* and *PrfGrpWrk* are considerably offset by the positive coefficients on their corresponding mean-SD interactions. In the U. S., the mean-SD interaction effect of *CoTakCare* is nonsignificant, as was earlier found to be true of this variable's main effect. But the highly significant negative interaction shown in Table 3 between the mean and SD of *PrfGrpWrk* signals that the weak effect of groupism on the Americans' loyalty to the factory revealed in Table 2 is actually contingent on how much variance on this cultural dimension exists among employees within the factory. In American plants with low variances as well as high means on the groupism dimension, the propensity to leave is notably stronger. It has sometimes been suggested that Japanese work practices and cultures built around group activities such as quality circles and production teams might be less successful in American work settings due to the individualism endemic in American culture. The results in Table 3 might be interpreted as consistent with that view.

Control variables results

Of the other explanatory variables in the model, there is a consistent if not uniform pattern of effects operating at the plant-level in Japan and at the individual-level in the U. S. On-the-job training increases loyalty in both countries, but the effect is plant-level in Japan, individual-level in the U. S. Schooling, which implies unspecific and thus portable skill, has

the expected opposite (individual-level) effect but only in the U. S. American employees with more schooling have a greater propensity to leave for another job.

Perceived promotion opportunity operates in both countries at the individual-level to foster loyalty. At odds with the usual pattern, for Americans in the production subsample we observe a parallel plant-level effect. This is unsurprising. Lots of promotions suggests a practice (or “culture”) of hiring/advancing from within, a pattern known to induce loyalty and commitment.

Employee age increases loyalty through an individual-level process in both countries. Tenure works the same way in the US but not in Japan where no such effect materializes. This is at odds with expectations as the *nenko joretsu* seniority-based pay and promotion system was firmly in place among Japanese companies in the 80’s.

Having close friends at work is negatively associated at the individual –level with propensity to quit in both countries. Consistent with the assumption of higher workforce cohesion is in Japan, this effect is stronger there. A surprising and hard to interpret finding, however, is the oppositely signed plant-level effect in the Japanese sample only. An ad hoc interpretation is the following: if *my* friends are coworkers, I’m less inclined to leave the firm. But if many of my coworkers’ close friends work there, I will feel less a part of the enterprise community and will contemplate leaving.

Finally, we find in the American sample the expectedly strong negative individual-

level association between earnings and propensity to quit. Such an individual-level association is absent in the Japanese sample, but, in line with the now-familiar pattern, a corresponding plant-level negative effect is present.. A negative plant level effect is significant for the Americans as well, but it is smaller. What is particularly of interest here is the significant inverse dependence of employee loyalty on the plant-specific *standard deviation* of U. S. employee pay. The study of variances in a cross-level analysis raises a host of conceptual and methodological issues that are beyond the scope of our study. However, because within-plant pay inequality and inequity are such an obvious potential source of employee dissatisfaction, we allowed for that effect in this one instance. It is unsurprising that inequality does not matter for employee loyalty in Japan. First, by all accounts, there is simply less of it. Moreover, the inequality that existed at the time of the survey was heavily structured by the variables of age, tenure, experience, and skill; much less by the more potentially controversial criteria of managers' often subjective perceptions of individual worker performance and value.

Extensions

Culture as ideology: Management as the reference group. We have done a number of other analyses in order to refine our understanding of the cultural effects detectable in our data. For reasons of space we do not report these formally and in detail but merely summarize

the main findings that emerge. None of these analyses yielded results that rendered the conclusions reported and discussed above less sound.

As noted at the outset, there is a subtle distinction to be made between “culture” and “ideology”, particularly when the group or community in question is a hierarchically structured business organization in which higher level employees (managers) have an interest in controlling, not only the behavior, but (as is typically the case in modern corporations) also the “hearts and minds” of the employees under them (Gramsci, 1990). Indeed, many important studies of organization, beginning, perhaps, with Reinhard Bendix’s classic 1956 work, refer to “managerial ideologies,” not to “organizational cultures” (Barley and Kunda, 1992). What distinguishes these studies is: (a) they were either written before the concept of an organizational “culture” had come into wide use; and/or (b): the authors were inclined to view organizational life through a critical lens (Lincoln and Guillot, 2006). Indeed, one of the most careful and rich ethnographic investigations of the norms, values, and beliefs of an organization and the rituals, ceremonies, and employment practices supporting them is Thomas Rohlen’s 1974 study of *Uedagin*, a Japanese bank. The book is an extraordinary portrayal of the strong culture and tight-knit community that was so conspicuous in Japanese firms at the time (Peters and Waterman, 1982), but Rohlen’s term for the patterns he documents is “ideology”, not “culture,” the clear implication being that the norms, values, and beliefs at Ueadgin and their supporting infrastructure are largely designed by top

management for the purpose of brainwashing, to use an archaic term, employees into giving their all for the firm.

