Long Working Hours and Stress
—In Relation to the Measure against Long Working Hours and Overtime

Takashi Fujimoto
Lecturer, Hosei University
Assistant Fellow, the Japan Institute for Labour Policy and Training

Introduction

While stress at work is unavoidable to a certain extent, various research findings indicate that mental and physical health is degrading among workers due to an increased burden under the recent difficult economic conditions.

For example, the bar chart in Figure 1 shows the "percentage of workers feeling different degrees of tiredness during their regular work" in the last ten years, according to the "Survey on Workers' Health Status"[1] carried out every five years by the Ministry of Health, Labour and Welfare. Every year only about 10 percent of workers, including men and women, answered that they were "very tired," but the percentage is gradually increasing. When including those who are "slightly tired," the percentage has remained above 70 percent since 1997.

Figure 1 Physical fatigue and mental stress of workers

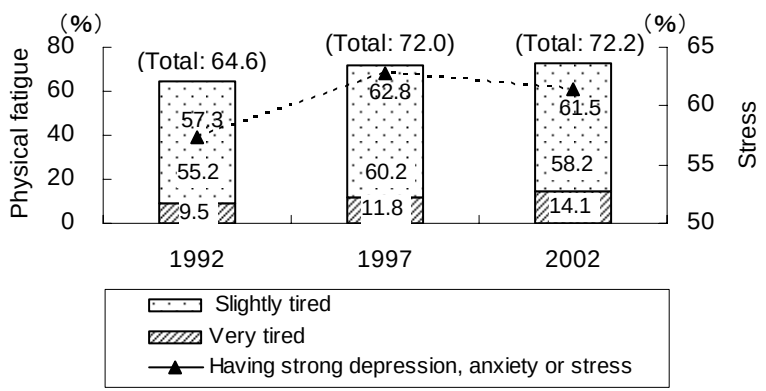

Chart created from the "Survey on Workers' Health Status" conducted by the Ministry of Health, Labour and Welfare, in 1992, 1997 and 2002.

[1] The survey was conducted on some 16,000 workers in 12,000 offices of private companies with 10 or more regular employees around the country.

The line chart in Figure 1 indicates the percentage of workers who "have a high level of depression, anxiety or stress in their life or at work." Similar to the outcome of physical fatigue, the percentage of those who answered "having a high level of depression, anxiety or stress" increased, and it has remained above 60 percent since 1997.

The mass media often talk about emotional disorders, and as a result the general public has become more aware of stress and depression in particular. According to the survey conducted by Rengo in 2005, 70.5 percent of workers answered "their fatigue increased" to the question asking them about the degree of fatigue felt at work in the previous three years, five points higher than in the previous survey (2000).[2] In another survey conducted by the Mental Health Research Institute of the Japan Productivity Center for Socio-Economic Development in the same period,[3] 68.7 percent answered that mental disease has been "on the increase" in the previous three years.

Under these circumstances, the Ministry of Health, Labour and Welfare announced "*Jigyoba ni okeru rodosha no kokoro no kenkozukuri no tame no shishin*" (Guideline of Workers for Good Mental Health at Workplace).[4] This guideline emphasizes the following four care activities to be practiced continuously along with good planning as concrete measures for maintaining the mental health of workers: "self-care" (recognizing and taking care of their stress by themselves), "care by the line[5]" (improvement of the working environment and counseling provided by managers and supervisors), "care by in-house industrial health staff" (professional care by industrial physicians, etc.), and "care by outsourced staff" (care provided by professional institutions outside the workplace). To promote these activities, the guideline also suggests "providing managers, supervisors and workers with education and training," "making improvements in the work environment," and "establishing a system

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2 The number of valid responses obtained for "*Rengo dai 5 kai anzen eisei ni kansuru chousa* (the 5th Rengo Survey on Health and Safety), conducted for the organizations under Rengo, was 2,374.

3 The survey was titled, "*Roudoukumiai no mentaru herusu he no torikumi ni kansuru chousa* (Survey on Measures Taken against Mental Health by Labor Unions), and it was conducted on labor unions throughout the country. The number of valid responses was 543.

