



**PROFILES OF STRESS: AN EMPIRICAL
COMPARISON OF EMPLOYEE
STRESS FACTOR DIFFERENCES IN
GERMANY AND THE US**

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PROFILES OF STRESS: AN EMPIRICAL COMPARISON OF EMPLOYEE STRESS FACTOR DIFFERENCES IN GERMANY AND THE US

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ABSTRACT

According to The HR Magazine (May, 2006 p. 14), "Today, American workers are saying that they are accomplishing less than they did a decade ago and are feeling more rushed on the job". This is the point of departure for our study. Using a questionnaire based upon the work of Geert Hofstede, we surveyed employees of a MNC headquartered in Germany with branches in the US. We create three stress groupings: High, Middle and Low based upon selected variables measured on Likert-type scales, e.g., How often do you feel nervous or tense at work? We examine these stress groups on a variety of variables to develop profiles of these three groups. The dataset with 1,300 observations on more than 75 variables provides a rich rendering of the profiles both overall and by country. For example, we find for both the German and US respondents that more stress is associated with less satisfaction in particular respecting Fringe Benefits and Having Challenging Work. And the German employees, who were classified as exhibiting high levels of stress, are less satisfied with Fringe Benefits than their US counterparts.

1. INTRODUCTION

A Business Week study (2002) reveals that a large majority of the surveyed U.S. employees indicated that the level of stress at work is “worse than ever”. Over half of these employees reported that stress affects their health and over 60 percent that they believe that their employer does not understand the extend stress affect (or does not affect) them on the job. Further, 17 percent of these employees said that the primary cause of stress is the pace of the job, 9 percent felt that it is their boss and 30% reported it to be the concerns about job security.

Stress at work seems to be part of the day-to-day life of employees, but at the same time, an unavoidable problem for the management of corporations. Job-related stress influences the employees’ ability to work. Kram and Hall (1989) have demonstrated that job-related stress influences the health of the employees, which leads to increased health care costs in organizations (Manning, Jackson and Fusilier, 1996). An International Labour Organization Report (2000) by Gabriel and Liimatainen warns that the costs of work place stress are rising and depression is increasingly common among employees: in the European Union, 3-4 percent of the Gross National Product is spent on mental health problems. In the U.S.A., the national spending on depression treatment ranges from US\$30 to US\$44 billion. One in ten working age U.S. American adults is affected by clinical depression, which leads to a loss of 200 million working days each year. In Germany, almost 7 percent of premature retirements are due to depressive disorders. Mental health disorders account for an annual volume worth of approximately € 2.5 billion of production loss. Stress does not just affect the health of employees, but also their ability to perform. Jamal (1990) and Motowidlo et al. (1986) have shown that stress influences the individual performance of employees and Beehr and Newman (1978) along with Motowidlo et al. (1986) the organizational effectiveness. Therefore, it is crucial to examine possible causes of stress in order to avoid the ever-increasing stress levels of employees which might, at the worst case, influence their ability to work and the performance of the firm.

Our paper focuses on examining the stress level of employees in a single multinational corporation (MNC) located in Germany and the U.S. Three stress profiles, low, middle, and high stress groups, are presented and it is examined, if there are differences in the stress levels of employees in the two countries. We will also examine, which factors contribute to stress in order to identify some possible causes for the variability of stress levels for the two geographical locations.

To begin, it is crucial to be clear about what we meant by stress. According Schuler (1980: 188) people can be said to be under stress “when the demands of the environment exceed (or threaten to exceed) a person’s capabilities or resources to meet them or the needs of the person are not being supplied by the job environment.” Robbins (2003) suggests that there are three major sources of potential stress: environmental, organizational, and individual factors as presented by Table 1. These sources of stress correspond to the New institutional Economics, especially to the three layers presented by Williamson (1996). That is, stress, which is experienced at the organizational level, can be caused by the institutional framework (environmental factors) or by individual factors. Stress can, however, also result from corporate governance issues themselves (organizational level).