Whether culture can be truly differentiated from ideology is a hard question, but one possible test of the difference between the two is the following. If the relevant reference group to whose values and beliefs employees are attuned and in response to which they adjust their behavior is not the organization as a whole, or their department or section, but rather the stratum of management it would seem justified to refer to organizational “ideology” effects rather than “cultural” effects. If the opposite is true—the averaged values that matter for some employee outcome behavior such as propensity to quit are less those of higher strata than groups composed of peers or all employee classes the concept of culture might be most appropriately applied. We thus substituted for the factory-wide means on the cultural items in Equation 2 of Table 3 the means on those same items of “managers” in the survey (i.e., respondents whose “rank” = 3). The resulting contextual effects were much weaker than those shown in either Equation 2 or 3 of Table 3. We thus conclude that there is little support for the hypothesis that the cultural effects we observe in these data are better described as “managerial ideology” effects.

CONCLUSIONS

This paper has explored the form and content of cultural effects on the “loyalty” – intention to stay with the present employer or seek a job in another company – of Japanese and American factory employees in the 1980’s. The content of Japanese and American work cultures is the lesser if still an important concern. Our findings are consistent with long-standing impressions and with sizable bodies of research findings in cross-cultural psychology and sociology on how Japan and the U. S. differ culturally. Examining three dimensions of culture relating to work and company life— groupism/collectivism (preference for working in groups); familism/paternalism (the belief that companies are obligated to “look after” employees as a parent might his/her family; and vertical cohesion (subordinates’ preference for close and personal relations with supervisors), we find the Japanese and American factory employees in the survey to differ in the conventionally expected ways. Importantly, the differences we find are less in terms of how Japanese and American employees differ in their average levels of the cultural variables measured in the Indiana – Kanagawa survey—such differences are heavily affected by measurement biases and should be interpreted with care (Lincoln and Kalleberg, 1990: Ch. 2). Rather, they reflect more clearly and credibly how such cultural elements affect those employees’ work-related attitudes and behaviors; specifically, their loyalty to the factory in terms of intention to leave or stay.

We find Japanese employees in the Indiana-Kanagawa survey less likely to leave their companies if: (1) they value corporate familism/paternalism; (2) they prefer working in groups; and (3) they feel they can confide in their supervisors about personal matters. The Americans, on the other hand, are *more* likely to quit when they subscribe to corporate familism/paternalism values; (2) a workplace culture of group work; and (3) supervisors who “leave them alone.” The one parallel between the Japanese and the Americans on these cultural dimensions is that both are more loyal when they feel they comfortable confiding in their supervisors.

On the whole, then, this pattern of differences on work culture dimensions is the usual, even somewhat stereotypical, one. Work cultures that favor group work, close supervisor-subordinate relations, and a corporate stance of familism and paternalism are associated (with the exception of the confide-in-supervisor item) with higher levels of Japanese employee loyalty (lower propensity to quit) but lower levels of American employee loyalty.

What is of greater interest, however, and of general importance for the broader study of organizational cultures is our quite strong finding that the cultural (and other) effects we observe in the Japanese factory survey are much more likely than in the U. S. survey to operate at the organizational- (i.e., plant-) level. The cultural effects in the U. S. sample, by contrast, are more likely (but not exclusively so) to operate at the individual-level. Plant-level

or ‘contextual’ cultural effects, as Blau noted in his seminal 1962 piece, is a process whereby the (here, work-related) attitudes and behaviors of individuals are responsive, not only to those individuals’ own professed values, norms, and beliefs, but to the distribution (typically means but variances may also be of interest) of such cultural elements in the individual’s reference group. We find the loyalty of the Japanese employees in our survey sample to be unrelated to each such employee’s *own* scores on the cultural dimensions of familism/paternalism and groupism. The significant negative effects of these dimensions that our regression analysis turned up in the Japanese sample were entirely “contextual”; i.e., operating at the plant-level and net of the corresponding individual-level effects. A marginally significant plant-level effect of *PrfGrpWrk* in the opposite direction was in evidence for the American employees. The much stronger and positive paternalism/familism effect on the Americans’ inclination to stay or leave (*LookFor*), by contrast, materialized only at the individual employee level. In neither country did the vertical cohesion items condition employee loyalty through a plant-level process. Those effects were entirely individual-level.