4 Announced on August 9, 2000 (http://www2.mhlw.go.jp/kisya/kijun/20000809_02_k/20000809_02_k.html).

5 Managers and supervisors who have contact with workers on a daily basis

to facilitate workers to request counseling."

In 2002, "*Kajoroudou ni yoru kenkoshougai boushi no tame no sougoutaisaku*" (Comprehensive Measures to Prevent Health Disorders Caused by Excessive Work)[6] were established. In 2001, the labor insurance certification criteria were revised for brain and cardiac diseases, and excessive work lasting for an extended period of time was considered as an excessive burden caused by work. For the "measures to be provided by employers to prevent health disorders caused by excessive work," these comprehensive measures suggest (1) reducing overtime work (to limit the overtime work to no more than 45 hours a month), (2) encouraging employees to take annual paid holidays, and (3) fully practicing health control (having health checkups and providing medical counseling by industrial physicians based on the amount of overtime performed).

Meanwhile, the suicide of workers due to overwork and other problems has become a social issue, and the number of health disorders certified by labor insurance has increased. Consequently, the "*Kajuroudou mentaru herusu taisaku no arikata ni kakawaru kentoukai*" (Study Group on Measures against Excessive Work and Mental Health) created, in 2004, a report[7] on health measures for workers. Based on the guideline and comprehensive measures mentioned above, the report consolidated and enhanced those measures while taking into consideration actual conditions. In the report, working hours were again considered as one of the major criteria for excessive work. The "*Shokuba ni okeru mentaru herusu taisaku no arikata kentou iinkai"* (Committee for the Examination of Mental Health Measure Practice at the Workplace) was established in the Japan Industrial Safety and Health Association in 2005, and the "*Roudousha no kokoro no kenko no hojizoushin no tame no shishin*" (Guideline for Promotion of Mental Health for Workers)[8] was established in 2006 to "further promote appropriate and effective practice of mental health

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6 Published on February 12, 2002 (http://www.mhlw.go.jp/topics/2004/06/dl/tp0630-1d.pdf).

7 Published on August 18, 2004, "*Kajuroudou mentaru herusu taisaku no arikatani kakawaru kentoukai*" (Study Group on Measures for Excessive Work and Mental Health). (http://www.mhlw.go.jp/shingi/2004/08/dl/s0823-3a.pdf).

8 Published on March 31, 2006 (http://www.mhlw.go.jp/houdou/2006/03/h0331-1.html).

measures at the workplace."

While the relevance of overtime work to health conditions was discussed by Ogura (2006), the Ministry of Health, Labour and Welfare claimed, based on the "current medical knowledge," that the pathogenesis of brain and cardiac diseases had higher relevance to work when overtime exceeded 45 hours every month for a period of one to six months prior to the pathogenesis. Furthermore, it was pointed out that it had strong relevance when working 100 hours of overtime in the month prior to the pathogenesis or when overtime exceeded 80 hours every month for the period of two to six months prior to the pathogenesis.

For the relevance of overtime work to health conditions, the Japan Institute for Labour Policy and Training conducted a survey[9] (hereinafter called the "JILPT 2004 Survey") in 2004, and its outcome was discussed by Ogura (2006). Rengo also conducted a survey[10] in 2004, which reported that the longer the overtime hours, the greater the mental stress at work.

According to the survey conducted by the Tokyo Roudoukyoku (Tokyo Labour Department) every year since 2002,[11] there has been an increase in the percentage of companies answering yes to the practice of over 100 hours of "overtime" a month or over 80 hours on average for the period of two to six months: from 24.9 percent (376 companies) in 2002, to 31.9 percent (353 companies) in 2003, and to 35.7 percent (382 companies) in 2004.

To the question about the extent to which companies in fact took measures to address health issues of their workers, the abovementioned "Survey on Workers' Health Status" (2002), indicated that mental health care was provided by over 90 percent of companies with 1,000 employees or more and over 60 percent of companies with 300 employees or more. However, these measures were provided by less than 50 percent of companies with less than 300

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9 The "Survey on the Practice and Awareness of Working Hours" conducted on 3,000 people selected from the survey collaborators registered with private survey companies throughout Japan in 2004. The number of valid responses was 2,557.