TABLE 1: SOURCES OF STRESS

Environmental Factors	Organizational Factors	Individual Factors
Economic uncertainty	Task demands	Family problems
Political uncertainty	Role demands	Economic problems
Technological uncertainty	Interpersonal demands	Personality
	Organizational structure	
	Organizational leadership	
	Organization’s life stage	

The environmental (institutional framework) factors indirectly contribute to the stress of employees. For example, as an economy is facing a downturn, employees automatically get worried about their job security. An unstable political environment increases the possibility in sudden and unexpected changes in regulations. The changing technological environment might lead very fast to obsolete skills and to the pressure of obtaining new ones.

The organizational (corporate governance) factors naturally influence the level of stress employees face at work. The stress can either be created by factors related to a person’s job, such as task variety and working conditions. Also the role an employee has in the organization might create stress, if it creates expectations which are hard to reconcile. Lack of social support from colleagues and poor interpersonal relationships also cause stress. Furthermore, the organizational structure also plays a significant role in stress creation; excessive rules and lack of participation in decisions making potentially augment the level of stress. Finally, managerial style is also a

source of stress. If senior management creates an atmosphere of anxiety, pressure and unrealistic pressures to perform employees tend to be stressed.

Individual factors also create stress. Family and personal problems, such as marital problems, are problems that are not forgotten when at work. Also financial problems of employees might create stress which is also present at work. In addition, some employees have a basic disposition to be more stressed, to emphasize the negative aspects of the world (Judge, Erez and Thorensen, 2000 and Spector et al., 2000), which might also lead to stress symptoms expressed on the job.

In the following we will examine, if the factors presented by Robbins (2003) also create stress for the employees of the study organization. We will, however, mainly concentrate on the organizational factors.

2. THE STUDY

We conducted a survey, following on the cross-cultural survey work of Geert Hofstede (2001). The Hofstede questionnaire consists of 77 questions, the majority of which have responses on Likert-type scales ranging from 1 to 5. The specific scales used are: *Satisfaction*, *Importance* and *Agreement*. We added three groups of questions to the Hofstede questionnaire. The respondents were asked to 1) rank 15 performance rewards according to their perception of which rewards would motivate them to improve their performance; 2) to indicate those rewards (if any) that they might find non-motivating in the sense that the reward would actually not motivate them to put forth additional effort and 3) to indicate their number of annual vacation days, monthly take-home salary and nationality. For the latter, we wanted to make sure that we were controlling for national culture. Thus, the questionnaire used in our study, available from the authors, contained 82 questions and one open-ended question.

Native speakers fluent in English translated Hofstede's original English-language questionnaire into German. Their translations, along with the original questionnaire, were given to a second native speaker as agreement verification. The number of differences found was less than one percent of the total words in the original English version. All of the queried differences were resolved to the satisfaction of the two German native speakers. The questionnaire responses were recorded SAS-JMP (Sall, Creighton and Lehman, 2005) using variable range-checks. The data was extensively examined for recording errors as well as for internal inconsistency problems. We

found that less than 0.1 percent of the data was incorrectly recorded; those recording errors were corrected.

The sample of the study consists of German and U.S. employees of a German MNC. The German sample consists of 1,655 responses (response rate of 73 %) from employees at the headquarters of the organization as well as subsidiaries located in Germany. 23 percent of the German respondents were women, 40 percent were production workers, 32 percent worked in administrative positions, 26 percent were technical workers and the remaining two percent of the employees had managerial positions, however, the top management was excluded. In Germany, 62 percent of the employees were between 31 and 40 years of age, 19 percent were older than 40 and 18 percent were 30 or younger. The U.S. sample consists of 279 employees (response rate of 87 %), from which 35 percent were female, 37 percent worked in technical positions, 30 percent were production workers, 20 percent administrative employees, and 13 % had managerial positions (excluding the top management). From the employees in the U.S.A., 66 percent of the employees were between 31 and 40 years of age, 19 percent were 30 years or younger and 15 percent were older than 40 years

3. STATISTICAL ANALYSES CONDUCTED

In order to examine the level of stress at the organization as well as to determine which aspects of work contribute to the stress of employees, various statistical analyses were performed. The most crucial aspect of our analysis is the development of three stress groups: low, middle and high stress groups.