However, our conclusion that organizational culture operates at the individual-level in the U. S. and at the organization-level in Japan must be tempered by our findings that in *both* countries, the plant-level cultural effects we observe in these data are conditioned on the “strength” of the culture within the factory. Where the within-plant variance in the culture dimensions was low, the plant-level effects of those dimensions were increased. This was true

of both *CoTakCare* and *PrfGrpWrk* in Japan; only the latter item in the U. S. but in that case the interaction effect was a strong one. Our broad conclusion that organizational culture operates via the “shame” (group pressure) in Japan and “guilt” culture in the U. S. still holds. But there is impressive evidence in this analysis that a strong factory culture favoring work in groups increases American employees’ propensity to quit. This means, conversely, that a strong factory culture of *not* working in groups – of working alone-- increases their their loyalty to the organization—their intention to stay. This pattern, of course, squares our finding in the American sample that at the individual-level employees’ loyalty rises when they feel their supervisors “leave them alone unless they ask for help.”

Less directly related to the question of organizational culture per se are the other measures in our data set that were collected through the employee questionnaire survey but, through aggregation into plant-specific means, exhibit plant- as well as individual-level effects on employee loyalty. With some exceptions (the effect of earnings variance in the U. S.), these paralleled the cultural effects in operating mostly at the plant-level in the Japan data, at the employee-level in the U. S. data.

Finally, we believe that, despite being cross-sectional, our data analysis using the Indiana-Tokyo factory survey data is relatively robust against the many biases that render interpretation of group effects in survey studies hazardous. First, while it cannot be entirely ruled out, the selection (“homophily”) biases that plague most social effects studies are less

severe given the ways workers and factories in industrial regions of Japan and the U. S. were matched. Second, having in the data set the officially-tallied factory quit rate in the last full year before the survey enables us to proxy, not only the cultural-- exogenous social—effects, but also the endogenous social effect—the dependence of the individual employee’s propensity to quit at the time of the survey on the quit rate of the plant in the prior year. Finally, the many rich measures of both individual (demographics, pay and training, job attributes, etc.) and factory characteristics (size, unionization, welfare services) contained in the survey enabled us to include in our regressions and thus control for a large number of potential confounders. The absence of such measurements of relevant individual- and group-level variables in most social effects studies has been much criticized as a source of upward bias in the empirical estimates of such effects.

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Figure 1. Modeling cultural effects at individual (i) and group (j) levels

a. Individual-level effects

My behavior (e.g., loyalty) depends on my values: $Y_{ij} = \sum_k X_{ijk} + \varepsilon_{ij}$

b. Group-level effects (Coleman, Durlauf, Friedkin, Manski)

Exogenous (“contextual”):

My behavior depends on the values of the group: $Y_{ij} = \sum_k \gamma_k \bar{X}_{jk} + \sum_k X_{ijk} + \varepsilon_{ij}$

Endogenous:

My behavior depends on the behavior of the group: $Y_{ij} = \rho \bar{Y}_j + \sum_k \beta_k X_{ijk} + \varepsilon_{ij}$

c. Combined group effects model: $Y_{ij} = \rho \bar{Y}_j + \sum_k \gamma_k X_{jk} + \sum_k \beta_k X_{ijk} + \sum_m \lambda_m Z_{jm} + \varepsilon_{ij}$

Difficult to identify and estimate ρ and $\{\gamma\}$ simultaneously.

Can be done if \bar{Y}_{jt-1} exists.