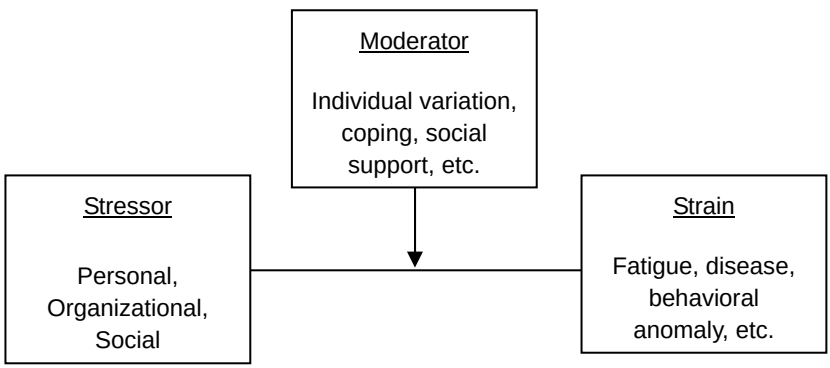
10 *The Rengo Seikatsu Anketo Chousa* (Rengo's Survey on Living)" conducted on 21,000 Rengo Union members. The number of valid responses was 20,928.

11 The "*Jugyouin no kenko kanritou ni kansuru anketo chosa*" (Survey on Health Control, Etc. for Employees) conducted on companies with over 300 employees located in Tokyo. The number of valid responses was 1,071.

employees and 23.5 percent in total. Specific measures included (in descending order from the response with the highest percentage, multiple answers allowed): “counseling services” (55.2 percent); “inquiry by medical doctors during periodic health checks” (43.6 percent); and “improvements in the workplace” (42.3 percent).

The chart below (Figure 2) shows an organizational stress model.

Figure 2 Organizational stress model (Tao, 1991)



Both stressors and strain are specific to individuals and vary from person to person.[12] Although people perceive stress differently depending on their personality and working styles,[13] stress does not have to be totally isolated as a personal problem. As the Ministry of Health, Labour and Welfare indicated in its guidelines, it is important to examine the possibility of finding a

[12] According to the “Survey on Workers’ Health Status” conducted in 2002, a major source of a high level of depression, anxiety and stress was derived from “personal relationships at work” (35.1 percent), “work volume” (32.3 percent), “work quality” (30.4 percent), “future potential of the company one is working for” (29.1 percent), etc. (multiple answers allowed).

[13] Type A personality people and those with an obsessive character are susceptible to stress (Munakata, 1991; Yoshitake, 1990). Type A personality people are scrupulous and have a strong sense of rivalry, always feeling pressured for time. They accumulate stress easily and have a higher probability of developing cardiovascular diseases. Rather than a sense of rivalry, the Japanese are characterized to have a strong sense of responsibility and to be more scrupulous in their behavior, and they are also categorized as an obsessive type of people.

moderator for alleviating any problems in the work environment.

In this paper, the JILPT 2004 Survey is used to examine whether or not the measures provided by companies for long working hours and overtime are actually working effectively as a moderator of personal stress (depressive tendency). It is possible that the respondents may not know precisely if the company is providing the measures or not in reality, but we consider recognition by the respondents of the practice of these measures to be important.

1. Measures for Long Working Hours, Overtime and Overtime Working Hours

In the JILPT 2004 Survey, respondents were surveyed about four items related to whether or not their companies were taking measures in response to long working hours and health control (hereinafter called "measures against long working hours and overtime").[14] Table 1 shows the percentage of the respondents who answered yes (N=2,557). The highest percentage, at 30.0 percent, said there was the measure of "grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors" and the lowest percentage, at 21.0 percent, said there was the measure of "counseling of people working long hours." The answers ranged between 20 and 30 percent.

Let us look at the relationship between the extent of overtime hours and measures for long working hours and overtime. Table 2 shows companies that provided measures for long working hours and overtime and companies that did not, to compare and see any differences in actual overtime hours between the two, using the average figures when 0 hours of overtime is included and not included.