Stress Groups

To determine the stress groupings, three separate questions of the Hofstede-questionnaire were used. The first question asked “How often do you feel nervous or tense at work?”, the respondents could choose their answer from five possible options: 1. I always feel this way, 2. Usually, 3. Sometimes, 4. Seldom, or 5. I never feel this way.

The second question was: “If employees took complaints to higher management, do you think they would suffer later on for doing it (such as getting a smaller salary increase, or getting the less desirable jobs in the department, etc.)?” For this question, the respondents were given four answer options: 1. Yes, they definitely would suffer later on for taking complaints to higher man-

agement, 2. Yes, probably, 3. No, probably not, 4. No, they would definitely not suffer later on for taking complaints to higher management.

The third question which was used for the creation of the stress groups asked to rate the overall satisfaction in the company at the present time. The employees were given seven possible answers: 1. I am completely satisfied, 2. Very satisfied, 3. Satisfied, 4. Neither satisfied nor dissatisfied, 5. Dissatisfied, 6. Very dissatisfied, and 7. I am completely dissatisfied.

Employees are said to be in the high stress level group when they reported to be always or usually nervous or tense at work and simultaneously either said that employees would suffer from complaining (options 1 or 2) or that their overall satisfaction level was very dissatisfied, or completely dissatisfied. A low stress level group is characterized by seldom or never feeling nervous or tense at work, not suffering for taking complaints to management and being completely being satisfied or very satisfied at work. In case an employee neither fits to the high nor to the low stress level group, that employee is said to be in the middle stress level group.

In order to inspect which factors then influence the stress level of employees, we examined some of the questions presented by the questionnaire related to the satisfaction of work related goals. Consider these factors now.

Factor Creating Stress

To examine how satisfaction with work related goal influences the stress level of the employees, we examined the current level of satisfaction with respect to the following nine work related goals: the challenge of the work, the opportunity for high earnings, the level of cooperation with colleagues, the fringe benefits, getting recognition, job security, opportunities for promotion, working relationship with the immediate manager, and the extent to which the job leaves sufficient time for personal or family life. The scale used for these work-related goals was: 1= very satisfied, 2= satisfied, 3= neither satisfied nor dissatisfied, 4= dissatisfied, 5= very dissatisfied. For both country samples we examined, if employees who were in the high stress level group were significantly less satisfied with the work related goal than employees in the low stress level group. To provide a robust statistical analysis, both parametric and non-parametric methods were used. We used the most conservative, that is, the highest, p-value between the appropriate parametric and non-parametric tests in identifying statistically significant relationships. It was also

examined, if employees in one of the samples are significantly less or more satisfied with the work related goals than in the other one.

Since the *Business Week* study indicated that the boss and job security are among the primary causes of stress, we also paid special attention to these aspects. We analysed the discrepancies between the preferences of management style and the actual management style prevalent at the company. For this, the employees of the study organization were asked to select the most preferred type of manager from among the four styles presented in Table 2. After that, they were asked to identify to which of these management styles (if any) their manager currently corresponds to.

TABLE 2: MANAGEMENT STYLE PROFILES

Managerial Type	Descriptive Scenario
Managers of Type 1 Authoritarian	Usually make decisions promptly, communicate them to their subordinates clearly and firmly and expect them to carry out these decisions loyally and without raising difficulties.
Managers of Type 2 Mentor	Usually make decisions promptly; but before going ahead, try to explain them fully to their subordinates, giving them the reasons for the decisions and answering whatever questions they may have.
Managers of Type 3 Consultative	Usually consult with their subordinates before reaching decisions. These managers are good listeners and consider the advice provided by their supervisees before announcing a decision. After the decision is made, they expect that it will be carried out, whether or not it is in accordance with the advice received from their supervisees.
Managers of Type 4 Collaborative	Usually call a meeting of their subordinates when there is an important decision to be made, putting the problem before the group and trying to obtain consensus. If consensus is obtained, the manager accepts this as the decision. If consensus is impossible, the manager usually makes the decision.

