What Types of Companies Take a Proactive Approach to Mental Health?

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The author analyzed individual data from the JILPT-implemented "Research on Mental Health Management in the Workplace" and studied factors that influence workplace mental health. In analyzing individual data, the author looked at the influence that explanatory variables have on four explained variables, using past experimental studies as a reference. Viewed comprehensively, the results of analyses reveal the following four important findings. (i) Differences among business categories: Analysis showed that those categories showing the most concern for mental health are "electricity, gas, heat supply and water" and "information and communications," while those showing the least concern include "transport and postal services," "wholesale and retail trade" and "eating and drinking places, accommodations." (ii) Differences depending on size of business establishment. Even when controlling for the influence of various variables, larger enterprises tend to have greater concern for mental health. (iii) The issue of non-regular employees: working as a non-regular employee appears to bring disadvantages in terms of mental health. However, many enterprises do not consider changes in the number of non-regular employees as related to mental health issues. (iv) Treatment of employees on sick leave. Enterprises that take treatment of employees on sick leave more seriously tend to have more concern for mental health, regardless of their size. From the above results, it is thought that giving priority to specific business categories, small and medium-size enterprises, non-regular employees, and other vulnerable populations will provide a shortcut to the resolution or alleviation of mental health issues.

I. Mental Disorders in the Workplace

"I tend to be absent from work." "I can't go to work." "I can't do my job because I can't concentrate." "I have a hard time listening to people." "I often think I'm worthless." "I feel like I want to die."

Anyone can experience mental symptoms such as these. According to the Organization for Economic Cooperation and Development (OECD), on average 5% of the working population suffers from a severe mental disorder such as schizophrenia, and 15% suffers from a moderate mental disorder such as depression (OECD 2012). Furthermore it has been reported that in 2005, 26% of the U.S. adult population suffered from a mental disorder continuously for at least one year (Dewa and McDaid 2011, 36).

The OECD classifies mental disorders as "severe mental disorders (SMD)," such as

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schizophrenia; "moderate mental disorders," such as depression; and "mild mental disorders." The latter two are classified as "common mental disorders (CMD)" (OECD 2012, 19). The OECD uses these classifications as a framework for discussions of mental disorders in the workplace.

According to the OECD, incidences of mental disorder have not suddenly increased in recent years; rather, mental disorders have afflicted considerable numbers of people for decades. However, there is a general perception that they have been on the rise recently. This is likely due to society's increasing concern with mental disorders, greater awareness of the issue among the general public, and greater recognition of the extent of the problem among psychiatrists and other experts (OECD2012, 32–33).

According to the Ministry of Health, Labour and Welfare (MHLW) survey, *Seishin Shogai-to no Rosai Hosho Jokyo* [Status of workers' compensation for mental disorders, etc.] (conducted by the Compensation Division, Workers' Compensation Department, Labour Standards Bureau, MHLW), there were 819 applications for workers' compensation in FY2006. This number subsequently increased steadily to 952 in FY2007, 927 in FY2008, 1,136 in FY2009, 1,181 in FY2010, and 1,272 in FY2011. It is thought that the increase from FY2008 to FY2009 was partly due to the effects of corporate downsizing resulting from the global financial crisis.

The OECD notes the following key characteristics of mental disorders (OECD 2012, 26–29): Mental disorders often appear in childhood and adolescence.

(i) In many cases, mental disorders go unnoticed and untreated for many years.
(ii) Mental disorders often co-occur with physical health problems.
(iii) Mental disorders tend to be quite chronic, going through cycles of deterioration and improvement..
(iv) Mental disorders are frequently accompanied by physical symptoms.

The above characteristics give rise to a variety of challenges on the job (OECD 2012, 40–79):

(i) The unemployment rate is high in cases of mental disorder. In 10 OECD countries, approximately 40 to 60% of SMD cases and 50 to 70% of CMD cases are employed [OECD 2012, 30], representing a gap of about 30 percentage points for those with a severe mental disorder and 10–15 percentage points for those with a moderate disorder, compared to those with no disorder.)
(ii) People with mental disorders tend to have lower incomes.
(iii) Unemployment tends to worsen mental disorders; however, disorders are alleviated with employment.
(iv) While employment in a high-quality job alleviates mental disorders, employment in a poor-quality job can exacerbate them (here, "high/poor-quality job" refers to employment contract period, working hours, job tenure, wages, job satisfaction, and skills-demand match [OECD 2012, 56–57]).
(v) When a mental disorder exists, productivity tends to fall due to illness-related absen-

teeism, or from "presenteeism" (a state in which a person attends work but is unable to execute duties to his/her full potential).