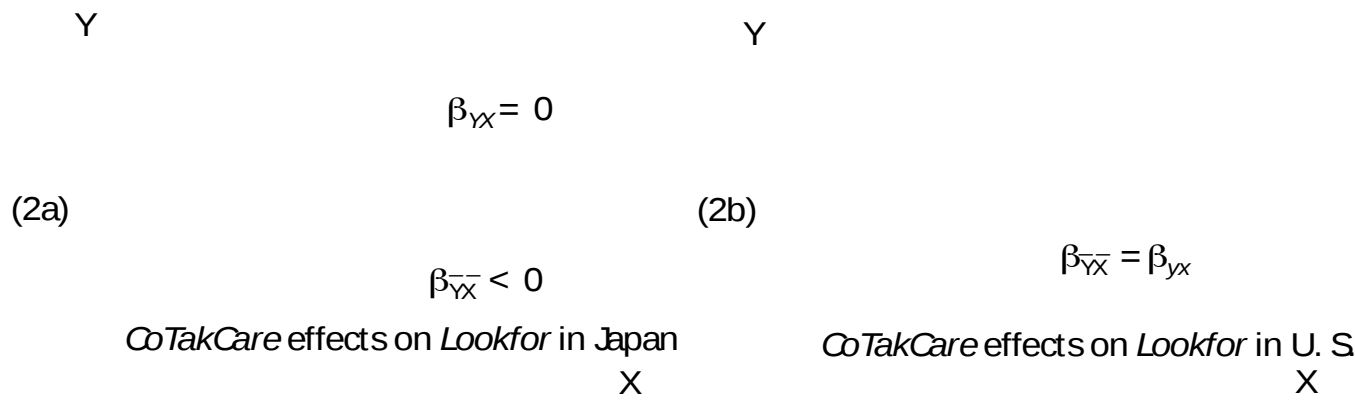


Figure 2. The regression of *Lookfor* on *CoTakCare* (net of controls) is all between-plants in Japan; all between-individuals in the U. S.

Figure 3. Survey Background

- Study conducted in 1981-1982 by research teams at Indiana University and SANNO Institute of Management in Tokyo
- Two-stage design: questionnaires of employees + interviews & documentary info-gathering from managers in US and Japanese manufacturing plants
- Extensive org- and individual-level data collected: org context, structure, job attributes, work attitudes, work values, employee background

US

- 51 plants in Indianapolis MSA
- 4,513 American managers, supervisors, and workers surveyed

Japan

- 42 plants in Atsugi (Kanagawa Pref.)
- 3,409 Japanese managers, supervisors, and workers surveyed

- Lincoln and Kalleberg: *Culture, Control, and Commitment: A Study of Work Organization and Work Attitudes in the US and Japan* (Cambridge, 1990).
- Articles in ASR, AJS, ASQ, ILRR, IR, etc.

Table 1. Means and standard deviations for all variables

Variable name	Japan		U. S.	
	Mean	SD	Mean	SD
Lookfor	0.409	0.637	0.336	0.640
CoTakCare	2.996	1.072	4.342	0.835
PrfGrpWrk	3.272	1.137	2.962	1.085
SpvrConfide	2.790	1.152	2.221	1.071
SpvrLvAlone	2.823	1.036	3.893	0.887
HiSkillJob	3.259	1.098	3.453	1.158
JobNotLetDec	2.854	1.118	2.907	1.127
PromChance	0.237	0.425	0.223	0.416
ImpOJT	2.309	1.344	3.354	0.933
#Friends	1.964	1.223	0.946	0.918
EmpAge	34.99	10.24	39.48	10.91
EmpTenure	11.71	8.587	12.61	9.538
Female(=1)	0.141	0.348	0.263	0.440
Rank	1.311	0.569	1.184	0.490
Schooling	3.009	1.001	3.111	0.998
LogEmpPay	9.309	0.504	9.888	0.540
LogPltSize	6.025	0.895	6.444	1.205
#WelfServ	7.374	1.506	5.858	1.460
Union	0.805	0.397	0.851	0.356
Quitrate	0.0604	0.0388	0.0395	0.0448
Auto	0.128	.3342	0.247	.4312
Elect	0.401	0.490	0.223	0.416
Chem	0.127	0.333	0.150	0.357
Metals	0.151	0.358	0.0218	0.146
Food	0.0661	0.248	0.0672	0.250
Mach	0.175	0.380	0.128	0.334
Print	0.0235	0.151	0.0871	0.282
Mlookfor	0.417	0.151	0.346	0.163
MCoTakeCare	3.002	0.180	4.356	0.144
SCoTakeCare	1.089	0.118	0.812	0.0948
MPrefGrpWrk	3.274	0.185	2.976	0.186
SPrefGrpWrk	1.126	0.112	1.064	0.0719
MPromChanc	0.257	0.158	0.231	0.118
MImpOJT	2.349	0.434	3.372	0.157
M#Friends	1.972	0.330	0.953	0.198
Mfemale	0.136	0.158	0.269	0.174
MEmpPay	10,260	2,753	22,610	6,743
SEmpPay	2,690	2,585	11,480	8,080
N	3452		4565	

Lookfor and Quitrate similar in two countries.