The analysis was performed for both study countries individually. To identify differences between countries with respect to preferences for managerial styles, we used the per cell Chi² con-

tribution in the respective 2×4 classification table. Conservatively, we will assume that Chi² cell contributions in the inclusive range 2.5 to 3.0 are suggestive of differences (noted in italic on the tables). Chi² cell contributions greater than 3.0 will indicate significant differences (noted in boldface on the tables) relative to expectations (Tamhane and Dunlop, 2000). This is a conservative partitioning, in that these contribution averages relative to the Chi² degrees of freedom would scale to something around a 4 × 4 tabular comparison with significance less than $p < 0.01$.

In addition to the management style question, we focused on the job security of the employees (the expected time remaining at the company) as well as the outside options of the employees. Here we asked the employees, how long they think they will continue working for the company (1. Two years at the most, 2. From two to five years, 3. More than five years (but I probably will leave before I retire), 4. Until I retire) and how do they judge their possibilities of finding a comparable position at about the same income (1. Yes, definitely, 2. Yes, probably, 3. No, probably not, 4. No, definitely not.) For these questions, the per cell Chi² contributions were computed.

4. RESULTS

To start our discussion about the factors, which might create stress at our study organization at its locations in Germany and the U.S.A., we first examine the stress groupings in both countries. As Table 3 suggests, both the German and the U.S. employees of the study organization are faced with high levels of stress. In the U.S.A., over 57 percent of the employees belong to the high stress level group, whereas in Germany over 49 percent are in the high stress level group.

TABLE 3: STRESS GROUPINGS IN GERMANY AND THE U.S.A.

Country		Level of Stress		
		High	Low	Middle
Germany	Count	538	317	235
	Row %	49.36	29.08	21.56
	Expected	550.557	303.49	235.953
	Cell Chi ²	0.2864	0.6014	0.0038
U.S.A.	Count	106	38	41
	Row %	57.30	20.54	22.16
	Expected	93.4431	51.5098	40.0471
	Cell Chi ²	1.6874	3.5433	0.0227

From this we can conclude that stress at work is a major issue in both locations. The U.S. employees seem to be more stressed than their German colleagues, at least in the sense that in the

U.S. over half of the employees are in the high stress level group and a smaller percentage of the employees are in the low stress level groups than in Germany - i.e. the non-directional test of proportional difference is statistically significant at $p < 0.01$. It is now interesting to inspect, what creates stress in organizations. For this purpose, we have selected nine aspects of work goal satisfaction to inspect: satisfaction with the challenge the work provides, with the opportunities for high earnings, with the level of cooperation with colleagues, with fringe benefits, with recognition, with job security, the opportunities for promotion, with the working relationship with manager, and with the amount of leisure time. For all of these aspects, it could be found that employees who are more satisfied with these aspects of work in both countries are less stressed and vice versa. That is, these factors seem to be factors, which are associated with the stress level of employees. Since there are differences in the stress level of the employees in the two geographical locations, it might be worth of examining, if their levels of satisfaction with these nine variables differ. Differences do exist as presented in Table 4, however, interestingly and unexpectedly we find that the U.S. employees are actually more satisfied with the fulfilment of their work related goals than the German employees are, even given that they have exhibited a higher level of stress.

TABLE 4: SATISFACTION WITH THE FULFILLMENT OF WORK RELATED GOALS

Work related goal	Germany	USA	p-value
Challenge	2.38	2.34	0.4486
Earnings	2.80	3.11	<.0001
Cooperation	2.37	2.73	<.0001
Fringe benefits	2.88	2.55	<.0001
Recognition	3.06	2.70	<.0001
Job security	3.06	2.65	<.0001
Promotion	3.18	2.94	0.0052
Relationships with manager	2.36	2.07	0.0020
Personal time	2.37	2.10	0.0013

Scale: 1= very satisfied, 3= neither satisfied nor dissatisfied, 5= very dissatisfied.