Table 2 shows that no statistically significant difference was found with respect to the measure of "counseling of people working long hours" when 0 hours was included, and the level of statistical significance was only 10 percent when 0 hours was not included, indicating that there was no difference

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[14] In the survey, the actual question reads, "On the issues of long working hours and health control, are the measures listed here, from A to D, carried out in the company that you are working for?" The respondents were asked to select one of three choices "Yes," "No," and "Don't know" to answer each item.

Table 1 Respondents who answered that their companies are taking measures for long working hours and overtime (%) [15]

No-overtime day	Work-end call at the end of business hours	Grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors	Counseling of people working long hours
27.5	24.2	30.0	21.0

in overtime regardless of whether this measure was applied or not. For the other three measures, however, the average value of overtime was shorter when the measures were implemented, regardless of whether or not the overtime of 0 hours was included, showing a statistical significance of less than 5 percent. The measure of "work-end call at the end of business hour" showed the lowest average value when the measure was implemented. The comparison of the difference between when 0 hours was included and not included shows that the difference was larger when 0 hours was not included, except with regard to the "work-end call at the end of business hour."

The measure of "counseling of people working long hours" is not designed to actively shorten working hours (or to prevent working hours from becoming longer); therefore, it is not surprising that there was no difference in overtime depending on whether the measure was implemented or not. On the other hand, the other three measures have a direct influence on working hours, and thus there was a difference depending on whether the measure was implemented or not, implying that these measures had some effect in preventing long working hours.

[15] In the survey, the measure of "counseling of people working long hours" indicates "counseling on long working hours and stress provided outside periodic health checks".

Table 2 Comparison of overtime with/without measures against long working hours and overtime

		With overtime 0					Without overtime 0				
		Average	(Difference)	Standard deviation	(N)	Dispersion	Average	(Difference)	Standard deviation	(N)	Dispersion
No-overtime day	Yes	29.1	(5.1)	33.559	(675)	F value: 8.278	35.2	(7.0)	33.883	(557)	F value: 12.262
	No	34.2		40.571	(1571)	p < 0.01	42.2		41.160	(1273)	p < 0.01
Work-end call at the end of business hour	Yes	26.8	(6.9)	35.022	(583)	F value: 14.132	34.5	(6.7)	36.235	(453)	F value: 10.336
	No	33.7		39.073	(1686)	p < 0.01	41.3		39.455	(1379)	p < 0.01
Grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors	Yes	30.1	(3.5)	34.147	(731)	F value: 4.096	36.4	(5.2)	34.365	(604)	F value: 7.126
	No	33.6		39.771	(1322)	p < 0.05	41.6		40.314	(1068)	p < 0.01
Counseling of people working long hours	Yes	31.2	(1.3)	33.041	(517)	F value: 0.441	37.0	(4.0)	32.864	(437)	F value: 3.458
	No	32.5		40.161	(1639)	n.s.	41.0		41.054	(1301)	p < 0.10

2. Measures for Long Working Hours, Overtime and Stress

While 20 to 30 percent of the respondents answered that the measures were taken for long working hours and overtime as described above, a comparison between those who answered "Yes" and those who answered "No" shows that those who answered "Yes" had shorter overtime hours, except with respect to the measure of "counseling of people working long hours."

Now, let us examine whether measures for long working hours and overtime affect personal stress or not. The depression tendency score is used[16] as the stress variable.

Table 3 examines whether there were differences in the degree of personal stress (depression tendency) depending on whether the measures were implemented or not, based on the cross table[17] and comparison of average values.

Of the four measures, the measure of "no-overtime day" indicated that "very little depression" was more frequent among people who answered "Yes" than those who said "No," and that "medium depression" was a little less frequent, even though the result was not statistically significant. There was also no statistically significant difference identified for comparison of the average values of depression tendency score. For the other measures, the percentage of "very little depression" tended to be higher and the percentage of "medium depression" lower when the measures were implemented than when they were not. For the average values of depression tendency score, as well, the score were lower when the measures were implemented than when they were not, showing statistically significant differences.