The OECD identifies the following three policy interventions as effective for people dealing with mental disorders (OECD 2012, 208).

(i) Securing good working conditions which avoid job strain on the one hand, and sound management practices on the other, to avoid the development of work-related mental health problems and to minimize productivity losses of workers caused by such problems;

(ii) Systematic monitoring of sick-leave behavior to detect longer-term or repeated absences as early as possible and manage those by providing immediate retention support; and

(iii) Helping employers avoid unnecessary dismissal caused by mental health problems through the provision of adequate incentives, information, and support.

II. The Role of This Paper

This paper aims to provide an empirical analysis of mental health in Japanese workplaces, and of enterprises' mental health-related measures. Its objective is to shed light on the kinds of enterprises in which mental health constitutes a major challenge, as well as the kinds of enterprises that have strong concern with mental health, rather than to examine mental health problems as they affect individual workers or to discuss specific legal systems or individual enterprises. To achieve this objective, the author has analyzed individual data from a large-scale questionnaire survey of enterprises that was recently conducted by JILPT.

As will be described later, a few questionnaire surveys on mental health and related measures in the workplace are being conducted. The JILPT survey to be discussed in detail below is one of them. However, there is a problem with most of these surveys.

In general, surveys on workplace mental health conducted thus far have provided no more than cross-tabulated results. In other words, they have not provided research results that are based on various controlled variables. While it must be evident that large enterprises are taking a more proactive approach to mental health measures than their smaller counterparts, when controlling for other attributes, it is not known exactly which attributes have an influence when controlling for enterprise size. This is highly unfortunate. The author was unable to find any examples of empirical studies (in the sense described above) that employ individual data from questionnaire surveys on mental health conducted in Japan.[1] For this reason, the material covered in this paper is of great significance.

Even overseas, it appears that little research bearing on the topic of this paper has

[1] Although it is possible that similar research is taking place in fields outside the author's realm of expertise, such as in medicine or psychology, the author was unable to find any examples in the sense of "results using individual survey data on mental health initiatives by business enterprises."

been conducted. As a comprehensive work on mental health (Schulz and Rogers 2011) points out, little research on workplace mental health has focused on the measures adopted by enterprises.

An exception is Schultz et al. (2011). This paper conducted an analysis of individual data for 83 enterprises, which were extracted from a database of Canadian enterprises with at least 100 employees and then surveyed in detail. In addition to their size, business category, and other items, the enterprises were asked about areas in which mental health is a concern, focusing on three specific points—"work personality,"[2] "work performance"[3] and "symptomatology."[4] They were also asked about "actual mental health measures that are being implemented" with a focus on eight categories, namely "stamina,"[5] "concentration,"[6] "organization,"[7] "memory,"[8] "effective work with supervisors,"[9] "interaction with coworkers,"[10] "difficulty handling stress"[11] and "attendance issues."[12]

Schultz and others then conducted an empirical study using the three previously mentioned factors that influence "concern with mental health" and eight "implemented mental health measures" as explained variables. The main results obtained are as follows (Schultz et al. 2011, 336–38):

(i) Enterprises that have a policy of employing people with mental disorders, or experience employing people with mental disorders, have stronger concern with mental health and are more likely to implement mental health measures.

(ii) Larger enterprises have correspondingly stronger concern with mental health (particularly in terms of "work performance") and are more likely to implement mental health measures (particularly in terms of "effective work with supervisors" and "at-

[2] This item was further broken down into 13 sub-items, including "adjusting to the work environment," "being reliable" and "being on time." For details, see Schultz et al. (2011, 329).

[3] This item was further broken down into 12 sub-items, including "being able to perform job tasks safely" and "being able to tolerate the working conditions" (Schultz et al. 2011, 329).

[4] This item was further broken down into 14 sub-items, including "having the ability to maintain emotional stability" and "bizarre behaviors" (Schultz et al. 2011, 330).

[5] This item was further broken down into nine sub-items, including "flexible scheduling" and "allow longer work breaks" (Schultz et al. 2011, 331).

