Lukewarm ("Nurumayu") Feeling in Japanese Firms
日本企業のぬるま湯感

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1. INTRODUCTION

This paper is focused on lukewarm ("nurumayu" in Japanese) feeling in Japanese firms, which is supposed to be caused by not preferable organizational conditions. The word "nurumayu" is used on the analogy of a lukewarm bath. Average Japanese enjoy a hot bath, and a lukewarm bath is not hot enough and is at lower temperature than desired.

In the Japanese firms, this word expresses lukewarm atmosphere in the organization and is usually used in the case that the members easily accept the present situation and spend a carefree time. Therefore, under the name of a "nurumayutic" constitution, members would point up the complex and perplexing problems confronting the organizations and discuss the way to build up a vigorous constitution. This way is called organizational activation in the field of the Japanese style organization development. Takahashi (1992) provides the definition of the activated state of the organization by applying the results of mathematical organization design theories (Takahashi, 1986; 1987; 1988).

For the time being, we assume that "nurumayu" feeling is a typical signal of non-activated state of the organization. But, is it true? We study the conditions to cause "nurumayu" feeling among the members, and then we study relationship between such a feeling and the activated state of the organization.

In this paper, we propose the effective temperature hypothesis, which explains that each member's sense of "nurumayu" is caused by the low effective temperature. The effective temperature is defined as the difference between the system temperature and the body temperature measuring the propensity to change of the organizational system and that of the members respectively. The effective temperature hypothesis is supported by our four surveys of 2,623 employees of 30 companies from 1987 to 1990. We developed an effective temperature "thermometer" which can be used to forecast the lukewarm feeling ratio. Thus, our hypothesis provides a useful framework to examine the organizational activation and also explains the boiled frog phenomenon in the organizations.

2. STATEMENT OF THE PROBLEM

Methods

In order to get fact findings of the "nurumayu" phenomenon, we made the first survey in 1987. First, we selected eleven Japanese companies who were members of Japan Productivity Center in the industries: petroleum products (Company A), pharmaceuticals (Company B), railroad transportation (Company C), retail trade (Companies D and E), electric service (Company F), electric machinery (Company G), electronic machinery (Companies H and K), telecommunication (Company I), and service (Company J).

The study was conducted in two phases. Phase 1 began in April of 1987 and was completed by August. In this phase, group interviews were conducted. The respondent of each company was interviewed for approximately two hours to express corporate culture. The objectives of Phase 1 were to develop the original questionnaire. We prepared an exhaustive list of frank statements of the job attitude and the phenomena of non-activated state of the organization. Finally, we carefully revised all the items, and prepared the selected list of disjunctive yes-no questions: 25 questions on job attitude and 25 questions on phenomena. The original questionnaire was written in Japanese.

Phase 2 involved a sampling survey. The objectives of this phase were to obtain fact findings of a "nurumayutic" constitution. We initially selected for each company one or more organizational units of about 50 members. Then we investigated all the members of the selected 39 organizational units. The research was carried out from August 26 to September 7, 1987 through the delivery-collection and self-recording method. We obtain 580 respondents' data from the questionnaires (84.1% response rate).

Findings

We investigated the lukewarm ("nurumayu") feeling in Japanese firms, and each respondent answered the following key question on phenomena:

Question 1. Do you feel that the atmosphere at your working place is lukewarm ("nurumayu")? 1. Yes. 2. No.

55.4% of the total respondents answered "Yes", and 44.6% answered "No", that is, approximately the half of the total respondents expressing the lukewarm feeling.

Pearson's correlation coefficients between Question 1 and the other questions on phenomena are relatively high, but those between Question 1 and job attitude questions are generally low. Therefore a lukewarm feeling is closely related to the phenomena of the working place. But the low correlation coefficients with the job attitude arouse a question in our mind. Is it true that a lukewarm feeling is a typical signal of non-activated state of the organization?

This question is further complicated by the fact that coexistence of a lukewarm feeling and job satisfaction. Job satisfaction is measured by means of the following question on job attitude:

Question 2. Are you satisfied with your job? 1. Yes. 2. No.

We make a fourfold (two-by-two) table by Questions 1 and 2, and obtain Table 1, which suggests the negative relevance between the lukewarm feeling and the job satisfaction at significant level 0.001 by chi-square test. Pearson's correlation coefficient, r, also designates negative correlation between them. But strictly speaking, the configuration of Table 1 clearly reveals that the half of the respondents satisfied with their jobs simultaneously expressed the lukewarm feeling.