We find significant differences in the satisfaction with these work related goals between the two country samples for eight out of the nine variables. For most of the variables, the U.S. employees exhibit higher level of satisfaction, except for two variables, which are: the level of satisfaction with the opportunities for high earnings and with the satisfaction with cooperation with colleagues. This could be an indication that these two variables are factors which create stress for the U.S. employees.

In order to deepen our analysis, we will now inspect two of the nine aspects presented above in more detail, that is, job security and the working relationship with managers. We will analyze several additional questions.

For both samples, job security was identified to be a factor, which is related to the stress level of employees. That is, high satisfaction with job security corresponds to lower stress levels and vice versa. The questionnaire offers two additional questions, which might help to probe this question. One of the questions asked how long one plans to stay with the employer. In general, using the Chi² analysis, we find that over half of the German employees plan to stay with the organization until their retirement, where as only 36.41 % of the U.S. employees (less than expected) are thinking of staying so long with the organization. More than expected (over 15 %) of the U.S. employees are actually planning to stay no longer than two years at the organization. The U.S. employees in the high stress level group chose significantly more often the option of remaining at most the next two years than the other stress groups did. That is, high stress level does seem to influence the planned tenure of the employees in the U.S.

TABLE 5: PLANNED TENURE AT THE ORGANIZATION

Country		Estimated Time Remaining at the Organization			
		≥2 years	2-5 years	5>retirement	Until retirement
Germany	Count	69	162	253	565
	Row %	6.58	15.44	24.12	53.86
	Expected	84.2263	171.005	256.082	537.687
	Cell Chi ²	2.7526	0.4742	0.0371	1.3874
USA	Count	30	39	48	67
	Row %	16.30	21.20	26.09	36.41
	Expected	14.7737	29.9951	44.9181	94.3131
	Cell Chi ²	15.6927	2.7034	0.2115	7.9099

The high probability for the employees in the U.S. to change their employees is most likely determined by their outside options. Almost 50 % of the U.S. employees (more than expected) believe that they can definitely find a comparable position with similar income, whereas only 16 % of the German employees think they are able to find such a position (less than expected). Almost 40 % of the German employees actually believe that they will probably not be able to find a similar position with comparable salary which they have now.

TABLE 6: OUTSIDE OPTIONS

Country		Likelihood of Finding a Comparable Position with Same Income			
		Definitely	Probably	Probably not	Definitely not
Germany	Count	174	385	427	105
	Row %	15.95	35.29	39.14	9.62
	Expected	223.489	394.091	382.149	91.2721
	Cell Chi ²	10.9586	0.2097	5.2641	2.0648
USA	Count	88	77	21	2
	Row %	46.81	40.96	11.17	1.06
	Expected	38.5113	67.9093	65.8514	15.7279
	Cell Chi ²	63.5950	1.2169	30.5483	11.9822

This probably also corresponds to the fact that the U.S. employees of the study organization were more dissatisfied with their current opportunities for high salary. It might be that the organization is paying salaries below the industry level at the moment, which creates financial stress for the employees, which then might actually lead to leaving the company and searching for a new employer.

The second group of questions presented by the questionnaire, which might help to enrich our understanding of factors that create stress, focuses on management style. First the employees were asked to identify their preferred management style and then to denote under which management style they work now. Both the German and the U.S. employees most prefer the consultative management type as indicated by Table 7. However, the U.S. employees seem to prefer the mentor type of management more than their German counter parts do.