[6] This item was further broken down into 10 sub-items, including "divide assignments into smaller tasks" and "allow for frequent breaks" (Schultz et al. 2011, 331).

[7] This item was further broken down into five sub-items, including "make daily to-do lists" and "use calendars to mark meetings and deadlines" (Schultz et al. 2011, 331).

[8] This item was further broken down into 12 sub-items, including "provide written instructions" and "allow additional training time" (Schultz et al. 2011, 332).

[9] This item was further broken down into seven sub-items, including "allow for open communication with managers" (Schultz et al. 2011, 332).

[10] This item was further broken down into four sub-items, including "provide sensitivity training to coworkers and supervisors" (Schultz et al. 2011, 332).

[11] This item was further broken down into six sub-items, including "refer to counseling and employee assistance program" (Schultz et al. 2011, 333).

[12] This item was further broken down into nine sub-items, including "provide self-paced work load and flexible hours" and "allow employee to work at home" (Schultz et al. 2011, 333).

tendance issues").

(iii) Of implemented mental health measures, measures concerning "stamina" were influenced by business category and "work personality." Likewise, implemented mental health measures related to "organization" and "attendance issues" were influenced by "work personality," while measures related to "concentration," "memory," "effective work with supervisors" and "difficulty handling stress"[13] were influenced by business category and enterprise size.

Key conclusions that can be drawn from these results are that business category and enterprise size, etc. have an influence on "concern with mental health"; business category, enterprise size, and the enterprise's "concern with mental health" have an influence on "implemented mental health measures"; and "policy of employing people with mental disorders" and "experience employing people with mental disorders" have an influence on greater "concern with mental health" and "implemented mental health measures."

Here, important points that relate to this paper are the use of "concern with mental health" and "implemented mental health measures" as explained variables, and examination of actual conditions through analysis of mental health in Japanese workplaces, using explanatory variables such as business category and enterprise size.

III. Main Results of Enterprise Surveys

This section outlines major surveys on workplace mental health. Among them are surveys conducted on an ongoing basis, such as that by the Japan Productivity Center's Mental Health Institute. Details on the survey's results are published in the "White Paper on Mental Health of Workers." The most recent survey results concerning enterprises are contained in the 2010 edition. Of these, the following results relate strongly to this paper (Mental Health Institute, Japan Productivity Center 2010). It should be noted that all enterprises targeted by the survey are listed (relatively major) companies.

(i) Mental health measures are ranked by frequency of response as follows: "education for managers" (70.0%), "counseling for employees who work long hours" (63.8%), "establishment of a reinstatement support scheme for employees on sick leave" (49.5%), "training for regular employees" (48.6%), "delegation to an external consultation body" (48.0%), "establishment of an in-house consultation office" (47.7%), "provision of mental health checkups (including stress checks)" (43.0%), "publicity through company bulletins and pamphlets" (40.6%), "medical interviews during health checkups" (34.4%), "delegation to occupational health staff" (32.5%), "crea-

[13] Schultz et al. (2011, 334–36). However, no specific explanation of which business categories have an influence is provided.

tion of work environments that boost individual and organizational health" (18.6%), "training of employee counselors and listeners" (10.8%), "no action in particular" (5.0%), "training for employees' families" (3.7%) and "other" (4.0%).

(ii) Listed enterprises in general markets have greater concern with mental health measures than those in emerging markets, manufacturing businesses have more concern than non-manufacturing businesses, and a enterprises with a greater number of employees have a correspondingly higher degree of concern.

In the past, the Japan Productivity Center's Mental Health Institute has studied the relationship between management indicators for enterprises and mental health (Mental Health Institute, Japan Productivity Center 1999). This study found that there is a correlation between change in the number of employees and workers' mental health, and specifically that a decrease in number of employees is negatively correlated with mental health.

Yamaoka (2012, 65–69) examined the causal relationship between stress and several items including management indicators and human resources systems, using individual data from a JILPT survey. This study found that changes in the number of employees, satisfaction with evaluation and treatment, skills development, and other items have an influence on stress.

The following is an outline of the JILPT survey used for analysis in this paper (hereafter "the JILPT survey") (JILPT 2012).