Since the measure of "no-overtime day" is applied only once a week or so, it may not contribute to alleviating stress. On the other hand, the measure of "work-end call at the end of business hours" is applied on a daily basis, possibly providing opportunities for communication. The "grasping of the actual hours worked and giving warning or advice to people working long hours

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16 The depression tendency score was obtained by adding the score of the 20 psychological test items on depression, suggested by Zung, with a higher number indicating higher depression. The score ranged from 20 to 80: average = 41.71, standard deviation = 8.464, and Cronbach α = 0.825.

17 The depression score is defined as "very little depression" when the total is less than 40, "slight depression" when it is between 40 and 49, and "medium depression" for 50 and above.

Table 3 Measures for Long Working Hours, Overtime and Depression Tendency (%)

				Little depression	Slight depression	Medium depression	Average	Standard deviation	（N）	Dispersion
Total		100	(2533)	42.7	39.9	17.4	41.71	8.464	(2517)	-
No-overtime day	Yes	100	(704)	44.5	38.8	16.8	41.37	8.288	(696)	F value = 2.028
	No	100	(1661)	41.6	40.2	18.2	41.96	8.532	(1636)	
	Don't know	100	(168)	46.4	41.7	11.9	40.90	8.366	(164)	n.s.
	Chi square = 5.590, df = 4, n.s.									
Work-end call at the end of business hour	Yes	100	(618)	45.8	40.3	13.9	40.64	8.394	(610)	F value = 7.032
	No	100	(1769)	41.3	40.0	18.7	42.13	8.451	(1745)	
	Don't know	100	(135)	45.2	38.5	16.3	41.63	8.478	(132)	p < 0.01
	Chi square = 8.669, df = 4, p < 0.10									
Grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors	Yes	100	(766)	48.8	38.9	12.3	40.35	7.934	(757)	F value = 17.776
	No	100	(1397)	39.0	40.3	20.7	42.58	8.732	(1379)	
	Don't know	100	(365)	43.6	41.4	15.1	41.30	8.011	(357)	p < 0.01
	Chi square = 33.166, df = 4, p < 0.01									
Counseling of people working long hours	Yes	100	(536)	49.4	37.7	12.9	40.08	8.068	(532)	F value = 13.233
	No	100	(1737)	40.8	40.4	18.8	42.23	8.556	(1711)	
	Don't know	100	(258)	40.7	41.9	17.4	41.83	8.149	(252)	p < 0.01
	Chi square = 16.599, df = 4, p < 0.01									

or to their superiors" generates pressure to manage working hours and to prevent long working hours, which leads to improvements in work practices and the working environment, presumably alleviating stress.[18] The measure of "counseling of people working long hours" probably reduces stress due to the fact that there is someone who can be relied on for counseling.

The cross table above indicates the relation between each measure and the tendency of depression. Here, using the depression tendency score as a dependent variable, multiple regression analysis (OLS) was used to analyze the influence of each measure for long working hours and overtime on the tendency of depression. Control variables included attributes of respondents, attributes of the companies they belonged to, and their overtime hours.[19] Attributes of respondents included sex, age, educational background, job type, job title and annual income of the last year. Attributes of the companies that respondents belonged to included: business category, the number of employees, labor union availability, and recent business performance.

First, a correlation was identified between the depression tendency score, overtime hours and the four measures for long working hours and overtime (Table 4).

In relation to the depression tendency score, the measures had a low negative correlation, except for the measure of "no-overtime day." In other words, the depression score was lower when the measures were implemented, which matched the trend of the cross table and the average value shown in Table 3. There was a low positive correlation to the overtime hours, indicating that longer overtime hours led to higher depression score.

With respect to the relationship between overtime hours and measures for long working hours and overtime, there was a low negative correlation between the two, with the exception of the measure of "counseling of people working long hours," indicating results similar to those of Table 3. The correlation among the measures was relatively strong, with the highest correlation coefficient at 0.453.

Since the correlation was relatively strong among the different variables

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[18] Of course, this can contrarily work as a source of stress. For details, see Chapter 3: Summary.

[19] For the overtime hours, variables were used that included 0 hours of overtime. See the attached table for descriptive statistics of each variable.