CoTakCare & SpvrLvAlone higher in U. S

PrfGrpWrk, SpvrConfide, & #Friends higher in Japan.

Table 2. Ordered logit models of employee “intention to quit” on individual- and plant-level regressors

Regressors	Japan		US		Japan		US	
	All employees	US	All employees	US	Production only	US	Production only	US
CoTakCare	0.0147 (0.0422)	0.147** (0.0471)	0.0392 (0.0423)	0.165** (0.0472)	0.0668 (0.0466)	0.166** (0.0448)		
PrfGrpWrk	-0.0123 (0.0397)	0.0118 (0.0366)	-0.0102 (0.0428)	.00006 (0.0359)	0.000319 (0.0443)	0.00548 (0.0376)		
SpvrLvAlone	0.0183 (0.0402)	-0.150** (0.0373)	0.0211 (0.0441)	-0.149** (0.0381)	-0.00832 (0.0550)	-0.150** (0.0414)		
SpvrConfide	-0.148** (0.0465)	-0.0740+ (0.0380)	-0.137** (0.0474)	-0.0837* (0.0383)	-0.0962+ (0.0528)	-0.0579 (0.0453)		
HiSkillJob	0.0140 (0.0404)	-0.0991* (0.0432)	0.0212 (0.0410)	-0.105* (0.0437)	0.00417 (0.0431)	-0.118** (0.0419)		
JobNotLetDec	0.105* (0.0443)	0.178** (0.0417)	0.0970* (0.0480)	0.189** (0.0413)	0.0766 (0.0558)	0.193** (0.0433)		
PromChance	-0.214+ (0.119)	-0.316** (0.0851)	-0.274* (0.124)	-0.275** (0.0917)	-0.256+ (0.137)	-0.303** (0.102)		
ImpOJT	-0.0210 (0.0369)	-0.264** (0.0409)	-0.0174 (0.0405)	-0.259** (0.0430)	-0.0137 (0.0449)	-0.257** (0.0433)		
#Friends	-0.148** (0.0424)	-0.0811* (0.0378)	-0.168** (0.0444)	-0.0666 (0.0434)	-0.197** (0.0466)	-0.0756+ (0.0451)		
EmpAge	-0.0568** (0.00798)	-0.0318** (0.00605)	-0.0530** (0.00631)	-0.0318** (0.00560)	-0.0534** (0.00868)	-0.0290** (0.00618)		
EmpTenure	0.00756 (0.0118)	-0.0329** (0.00983)	-0.00318 (0.0130)	-0.0376** (0.0101)	0.00376 (0.0154)	-0.0413** (0.0111)		
Female	-0.562** (0.151)	-0.681** (0.125)	-0.518** (0.170)	-0.671** (0.129)	-0.541** (0.182)	-0.736** (0.131)		
Rank	0.0570 (0.0844)	-0.110 (0.0894)	0.111 (0.0860)	-0.221* (0.0886)	0.0441 (0.124)	-0.0740 (0.104)		
Schooling	-0.00344 (0.0685)	0.259** (0.0403)	-0.0242 (0.0687)	0.294** (0.0388)	-0.00953 (0.0781)	0.317** (0.0455)		
LogEmpPay	-0.0844 (0.136)	-0.398** (0.108)	-0.106 (0.150)	-0.218+ (0.114)	-0.141 (0.163)	-0.186 (0.120)		

No individual-level effects of *CoTakCare* & *Prf GrpWrk* in Japan.

Positive individual-level effect of *CoTakCare* in U. S

Table 2. (Continued)