(i) With a business establishment database prepared by Teikoku Databank as the parent set, 14,000 private business establishments having at least 10 employees were extracted through random sampling and stratified by industry and establishment size. Questionnaires were distributed to the extracted establishments, with responses collected from 5,250 establishments (recovery rate of 37.5%). Questionnaire distribution and collection took place in September and October of 2010 (the survey base point was September 1, 2010). Responding establishments were tabulated based on sampling weighted to the extracted parent set number.

(ii) A relatively large number of enterprises in the "medical, health care and welfare," "information and communications" and "manufacturing" industries responded that "there are employees suffering from mental disorders."

(iii) The survey did not ask for the actual number of employees suffering from mental disorders, out of concern that doing so would lower the recovery rate.

(iv) The positive response rate for the item "there are employees who took leave for at least one month or left employment due to mental health issues during the past one year" was highest in the "information and communications" industry, followed by "scientific research, professional and technical services" and "medical, health care and welfare."

(v) The most common response given as the cause of mental health issues was "the individual's personality issues."

(vi) Larger establishments had correspondingly higher reinstatement rates for employees suffering from mental disorders.

Table 1. Are Mental Health Measures Being Implemented?

Size of establishment	Implementing	Not implementing	Total (N)
Fewer than 50 employees	47%	53%	100% (66,528)
50 to 99 employees	54%	46%	100% (21,249)
100 to 299 employees	57%	43%	100% (22,559)
300 to 999 employees	78%	22%	100% (7,022)
1,000 employees or more	81%	19%	100% (2,385)
Total	53%	47%	100% (119,743)

Source: Tabulated by the author from individual data of JILPT (2012).

Notes: 1. Tabulated based on sampling weighted to the extracted parent set.

2. Cases corresponding to "forestry," "mining and quarrying of stone and gravel" and "others" were excluded from the business categories.
3. Non-responses were excluded.
4. Size of establishment refers to "total number of employees of the establishment."

(vii) Approximately half of the establishments responded that they "are implementing" mental health measures. Business categories with high implementation rates were "electricity, gas, heat supply and water," "real estate and goods rental and leasing" and "information and communications." Larger establishments were more likely to implement measures, as were establishments responding that they had employees who took leave for at least one month.

(viii) The content of mental health measures implemented included "establishment of a desk to receive consultations from workers" (55.7%); "provision of education, training, and information to managing supervisors" (51.0%); "provision of education, training, and information to workers" (41.7%); "review and discussion of mental health measures in health committee meetings, etc." (32.2%); "appointment of a person in charge of administering mental health care" (24.3%); "use of questionnaires to survey stress among workers" (20.5%); "support for reinstatement" (16.8%); "measures utilizing medical institutions" (15.2%); "provision of education, training, and information to on-site occupational health staff" (14.5%); "evaluation and improvement of working environments, etc." (14.5%); "formulation and execution of problem resolution plans concerning mental health care" (13.7%); "measures utilizing other external organizations" (11.2%); "measures utilizing regional occupational health centers" (5.1%); "measures utilizing prefectural occupational health promotion centers" (3.7%).

The following presents the results of cross tabulation of mental health measures appearing in the JILPT survey. Due to space limitations, only cross tabulation tables that are based on establishment size are provided.

Table 1 shows whether businesses are implementing mental health measures or not. The characteristics of Table 1 were mentioned above and are thus omitted here.

Table 2. Content of Mental Health Measures (by Size of Establishment, Multiple Responses)

	Size of establishment (No. of employees)					
	< 50	50–99	100–299	300–999	1,000 <	Total
(1) Review and discussion of mental health measures in health committee meetings, etc.	24%	42%	43%	40%	44%	33%
(2) Formulation and execution of problem resolution plans concerning mental health care	12%	14%	15%	17%	43%	14%
(3) Appointment of a person in charge of administering mental health care	19%	25%	36%	35%	41%	26%
(4) Provision of education, training, and information to workers	38%	41%	49%	53%	80%	43%
(5) Provision of education, training, and information to managing supervisors	52%	49%	51%	65%	86%	53%
(6) Provision of education, training, and information to onsite occupational health staff	10%	15%	19%	23%	32%	15%
(7) Evaluation and improvement of working environments, etc.	16%	14%	12%	15%	18%	15%
(8) Establishment of a desk to receive consultations from workers	58%	46%	58%	69%	91%	58%
(9) Use of questionnaires to survey stress among workers	17%	20%	25%	29%	48%	21%
(10) Support for reinstatement	10%	20%	23%	30%	51%	18%
(11) Measures utilizing regional occupational health centers	5%	8%	3%	5%	2%	5%
(12) Measures utilizing prefectural occupational health promotion centers	3%	7%	4%	3%	3%	4%
(13) Measures utilizing medical institutions	16%	15%	17%	15%	22%	16%
(14) Measures utilizing other external organizations	8%	13%	13%	14%	46%	12%
Total	100%	100%	100%	100%	100%	100%
(N)	(29,700)	(11,299)	(12,602)	(5,467)	(1,855)	(60,923)