Table 4 Relationship between the depression tendency score, overtime hours and four measures for long working hours and overtime

	Depression tendency score		No-overtime day		Work-end call at the end of business hour		Grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors		Counseling of people working long hours	
	Pearson correlation coefficient	(N)	Pearson correlation coefficient	(N)	Pearson correlation coefficient	(N)	Pearson correlation coefficient	(N)	Pearson correlation coefficient	(N)
No-overtime day	-0.032 n.s.	(2332)								
Work-end call at the end of business hour	-0.077 ***	(2355)	0.354 ***	(2297)						
Grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors	-0.125 ***	(2136)	0.397 ***	(2085)	0.402 ***	(2112)				
Counseling of people working long hours	-0.108 ***	(2243)	0.422 ***	(2174)	0.252 ***	(2201)	0.453 ***	(2035)		
Overworking hours	0.166 ***	(2370)	-0.061 **	(2246)	-0.079 ***	(2269)	-0.045 *	(2053)	-0.014 n.s.	(2156)

Note: One asterisk (*) indicates statistical significance at the level of 5%, two asterisks (**) indicate the level of 1%, and three asterisks (***) indicate the level of 0.1%.

of the measures for long working hours and overtime, the outcome of the analysis would be biased if the variables of all the measures were input in one model. Therefore, each measure was analyzed in a separate model (Equations 1, 2, 3 and 4) (Table 5).

Table 5 Influence of measures for long working hours and overtime on the depression tendency (OLS)

Dependent variable = Depression tendency score	Equation 1 β	Equation 1 t - value	Equation 2 β	Equation 2 t - value	Equation 3 β	Equation 3 t - value	Equation 4 β	Equation 4 t - value
Sex (Base = Female)	-0.035	-1.143	-0.035	-1.139	-0.044	-1.460	-0.040	-1.305
Age	-0.124	-4.337 ***	-0.123	-4.288 ***	-0.133	-4.638 ***	-0.130	-4.538 ***
Educational background (Base = Graduating senior high school or below)								
Junior college/vocational school	0.033	1.179	0.028	1.004	0.027	0.968	0.033	1.175
University graduate	0.038	1.265	0.034	1.123	0.035	1.181	0.041	1.356
Business category (Base = Manufacturing)								
Construction	-0.038	-1.441	-0.036	-1.388	-0.038	-1.452	-0.041	-1.548
Electric, gas, water, energy supply	0.013	0.540	0.014	0.590	0.013	0.542	0.012	0.503
Transportation and communication	0.020	0.798	0.022	0.888	0.021	0.826	0.017	0.664
Wholesale, retail, catering	-0.014	-0.460	-0.012	-0.409	-0.013	-0.451	-0.018	-0.610
Finance, insurance, real-estate	-0.028	-1.059	-0.022	-0.848	-0.030	-1.138	-0.035	-1.320
Services	-0.003	-0.108	0.001	0.023	-0.004	-0.148	-0.006	-0.194
Public services	-0.009	-0.346	-0.003	-0.115	-0.014	-0.533	-0.008	-0.309
Others	-0.030	-1.085	-0.027	-0.991	-0.036	-1.321	-0.035	-1.266
Number of employees (Base = 99 or less)								
100 to 999	0.013	0.473	0.013	0.465	0.030	1.054	0.018	0.646
1000 or more	0.011	0.311	0.022	0.628	0.041	1.140	0.044	1.201
Job type (Base = Administration and clerical)								
Sales, Marketing, customer relation	0.017	0.544	0.015	0.486	0.008	0.265	0.012	0.380
Specialist	-0.023	-0.719	-0.023	-0.728	-0.024	-0.755	-0.018	-0.577
Manufacturing and production	-0.029	-0.906	-0.029	-0.894	-0.033	-1.012	-0.031	-0.967
Others	-0.040	-1.548	-0.039	-1.544	-0.037	-1.473	-0.037	-1.449
Job title (Base = Regular employee)								
Section manager, supervisor	-0.020	-0.754	-0.018	-0.673	-0.017	-0.652	-0.022	-0.825
Department manager	-0.056	-2.024 *	-0.055	-1.999 *	-0.054	-1.951	-0.056	-2.031 *
Division manager	-0.067	-2.669 **	-0.063	-2.536 *	-0.059	-2.358 *	-0.068	-2.725 **
Others (executive)	-0.037	-1.523	-0.037	-1.535	-0.030	-1.258	-0.038	-1.596
Labor union availability	-0.068	-2.229 *	-0.060	-2.000 *	-0.054	-1.796	-0.058	-1.911
Annual income of last year	-0.027	-0.751	-0.029	-0.804	-0.014	-0.381	-0.012	-0.329
Recent business performance	0.118	4.831 ***	0.114	4.678 ***	0.111	4.545 ***	0.112	4.585 ***
Overworking hours	0.178	7.237 ***	0.173	7.050 ***	0.170	6.949 ***	0.173	7.071 ***
Measures against Long Working Hours and Overtime								
No-overtime day	0.003	0.103						
Work-end call at the end of business hour			-0.069	-2.859 **				
Grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors					-0.110	-4.368 ***		
Counseling of people working long hours							-0.091	-3.316 **
Constant		35.004 ***		35.261 ***		35.524 ***		35.325 ***
	Sample size = 1713 R2=0.096 F=6.652, df=27, p<0.01		Sample size = 1713 R2=0.101 F=6.986, df=27, p<0.01		Sample size = 1713 R2=0.106 F=7.434, df=27, p<0.01		Sample size = 1713 R2=0.102 F=7.102, df=27, p<0.01	