The ratio of "Yes" to total respondents in Questions 1 is called the lukewarm feeling ratio, and the ratio of "Yes" to total respondents in Question 2 is called the job satisfaction ratio. By using these two ratios, eleven companies are plotted on the scatter diagram and thus Figure 1 is obtained. This figure suggests the negative correlation between the lukewarm feeling ratio and the job satisfaction ratio, except for Company C. Company C has the highest lukewarm feeling ratio and the third highest job

Table 1. Cross-Tabulation by Lukewarm Feeling and Job Satisfaction.

Question 2.	Question 1. Lukewarm feeling		
Job satisfaction	1. Yes	2. No	Total
1. Yes	175(49.9)	176(50.1)	351(100.0)
2. No	138(64.2)	77(35.8)	215(100.0)
Total	313	253	566

Pearson's $r=-0.140$ $\chi^2(1)=11.07$ $p<0.001$

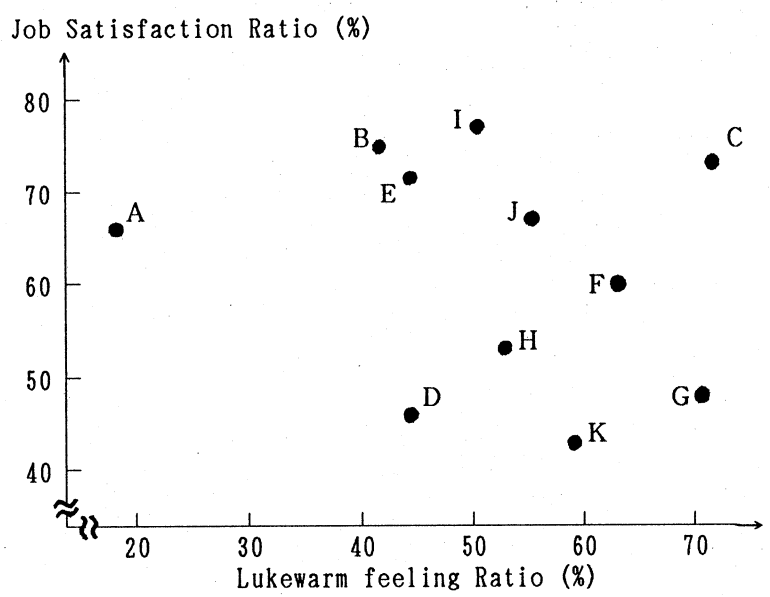

Figure 1. Scatter Diagram of Eleven Companies.

satisfaction ratio. Furthermore, it is known that there exist many organizational units with high lukewarm feeling ratio and high job satisfaction ratio.

Hence, we obtain the following finding: The lukewarm feeling and the job satisfaction coexist together. From this finding, it is not reasonable that a lukewarm feeling is a typical signal of non-activated state of the organization. We need a new framework to determine the relationship between the lukewarm phenomena and the activated states of the organization.

3. EFFECTIVE TEMPERATURE HYPOTHESIS

System Temperature

Let us trace the origin of "nurumayu". A "nurumayu" feeling is usually explained by the analogy of a lukewarm bath in Japan. How can we take the temperature of the working place? We received a useful hint for taking the temperature from the dictionaries. The best dictionary to consult for determining the origin of Japanese words is the Kojien, Iwanami, 1983. If you open this dictionary, you will find the word "nurumayu" signified "hot water at a lower temperature or lukewarm water". Furthermore, you will find the prevalent phrase "soak oneself in 'nurumayu'" is used by the Japanese in a sense that "accept the present situation and spend a carefree time".

Now, a propensity to change is defined as the propensity not to accept the present situation and not to spend a carefree time and to master the circumstances. Deci (1975) has asserted that people engage in many behaviors in order to feel a sense of competence and self-determination. Our concept of a propensity to change is within the same general camp. In order to examine a "nurumayu" feeling, we first consider the organization's propensity to change. You may easily suppose that the organization of a high propensity to change has a high temperature and its members feel hot. If it has a low propensity, its temperature is low and its members feel lukewarm. To take the temperature of the working place, by multivariate analysis and logical examination, five questions were selected from among 25 yes-no questions on phenomena as follows:

S1. Have high performing individuals been consistently promoted and given raises?
S2. Is the atmosphere one which welcomes "positive failure" which would serve as a lesson to all?
S3. Is your immediate superior able to exert influence on his or her superiors?
S4. Are the present ways of doing jobs very unlikely to change? (-)
S5. Do all the members believe they can move up the ladder to a certain extent solely on the basis of seniority? (-)

For questions S1, S2, and S3, "Yes" means a high propensity to change, and for S4 and S5 indicated by (-), "No" means a high propensity to change. The yes-no answer of the question Si can be quantified and represented by a dummy variable S_i, $i=1,\ldots,5$. The dummy variable takes only two values, zero and one, which signify that the observation belongs in one of two possible categories. Variables S_1, S_2, and S_3 are dummy variables designating the two categories, 1 for "Yes" and 0 for "No". Variables S_4 and S_5 are also dummy variables coded as 0 for "Yes" and 1 for "No". These dummy variables can be used to take the temperature of the working place, which is called the system temperature (SINDEX) and calculated as follows:
$SINDEX=S_1+S_2+S_3+S_4+S_5$.
SINDEX is an integer from 0 to 5.

For the lukewarm group (the group of "Yes" respondents in Question 1) and the non-lukewarm group (the group of "No" respondents in Question 1), we calculate means of SINDEX as follows: 3.05 for the total (N=525), 2.72 for the lukewarm group (N=292), and 3.46 for the non-lukewarm group (N=233). Thus by t-test, the lukewarm group has significantly lower SINDEX than the non-lukewarm group at level 0.001 (t=-6.61). But SINDEX of Company C having the highest lukewarm feeling ratio is 2.73 and is not lowest. Hence it is difficult to characterize Company C aptly only by SINDEX.

Hypothesis

Now, we should find an alternative way to explain a lukewarm feeling. The system temperature is not sufficient to explain the high lukewarm feeling ratio of the high job satisfaction ratio company, like Company C. The problem of Company C demands the careful consideration of not only the phenomena but also the individual job attitude. The biological temperature of the human body is normally 36 to 37 degrees Centigrade. Consider the organization man characterized by the organization personality (Barnard, 1938). Does everyone have always a fixed body temperature as an organization man? Does the high job satisfaction ratio company (like Company C) have a high average of body temperature? The body temperature of an organization man may form a basis for his lukewarm or hot feeling.

Now, let us define the body temperature (BINDEX) as the propensity to change of the individual as an organization man, that is, the body temperature is an index to the organization personality not to accept the present organizational situation and not to spend a carefree time and to master the circumstances in the organization.

We are now in position to propose the following important hypothesis.

Hypothesis 1 (Effective Temperature Hypothesis). Define the effective temperature (T) as follows: T=SINDEX-BINDEX. Then the respondent expressing a lukewarm feeling has a lower effective temperature than the respondent expressing a hot feeling.

Body Temperature

To take the body temperature, by multivariate analysis and logical examination, five questions were selected from among 25 yes-no questions on job attitude as follows:

B1. Do you constantly seek improved ways of doing your jobs better than the others?
B2. Do you wish to maintain the "status quo" by avoiding to cause mistakes or problems rather than improving

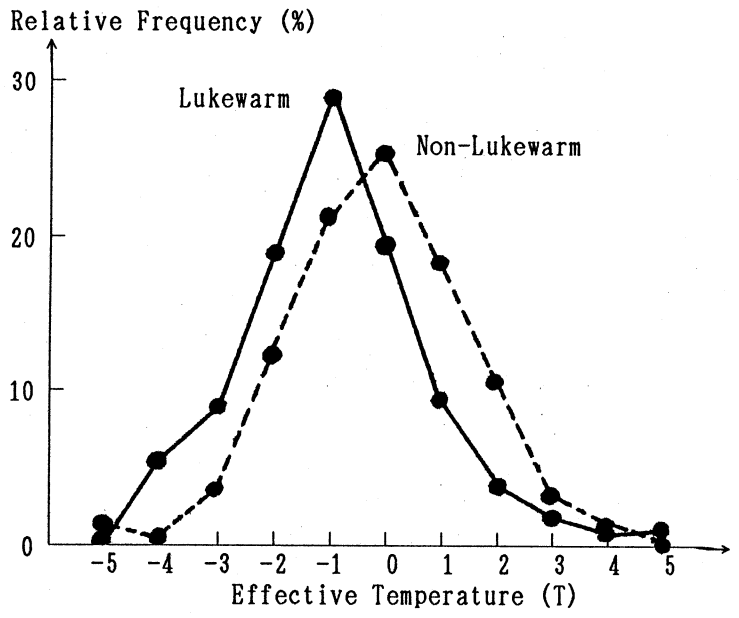

Figure 2. Relative Frequency Diagram.

your performance by risk taking? (-)

B3. Do you constantly seek to improve your practical knowledge and expertise required to do your job?