Source: Same as Table 1.

Notes: 1–4. Same as Table 1.

5. For mental health measures, the category “other” was excluded.

Table 3. Current Priority Placed on Mental Health Measures

Size of establishment	Top priority issue	Fairly important issue	Only a minor issue	Not an important issue	Total (N)
< 50 employees	4%	47%	35%	14%	100% (67,497)
50 to 99	4%	51%	34%	11%	100% (21,209)
100 to 299	9%	55%	31%	5%	100% (22,939)
300 to 999	10%	66%	17%	7%	100% (7,152)
1,000 <	18%	59%	8%	15%	100% (2,415)
Total	6%	51%	32%	12%	100% (121,212)

Source: Same as Table 1.
Notes: 1–4. Same as Table 1.

Table 4. Future Intentions regarding Mental Health Measures

Size of establishment	Measures must be reinforced	Measures should probably be reinforced	There is little need to reinforce measures	No need to reinforce measures	Total (N)
< 50 employees	12%	58%	22%	8%	100% (67,220)
50 to 99	15%	59%	21%	5%	100% (20,946)
100 to 299	22%	57%	20%	2%	100% (22,837)
300 to 999	35%	50%	13%	2%	100% (7,160)
1,000 <	25%	56%	6%	13%	100% (2,409)
Total	16%	57%	21%	6%	100% (120,572)

Source: Same as Table 1.
Notes: 1–4. Same as Table 1.

Table 2 shows the content of mental health measures that are being implemented. For items (3), (4), (5), (6), (8), (9), (10), and (13), there is a correlation between establishment size and implementation rate. Meanwhile, for items (2), (4), (5), (8), (9), (10), and (14), the implementation rate various considerably depending on whether or not the business has at least 1,000 employees. Thus, it is thought that the size of an establishment has considerable influence.

Table 3 looks at the priority currently placed on mental health care measures. While it is evident that larger enterprises tend to have higher response rates for both “top priority issue” and “fairly important issue,” the response rate for “fairly important issue” is higher for businesses in the 300–999 employee range than employees with at least 1,000 employees. This may be because measures are already being implemented at a high rate at companies with at least 1,000 employees.

Table 4 looks at future intentions regarding mental health care measures. Relatively large enterprises have higher response rates for “measures must be reinforced”; however, there is little difference among the size categories for “measures should probably be

Table 5. Increase/Decrease in Employees Suffering from Mental Disorders Compared to Three Years Prior (Regular Employees)

Size of establishment	Upward trend	Slight upward trend	Roughly the same	Slight downward trend	Downward trend	No employees suffer from mental health issues	Total (N)
< 50 employees	2%	9%	24%	4%	6%	56%	100% (59,979)
50 to 99	6%	19%	29%	4%	9%	34%	100% (19,226)
100 to 299	5%	24%	34%	5%	9%	24%	100% (21,772)
300 to 999	6%	29%	38%	3%	6%	18%	100% (7,286)
1,000 <	14%	33%	38%	5%	2%	9%	100% (2,376)
Total	4%	15%	28%	4%	7%	42%	100% (110,639)

Source: Same as Table 1.

Notes: 1–4. Same as Table 1.

5. Cases corresponding to the response option "there are no workers of that classification in this establishment" were excluded.

reinforced." For "there is little need to reinforce measures," the response rate is higher for enterprises with fewer than 300 employees than for those with at least 300 employees.

Table 5 looks at increases and decreases in the number of employees suffering from mental disorders compared to three years prior. The table only tabulates responses for "regular employees." For both "trending upward" and "trending upward slightly," response rates rise proportionally with enterprise size. However, looking at "no employees are suffering from mental disorders," the fact that the response rate rises as enterprise sizes grow smaller is highly intriguing. It seems possible that this phenomenon results from small-scale enterprises' not being aware of any cases, rather than there actually not being any.