First, we examined the relationship between the control variables and the depression tendency score. For the depression tendency score, there was a statistical significance with respect to “age” (-), “department manager” (-) with the exception of equation 3, “division manager” (-), “labor union availability" of equations 1 and 2, and “recent business performance" (+). In terms of age, younger people had a higher depression tendency, while in terms of posts, department and division managers had a lower depression tendency than regular employees. For equations 1 and 2, labor union availability contributed to a lower depression tendency. With regard to recent business performance, since larger values indicated poorer business performance, poor business performance contributed to increase depression tendency. With respect to overtime hours, statistically significant results (+) were obtained for all equations. Longer overtime hours contributed to an increase in depression tendency.

For the variables used for the measures for long working hours and overtime, statistically significant results were obtained with the exception of the measure of “no-overtime day” (all coefficients were negative). In each case, people had a lower depression tendency when the measures were implemented. The same trend was observed with Tables 3 and 4. The influence on depression tendency remained even after controlling by attribute variables and overtime hours. This indicated that these measures contributed to a certain level to preventing the development of stress in the respondents or to alleviating stress that had been developed, thus implying that these measures work as a moderator to a certain level.

3. Summary

Various research efforts indicate that workers are subjected to a greater burden at work under the difficult economic situation of recent years, and that socially there is a greater concern for mental and physical health disorders. As symbolic signs of these phenomena, the mass media have often reported overwork-derived suicides and depression, thus raising the interest in mental health care in particular. Stress varies depending on the workplace, and appropriate remedies also vary depending on the individual. It is important to create an environment in which development of stress can be reduced and in which stress can be alleviated once it has developed.

In studying the relationship between long working hours and stress, this

paper verifies, using the data from the JILPT 2004 Survey, whether or not the four measures implemented for long working hours and overtime in fact work as a moderator for alleviating stress.

First, as for the relation between overworking hours and the measures for long working hours and overtime, the overtime hours tend to become shorter when three measures other than the measure of "counseling of people working long hours" were implemented. This indicates that these three measures have a certain effect on controlling the extension of overtime hours.

Next, we examined the relation between depression tendency and measures for long working hours and overtime by using the cross table and comparing the average values. The result showed that that the depression tendency tends to remain at low levels when the three measures other than the measure of "no-overtime day" were implemented. Furthermore, we used multiple regression analysis to verify the influence of each measure on the depression tendency, while controlling the attributes of the respondents and the attributes of the companies that respondents belong to. The results showed that the depression tendency is lower when the three measures other than the measure of "no-overtime day" were implemented, which were the same as the results of the cross table.