B4. Do you continually welcome challenging new jobs?

B5. Do you hope to be promoted faster than the others at your company if possible?

For question B2 indicated by (-), "No" means a high propensity to change, and for the other four questions, "Yes" means a high propensity to change. The yes-no answer of the question Bi was represented by a dummy variable B_i, i=1,...,5: B_1, and B_3 to B_5 respectively designated the two categories, 1 for "Yes" and 0 for "No"; and B_2 coded as 0 for "Yes" and 1 for "No". The dummy variables can be used to take the body temperature (BINDEX) as follows: $BINDEX=B_1+B_2+B_3+B_4+B_5$.
BINDEX is an integer from 0 to 5. Company C having the third highest job satisfaction ratio has third highest body temperature (BINDEX=4.04).

Let us begin with the analysis of Hypothesis 1. We have examined the austerely simplified equation in Hypothesis 1 through the principal components analysis and the discriminant analysis (Takahashi, 1989). Unfortunately, we cannot use categories of "lukewarm" and "hot". We can only use categories of "lukewarm" and "non-lukewarm" based on Question 1. Then the non-lukewarm group may include not only the "hot" group but also the other groups, like a "suitable" group. In fact, the scatter diagram of the non-lukewarm group suggests that this group includes the "suitable" group located at the northeast area of high system temperature and high body temperature, whereas the respondents of the lukewarm group are mainly plotted in the lukewarm.

We first calculate means of the effective temperature T as follows: -0.55 for the total (N=525), -0.91 for the lukewarm group (N=292), and -0.09 for the non-lukewarm group (N=233). By t-test, the lukewarm group has the significantly lower effective temperature than the non-lukewarm group at level 0.001 (t=-5.79). Figure 2 clearly supports Hypothesis 1. On the other hand, Company C has the lowest effective temperature: T=-1.31. Figure 3 shows that only Company C is located at the lukewarm area of low system temperature and high body temperature.

From the above discussion, our empirical research supports Hypothesis 1, and the highest lukewarm feeling ratio of Company C can be explained by the lowest effective temperature.

Additional Test on Middle Managers

In 1988, we made the second survey of middle managers in order to verify the effective temperature hypothesis again. We selected eight Japanese companies who were also members of Japan Productivity Center in the industries: railroad transportation, precision machinery, retail

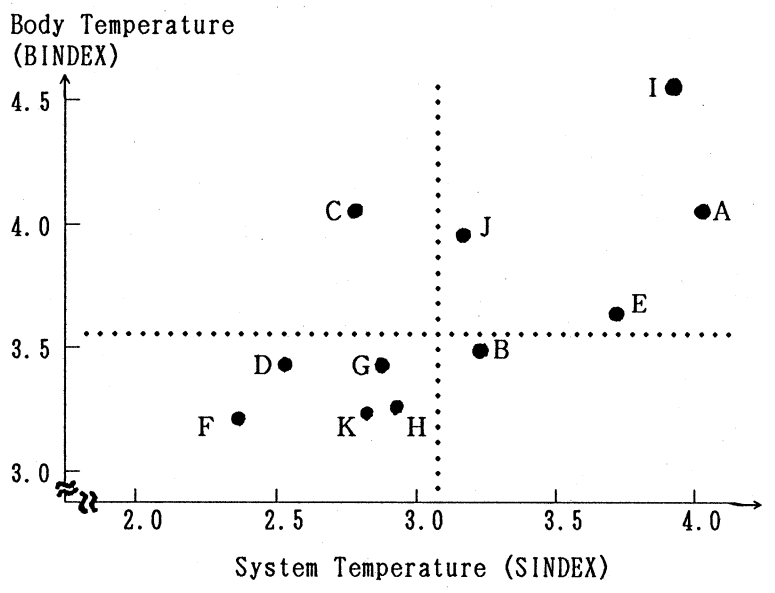

Figure 3. Scatter Diagram of Eleven Companies.
(Dotted lines indicate the averages).

trade, motor vehicles and equipment, telecommunication, electronic machinery, and banking (2). The research was carried out from August 31 to September 5, 1988 through the delivery-collection and self-recording method. We obtain 626 respondents' data from the questionnaires (81.3% response rate).