IV. Multi-Variable Regression Analysis

This section seeks to identify factors that influence mental health in the workplace based on a review of the literature and the cross-tabulated results described above.

The results of studies undertaken thus far suggest that business category, enterprise size, change in number of employees, concern with mental health, policy of employing people with mental disorders, experience employing people with mental disorders, and other factors serve as important explanatory variables influencing mental health in the workplace. Of these, the first three variables have items relating to them on the JILPT survey.

Additionally, with regard to "concern with mental health," the author uses the item "current priority and future intentions regarding mental health care measures" as a proxy variable. While this item focuses on two points (namely, "current priority" and "future intentions"), the author uses "current priority" only, in order to emphasize current interest. Available responses are arranged in a four-point scale ranging from "top priority issue" to

"not an important issue."

For "policy of employing people with mental disorders," the author uses a questionnaire item pertaining to "reinstatement of employees who have taken mental health leave." The item used is "procedures and rules applying to reinstatement." Respondents are asked to choose one response from "in-house procedures and rules for reinstatement have been established," "reinstatement procedures are determined by staff in charge of human resources based on consultations held in each case" and "reinstatement procedures are left to each worksite supervisor to determine." "Policy of employing people with mental disorders," as it appears in the reviewed literature, likely refers to "employment policy for new hires"; however, the literature does not clarify this point in detail. Moreover, there are no questionnaire items concerning this point in the JILPT survey. Thus, while this paper makes do with focusing on reinstatement regulations, there is a possibility that differences in character will arise between enterprises that have a policy of hiring people with mental disorders and those that do not.

Lastly, for "experience employing people with mental disorders," the author uses a question item concerning "the situation of workers currently dealing with mental health issues." Available responses are arranged on a five-point scale that ranges from "a large number considering the business's size" to "few" with "none at all" added. Because "experience employing people with mental disorders" is thought to cover both the past and the present, this item differs from the questionnaire item on the JILPT survey. Unfortunately, however, there are no similar items in the survey, and thus the author has chosen to use this item. Explained variables are set as follows.

First is the "presence or absence of mental health measures." This is a binary variable comprised of "implementing measures" and "not implementing measures."

Second is "substantiality of mental health measures." "Content of mental health measures" contains 15 items, including "other." However, qualitative comparison of the content of individual measures is difficult. For this reason, the author interprets higher numbers as indicating that the implementation of mental health measures is "more substantial" and uses a maximum of 14 items (excluding "other") as continuous variables.

Third is "current priority placed on mental health (concern with mental health)." Although this is also an explanatory variable for the first and second explained variables, it should also be viewed as an explained variable in order to examine connections with research conducted thus far. As mentioned previously, there are two viewpoints considered here—namely, "current priority" and "future intentions"—however, the author has chosen to look at "current priority."

The fourth is "upward/downward trends in the number of employees suffering from mental disorders." Although this information is not obtained as numerical data (i.e. as real numbers or ratios), the author has chosen to use it to examine influence on upward or downward trends in targeted enterprises compared to three years prior. Available responses are arranged on a five-point scale from "trending upward" to "trending downward," with

"no employees suffer from mental disorders" added. However, the response "no employees suffer from mental disorders" is not compatible with the goal of comparing the current situation with three years prior. In other words, it is unclear whether this response means that "there have been no such employees since three years ago" or "there are no such employees present now (although there were some three years ago)." Consequently, in examining "upward/downward trends," the author has employed a sample excluding the response "no employees suffer from mental disorders."

It should be noted that that "current priority on mental health measures," which is a proxy variable for "concern with mental health," is primarily used as an explanatory variable. However, its endogeneity with the first, second, and fourth explained variables is in doubt. In other words, there may be problems in discerning whether "implementing measures" (or measures being "substantial" or "increasing") results from "high degree of concern," or vice versa. For this reason, the author conducts the analyses using instrumental variables that influence "concern with mental health" and are thought to have a strong independent association with explained variables.

Tables 6 to 9 show the results of the analyses on the four explained variables mentioned above.