TABLE 7: PREFERRED MANAGEMENT STYLE

Country		Preferred Management Style			
		Authoritarian	Mentor	Consultative	Collaborative
Germany	Count	41	145	535	363
	Row %	3.78	13.38	49.35	33.49
	Expected	40.0535	158.509	526.66	358.777
	Cell Chi ²	0.0224	1.1514	0.1321	0.0497
USA	Count	6	41	83	58
	Row %	3.19	21.81	44.15	30.85
	Expected	6.94654	27.4906	91.3396	62.2233
	Cell Chi ²	0.1290	6.6388	0.7614	0.2866

Nevertheless, at the moment a large number of the U.S. employees (almost 30 %) are working under an authoritarian management, which actually is the least preferred management style in both countries (see Table 8). Actually, in comparison to the German sample, in the U.S. significantly more employees reported to work under an authoritarian manager and suggestively less under consultative manager.

TABLE 8: PERCEIVED MANAGEMENT STYLE

Country		Perceived Management Style				
		Authoritarian	Mentor	Consultative	Collaborative	Other
Germany	Count	229	296	332	132	80
	Row %	21.42	27.69	31.06	12.35	7.48
	Expected	241.717	297.89	320.019	125.965	83.4092
	Cell Chi ²	0.6690	0.0120	0.4485	0.2891	0.1393
USA	Count	55	54	44	16	18
	Row %	29.41	28.88	23.53	8.56	9.63
	Expected	42.2834	52.1099	55.9809	22.035	14.5908
	Cell Chi ²	3.8245	0.0686	2.5641	1.6529	0.7966

The discrepancies between the preferred and perceived management style might also be factors, which influence the stress level of employees. Recall, it was said that the working relationship with managers is a factor, which contributes to the stress level of employees. Therefore, it can be assumed that, if there is no match between the preferred and perceived management style at the organization, the stress level of the employees is higher than at organizations where there is a match between the expectation and reality. Therefore, since the authoritarian management type was the least preferred type in both countries and at the same time over 29 % of the U.S. employees were currently working under an authoritarian manager, we examined, if employees working under authoritarian managers are more likely to exhibit higher levels of stress.

TABLE 8: PERCEIVED MANAGEMENT STYLE AND LEVEL OF STRESS

Management Style		Stress Group		
		High	Low	Middle
Authoritarian	Count	194	37	49
	Row %	69.29	13.21	17.50
	Expected	142.935	77.2258	59.8387
	Cell Chi ²	18.2431	20.9530	1.9632
Mentor	Count	170	100	78
	Row %	48.85	28.74	22.41
	Expected	177.648	95.9806	74.371
	Cell Chi ²	0.3293	0.1683	0.1771
Consultative	Count	142	144	82
	Row %	38.59	39.13	22.28
	Expected	187.858	101.497	78.6452
	Cell Chi ²	11.1944	17.7988	0.1431
Collaborative	Count	63	44	39
	Row %	43.15	30.14	26.71
	Expected	74.5306	40.2677	31.2016
	Cell Chi ²	1.7839	0.3459	1.9491
Other	Count	64	17	17
	Row %	65.31	17.35	17.35
	Expected	50.0274	27.029	20.9435
	Cell Chi ²	3.9025	3.7212	0.7425

As Table 9 demonstrates, it is in fact so that employees who work under an authoritarian manager demonstrate significantly higher stress levels than others: over 69 % of employees working under authoritarian managers demonstrate high levels of stress. Adversely, employees working under consultative managers exhibit significantly lower stress levels than expected. These results allow the conclusion that the working relationship with managers seems to be a major factor contributing to stress. This result might partly explain the fact that the U.S. employees are more stressed than the German.

5. CONCLUSION AND OUTLOOK

In this paper, we have examined factors, which create stress at work place using by examining employees of a MNC located in Germany and the U.S.A. and investigated, if these factors create stress for employees in both locations. As a summary of our results, it can be said that the organizational factors creating stress presented by Robbins (2003) seem to apply in both of our samples. That is, stress is created by similar factors in both study countries. Stress does also seem to be an important challenge the management faces in both countries – the employees exhibit high levels

of stress regardless of their location. Our paper has not focused on examining the effects of stress on employees and the organization, which would now be the next logical step with respect to our study.

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