According to our observations, the measure of "no-overtime day" is effective in controlling overtime hours but not in alleviating stress. When the difference of this measure compared to other measures is considered, the measure of "work-end call at the end of business hours" involves the action of "calling" to others, the measure of "grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors" involves the action of "giving warning or advice," and the measure of "counseling of people working long hours" involves the action of "counseling" others. In all of these measures, there is direct communication. On the other hand, the measure of "no-overtime day" is carried out formally across the entire organization and is unlikely to promote communication in each instance.

The above observations imply that communication is important at the workplace in preventing workers from developing stress or in alleviating their stress. As a source of stress, personal relationship is often raised,[21] and

[21] For example, according to the "Survey on Workers' Health Status" conducted in 2002, a major source of a high level of depression, anxiety and stress

miscommunication is in fact one of the major causes of stress. The survey conducted by the Mental Health Research Institute of the Japan Productivity Center for Socio-Economic Development [22] also indicates that "poor communication" is one of the major factors detrimental to mental health at the workplace, and it recommends "communication and daily care activities" as an effective measure.

If, however, measures are taken specifically against employees who work long overtime hours, it may be taken as a penalty and reduce their motivation (the Mental Health Research Institute of the Japan Productivity Center for Socio-Economic Development, 2005). As a result, it may shorten working hours but also cause mental and physical disorders. Therefore, the Mental Health Research Institute of the Japan Productivity Center for Socio-Economic Development (2005) emphasizes that rather than introduce a regulation on overtime across-the-board, measures that suit the different situation of each workplace are necessary.

To this end, better communication is also required at the workplace for individuals and management to reconsider the way they work. This will make it possible to coordinate working hours and alleviate stress. It is important to first take various measures in the organization; however, in regards to actually implementing such measures, the unique circumstances of each workplace should also be considered. For this purpose, day-to-day communication needs to be emphasized to create an environment in which consultation and advice may be freely sought and given in the workplace as such needs arise.

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was derived from "personal relationships at work," as described in footnote no. 2.

[22] See footnote no. 3.

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Attached Sheet: Descriptive Statistics [23]

	Average	Standard deviation	N
Depression tendency score (dependent variable)	41.81	8.482	1713
Sex (Base = Female)	0.69	0.462	1713
Age	39.78	10.706	1713
Educational background (Base = Graduating senior high school or below)			
Junior college/vocational school	0.22	0.415	1713
University graduate	0.43	0.495	1713
Business category (Base = Manufacturing)			
Construction	0.08	0.273	1713
Electric, gas, water, energy supply	0.02	0.153	1713
Transportation and communication	0.07	0.250	1713
Wholesale, retail, catering	0.13	0.337	1713
Finance, insurance, real-estate	0.06	0.241	1713
Services	0.19	0.389	1713
Public services	0.08	0.267	1713
Others	0.10	0.304	1713
Number of employees (Base = 99 or less)			
100 to 999	0.30	0.459	1713
1000 or more	0.33	0.470	1713
Job type (Base = Administration and clerical)			
Sales, Marketing, customer relation	0.23	0.424	1713
Specialist	0.28	0.447	1713
Manufacturing and production	0.20	0.397	1713
Others	0.06	0.229	1713
Job title (Base = Regular employee)			
Section manager, supervisor	0.24	0.427	1713
Department manager	0.10	0.306	1713
Division manager	0.03	0.173	1713
Others (executive)	0.03	0.162	1713
Labor union availability	0.45	0.498	1713
Annual income of last year	5.44	2.320	1713
Recent business performance	3.20	1.134	1713
Overworking hours	33.43	38.956	1713
Measures against Long Working Hours and Overtime			
No-overtime day	0.28	0.447	1713
Work-end call at the end of business hour	0.23	0.423	1713
Grasping the actual hours worked and giving warning or advice to people working long hours or to their superiors	0.34	0.473	1713
Counseling to people working long hours	0.23	0.424	1713

[23] The "annual income of last year" consists of the categories of "less than ¥11 million" to "¥1,320 million." There are five possible answers for the "recent business performance": "1. Very good," "2. Relatively good," "3. Average," "4. Somewhat bad" and "5. Quite bad."