Given their cumbersome nature, here we will refrain from discussing the details of the analyses presented in Tables 6 to 9. Table 10 presents a comprehensive summary of the results of the four analyses. The main results of analyses conducted for this paper, based on Table 10, are outlined below. The explanatory variables will be examined in the order they are presented in the tables so that the reader may reference the tables while reading (while the subject of the analyses is "establishments," the following will refer to "enterprises" in the interest of using general terminology).

It is found that "current priority placed on mental health" has no influence on analysis of (1), which uses instrumental variables. In other words, it is thought that the relative importance placed on mental health does not influence whether or not actual measures are implemented. However, it does have an influence on analysis of (2). Specifically, enterprises that place relatively greater emphasis on mental health have a correspondingly higher number of implemented measures. It should be noted, however, that the number of employees suffering from mental disorders is trending upward. Because instrumental variables are also used in this analysis of (4), temporarily eliminating the reverse causal relationship of "the number of employees suffering from mental disorders is growing and therefore emphasis is placed on mental health" can be considered for the time being. Accordingly, this result is that "the number of employees suffering from mental disorders is trending upward despite the emphasis placed on mental health." Because the substantiality of measures is on the positive side, it appears likely that although emphasis is placed on mental health, mental health measures are not necessarily of higher quality.

Fairly obvious differences are apparent with regard to "business category." A comprehensive look at the analyses of explained variables (1) to (4) shows that the business

Table 6. Influence on Implementation/Non-Implementation of Mental Health Measures

Explained variable: "Implementing" dummy [implementing = 1, not implementing = 0] Method: IV probit	N = 86,067 Wald chi2(29) = 10075.44 (p<0.000) Wald test = 110.26 (p<0.000)		
Explanatory variables	Coefficient	Standard error	
Current priority placed on mental health [1 = not an important issue to 4= top priority issue]	0.061	0.074	
Business category [RG: Manufacturing]			
Construction	-0.009	0.022	
Electricity, gas, heat supply and water	1.228	0.064	**
Information and communications	0.545	0.032	**
Transport and postal services	-0.104	0.018	**
Wholesale and retail trade	-0.165	0.013	**
Finance and insurance	0.818	0.027	**
Real estate and goods rental and leasing	-0.007	0.045	
Scientific research, professional and technical services	0.131	0.047	**
Eating and drinking places, accommodations	-0.430	0.026	**
Lifestyle and amusement-related services	-0.812	0.054	**
Education, learning support	-0.080	0.043	*
Medical, health care and welfare	-0.367	0.024	**
Compound services (post offices, agricultural cooperatives, etc.)	0.508	0.045	**
Other services (services not included in other classifications)	0.117	0.017	**
Size of establishment [RG: 100 to 299 employees]			
Fewer than 50 employees	-0.070	0.014	**
50 to 99 employees	-0.059	0.018	**
300 to 999 employees	0.943	0.029	**
1,000 employees or more	1.080	0.052	**
Change in number of regular employees [1=20% or more decrease to 7=20% or more increase]	0.036	0.004	**
Change in number of non-regular employees [1=20% or more decrease to 7=20% or more increase]	-0.004	0.004	
Reinstatement of employees on leave [RG: Procedures/rules exist]			
Consultation in each instance	-0.310	0.012	**
Left to supervisor	-0.675	0.014	**
Situation of workers dealing with mental health issues [RG: Normal considering establishment size]			
Few considering establishment size	-0.167	0.015	**
Somewhat few considering establishment size	-0.126	0.022	**
Fairly many considering establishment size	-0.287	0.028	**
Many considering establishment size	0.672	0.054	**
None at all	-0.153	0.022	**
Change in sales [1=considerably lower to 5=considerably larger]	0.045	0.005	**
Constant	0.147	0.189	

Source: Same as Table 1.

Notes: 1–3. Same as Table 1.

4. Business category, size of establishment, change in number of regular employees, change in number of non-regular employees, reinstatement of employees on leave, situation of workers dealing with mental health issues, change in sales, change in overall amount of work at workplace, and 3-year change in personnel distribution were used as instrumental variables for "Current priority placed on mental health."
5. **P<0.05; *P<0.1.
6. "RG" indicates the reference group of the dummy variable.