Regressors	Japan	US	Japan	US	Japan	US
	All employees	All employees	All employees	All employees	Production only	Production only
LogPltSize	-0.0533 (0.0802)	-0.148 (0.0924)	-0.109 (0.0899)	-0.308** (0.118)	-0.0347 (0.0806)	-0.281* (0.114)
#WelfServ	-0.142** (0.0517)	-0.137* (0.0568)	-0.166** (0.0453)	-0.0825 (0.0543)	-0.160** (0.0467)	-0.113* (0.0523)
Union	0.146 (0.204)	0.479** (0.169)	0.0970 (0.165)	0.372* (0.157)	0.177 (0.188)	0.363* (0.158)
QuitRate	3.809* (1.940)	3.663** (1.419)	5.629** (1.883)	3.346* (1.339)	7.922** (2.240)	3.785** (1.254)
Elect	0.221 (0.172)	0.486* (0.247)	0.145 (0.267)	0.0715 (0.225)	-0.0570 (0.261)	0.0617 (0.205)
Chem	-0.0244 (0.242)	0.329 (0.338)	0.391 (0.366)	-0.0167 (0.375)	0.229 (0.373)	0.0241 (0.326)
Metl	0.288 (0.250)	-0.0926 (0.341)	0.349 (0.248)	-0.520+ (0.291)	0.169 (0.265)	-0.665* (0.271)
Food	0.448 (0.332)	0.234 (0.288)	0.761** (0.232)	-0.350 (0.294)	0.758** (0.249)	-0.296 (0.283)
Mach	0.476+ (0.251)	0.519+ (0.304)	0.440 (0.277)	0.204 (0.186)	0.401 (0.279)	0.233 (0.190)
Prin	0.759** (0.253)	0.209 (0.331)	1.644** (0.371)	-0.365 (0.245)	1.853** (0.382)	-0.300 (0.251)

Effects of plant-level quit rate and welfare services are similar in Japan and the U. S

Table 2. Continued.

Regressors	All employees		All employees		Production only		
	Japan	US	Japan	US	Japan	US	
MCoTakCare			-1.320** (0.436)	0.00399 (0.350)	-1.860** (0.534)	0.0484 (0.365)	Negative plant-level effects of <i>CoTakCare</i> & <i>PrfGrpWrk</i> in Japan.
MPrfGrpWrk			-0.770* (0.363)	0.564 (0.369)	-1.039** (0.343)	0.624+ (0.356)	
M#Friends			1.101** (0.290)	-0.0169 (0.985)	1.158** (0.305)	0.0196 (0.899)	
MImpOJT			-0.645** (0.192)	-0.491 (0.431)	-0.876** (0.214)	-0.634 (0.408)	
MPromChanc			0.737 (0.775)	-0.674 (0.464)	1.040 (0.841)	-0.838+ (0.456)	
MFemale			-1.787** (0.473)	-0.0804 (0.400)	-1.835** (0.566)	-0.280 (0.387)	
Mtenure			0.0547+ (0.0304)	0.0251 (0.0330)	0.0441 (0.0350)	0.0251 (0.0314)	
STenure			-0.0904 (0.0644)	0.0414 (0.0526)	-0.0755 (0.0790)	0.0389 (0.0500)	
MEmpPay			-0.000142** (.00004)	-.00005** (.00002)	-0.000122* (.00005)	-.00006** (.00002)	
SEmpPay			0.000104 (.00006)	.00005** (.00002)	.00007 (.00007)	.0006** (.00006)	
Constant	-1.254 (1.491)	-4.257** (1.079)	-8.712** (1.775)	-3.658* (1.771)	-11.11** (2.080)	-3.200+ (1.894)	Weak positive plant-level effect of <i>PrfGrpWrk</i> in U. S
N	2,763	3,939	2,573	3,939	2,117	3,535	

Robust standard errors adjusted for clustering on plant in parentheses
 ** p<0.01, * p<0.05, + p<0.1. Note: 'transportation equipment' is the excluded industry.

Table 3. Coefficients and standard errors for interactions of plant-level means and standard deviations for CoTakCare and PrfGrpWrk

	All employees		Production only	
	Japan	U. S.	Japan	U. S.
	Higher within-plant variance in culture items reduces plant-level cultural effects in both countries			
MNCoTakCare	-3.050** (0.516)	-0.994 (1.087)	-3.353** (0.525)	-1.066 (1.070)
SDCoTakCare	-5.540* (2.34)	-1.057 (5.523)	-5.396* (2.336)	-2.738 (5.421)
MNCoTakCare X	1.728*	0.264	1.772**	0.684
SDCoTakCare	(0.763)	(1.251)	(0.749)	(1.232)
MPrfGrpWrk	-0.607 (0.441)	1.981** (0.456)	-1.070+ (0.574)	1.646** (0.563)
SDPrfGrpWrk	-4.279* (2.07)	6.270** (1.441)	-3.987 (2.495)	4.274** (1.592)
MNPrfGrpWrk X	1.363*	-2.005**	1.201	-1.347**
SDPrfGrpWrk	(0.630)	(0.469)	(0.771)	(0.517)

Robust standard errors adjusted for clustering on plant

p** p<0.01, * p<0.05, + p<0.1

Note: these coefficients and standard errors come from regressions identical to those in Table 2 save for the addition of the “SD” and “MN X SD” terms