To test Hypothesis 1, we calculated means of the effective temperature: -1.03 for the total (N=609), -1.19 for the lukewarm group (N=422), and -0.66 for the non-lukewarm group (N=187). Thus by t-test, the lukewarm group has the significantly lower effective temperature than the non-lukewarm group at level 0.001 (t=-4.11). Therefore, empirical research on middle managers supports our Hypothesis 1.

For Question 1, 69.7% of the total respondents answered "Yes" and 30.3% answered "No". Why is the lukewarm feeling ratio of the middle managers so high? The mean of SINDEX is 3.06 for the total, which is almost equal to 3.05 of 1987. Thus, high lukewarm feeling ratio of 1988 cannot be explained by the system temperature. But, the mean of BINDEX is 4.09 for the total, which is remarkably higher than 3.60 of 1987. Hence, by using our effective temperature hypothesis, the distinguished high lukewarm feeling ratio of 1988 is clearly explained from the fact that the middle managers have the high body temperature in Japanese firms.

4. REFINEMENT OF THE "THERMOMETER"

Confronted with the fact that a substantial part of the "non-lukewarm" group should be characterized as a "suitable" group, it is not proper to explain a lukewarm feeling by comparison with a hot feeling. We are now in position to propose a new version of Hypothesis 1.

Hypothesis 2 (Refined Effective Temperature Hypothesis). The lukewarm feeling ratio of a group is in reverse proportion to its average of the effective temperature.

Method

We were prompted to search for a more refined "thermometer" with better properties to explain the lukewarm feeling ratio. The first survey in 1987 and the second survey in 1988 used same questions S1 to S5 and B1 to B5 in order to test Hypothesis 1. These ten questions were selected from among only 50 questions of the first survey which was planned to get fact findings of the "nurumayu" phenomenon. There are some prospects of improvement on the questions.

In 1989 to 1990, we made the preliminary third survey of 564 employees of two Japanese manufacturing companies (84.1% response rate). In this third survey, we prepared a comprehensive list of 100 yes-no questions made of preceding surveys' questions and new questions. Through this preliminary survey, we selected 35 questions from among these 100 questions by multivariate analysis.

Using these 35 questions, we made the fourth survey in

1990 in order to refine the "thermometer" to measure the effective temperature. We selected nine Japanese companies who were members of Japan Productivity Center in the industries: motor vehicles and equipment (3), telecommunication, railroad transportation (2), petroleum products, banking (2). The research was carried out from September 5 to 10, 1990 through the delivery-collection and self-recording method. We obtain 853 respondents' data from the questionnaires (88.9% response rate).

By multivariate analysis, Questions S2 to S5 and B2 to B5 were replaced by the following newcomers:

S6. Is avoiding failure considered more important than improving performance through trial and error? (-)
S7. Is the atmosphere one which welcomes challenging new jobs?
S8. Is adopting the corporate culture more important than developing your own individuality? (-)
S9. Is the atmosphere a competitive one in which members strive to achieve their goals?

B6. Do you do your job in the way you want regardless of the way it was done in the past?
B7. Do you go out of your way to do new jobs before they are assigned to some sections?
B8. Do you believe you are able to cut your own way to success even at another company?
B9. Do you obey the orders of your superiors even if you disagree? (-)

For three questions S6, S8 and B9 indicated by (-), "No" means a high propensity to change, and for the other seven questions, "Yes" means a high propensity to change. These yes-no answers were quantified by dummy variables: S_6, S_8 and B_9 respectively designated the two categories, 0 for "Yes" and 1 for "No"; and the other variables coded as 1 for "Yes" and 0 for "No". These dummy variables can be used to take the system temperature (SINDEX), the body temperature (BINDEX) as follows: $SINDEX=S_1+S_6+S_7+S_8+S_9$, $BINDEX=B_1+B_6+B_7+B_8+B_9$.

Results

The graph of the lukewarm feeling ratio versus the effective temperature in Figure 4 suggests a straight line relationship. It is fairly clear that the two points (T=4 and T=5) would deflate the slope of the line. These two points should be regarded as outliers. We had only one respondent at T=5 and eight respondents at T=4, so that we were reluctantly compelled to measure the lukewarm feeling ratio only on the rough scale, e.g., the lukewarm feeling ratio should be 0% or 100% at T=5. By dropping these two points from the data, a linear model is fitted to the data. To test Hypothesis 2, we regressed lukewarm feeling ratio on the effective temperature. The estimated coefficient are given in Table 2, and every coefficient is significant at level 0.001. The high value 0.981 of adjusted R^2 indicates a strong linear relationship between the lukewarm feeling ratio and the effective temperature. For each degree increase in the effective temperature, the lukewarm feeling ratio is expected to decrease by 6.58%, and the lukewarm feeling ratio is almost 50% at 0 degrees. Thus the thermometer of the effective temperature can be used to forecast the lukewarm feeling ratio.

5. DISCUSSION

Thus far, we explain the lukewarm feeling by the effective temperature defined as the difference between the system temperature and the body temperature. If our effective temperature hypothesis is valid, a lukewarm feeling may mislead the member's judgment on the state of his or her organization. For example, the point at SINDEX=5 and BINDEX=5 has the same effective temperature 0 as the point at SINDEX=0 and BINDEX=0. But these two points represent two extremes of the organizational state: The former represents the activated state of the organization (Takahashi, 1992) where both of members and the system have the highest propensity to change. But, the latter represents the typical non-activated state where they make scarcely any changes. (Thus, it is notable that the lukewarm state is neither the typical non-activated state nor the typical activated state of the organization!)

Table 2. Regression Analysis of Lukewarm Feeling Ratios.

Variable	Coefficient	Standard error	t	
Effective temperature	-6.58	0.32	-20.45	p<0.001
Constant	49.76	0.89	55.88	p<0.001
Adjusted R^2 = 0.981		F=418.376		p<0.001

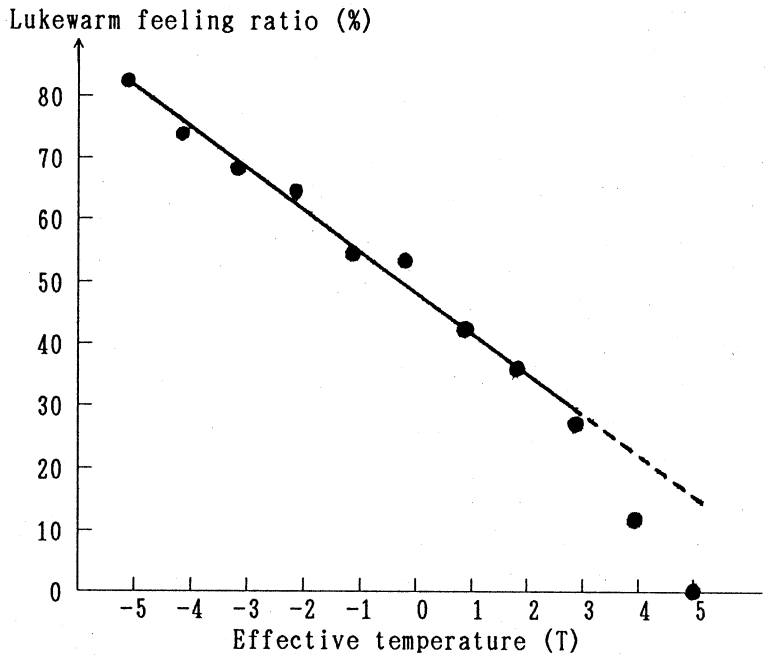

Figure 4. Graph of the Lukewarm Feeling Ratio Versus the Effective Temperature.

A similar phenomenon is called the boiled frog phenomenon in the management theory (Tichy & Devanna, 1986), which comes from a classic physiological response experiment. If we place the frog in a pan of boiled water, it will promptly jump out. But, if the frog is placed in a pan of cold water and the heat is turned up very gradually, the frog will sit in the pan until it boils to death. Tichy & Devanna (1986) explain that, like the frog, the organization and its members do not respond to trigger events in time to avoid catastrophic consequences, since the cultural cocoons created by the organization surround them with a false sense of security. Our effective temperature hypothesis offers a clear and scientific explanation of an organizational version of the boiled frog phenomenon in comparison with their "cultural cocoons" theory.

ACKNOWLEDGMENTS

The empirical research was financially supported by the Academy of Management Development at the Japan Productivity Center.

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