Table 7. Influence on Substantiality of Mental Health Measures

Explained variable: Number of measures implemented [1 to 14] Method: Two-stage least squares	N=47,441 Wald chi2(29)=7503.31 (p<0.000) Sargan chi2(1)=11.9617 (p<0.001) Basmann chi2(1)=11.9569 (p<0.001)	
Explanatory variables	Coefficient	Standard error
Current priority placed on mental health [1 = not an important issue to 4= top priority issue]	3.427	0.400 **
Business category [RG: Manufacturing]		
Construction	0.291	0.057 **
Electricity, gas, heat supply and water	0.583	0.097 **
Information and communications	0.105	0.070
Transport and postal services	-0.698	0.056 **
Wholesale and retail trade	-0.183	0.034 **
Finance and insurance	-0.873	0.106 **
Real estate and goods rental and leasing	-0.051	0.112
Scientific research, professional and technical services	-0.487	0.117 **
Eating and drinking places, accommodations	0.087	0.072
Lifestyle and amusement-related services	-0.228	0.154
Education, learning support	-1.263	0.104 **
Medical, health care and welfare	-0.311	0.065 **
Compound services (post offices, agricultural cooperatives, etc.)	-0.306	0.099 **
Other services (services not included in other classifications)	-0.205	0.041 **
Size of establishment [RG: 100 to 299 employees]		
Fewer than 50 employees	-0.341	0.042 **
50 to 99 employees	0.205	0.059 **
300 to 999 employees	0.359	0.044 **
1,000 employees or more	1.679	0.117 **
Change in number of regular employees [1=20% or more decrease to 7=20% or more increase]	-0.063	0.009 **
Change in number of non-regular employees [1=20% or more decrease to 7=20% or more increase]	-0.005	0.009
Reinstatement of employees on leave [RG: Procedures/rules exist]		
Consultation in each instance	-0.533	0.037 **
Left to supervisor	-0.673	0.089 **
Situation of workers dealing with mental health issues [RG: Normal considering establishment size]		
Few considering establishment size	-0.052	0.050
Somewhat few considering establishment size	0.406	0.057 **
Fairly many considering establishment size	0.042	0.065
Many considering establishment size	0.658	0.102 **
None at all	0.100	0.088
Change in sales [1=considerably lower to 5=considerably larger]	-0.015	0.018
Constant	-5.637	1.164 **

Source: Same as Table 1.

Notes: 1–3. Same as Table 1.

4–6. Same as Table 6.

7. The analysis focused solely on establishments that “are implementing” mental health measures.

Table 8. Influence on Current Priority Placed on Mental Health Measures

Explained variable: Current priority placed on mental health [1=not an important issue to 4=top priority issue] Method: Ordered probit	N=90,289 LR chi2(28)=14165.93 (p<0.000) Pseudo R2=0.074		
Explanatory variables	Coefficient	Standard error	
Business category [RG: Manufacturing]			
Construction	-0.009	0.018	
Electricity, gas, heat supply and water	0.160	0.035	**
Information and communications	0.400	0.025	**
Transport and postal services	-0.013	0.015	
Wholesale and retail trade	-0.012	0.011	
Finance and insurance	0.837	0.016	**
Real estate and goods rental and leasing	0.136	0.038	**
Scientific research, professional and technical services	0.084	0.034	*
Eating and drinking places, accommodations	-0.399	0.019	**
Lifestyle and amusement-related services	-0.374	0.042	**
Education, learning support	-0.174	0.035	**
Medical, health care and welfare	-0.017	0.020	
Compound services (post offices, agricultural cooperatives, etc.)	0.340	0.037	**
Other services (services not included in other classifications)	0.003	0.014	
Size of establishment [RG: 100 to 299 employees]			
Fewer than 50 employees	-0.223	0.010	**
50 to 99 employees	-0.271	0.012	**
300 to 999 employees	0.206	0.018	**
1,000 employees or more	0.514	0.028	**
Change in number of regular employees [1=20% or more decrease to 7=20% or more increase]	0.033	0.003	**
Change in number of non-regular employees [1=20% or more decrease to 7=20% or more increase]	-0.001	0.003	
Reinstatement of employees on leave [RG: Procedures/rules exist]			
Consultation in each instance	-0.042	0.009	**
Left to supervisor	-0.459	0.011	**
Situation of workers dealing with mental health issues [RG: Normal considering establishment size]			
Few considering establishment size	-0.245	0.011	**
Somewhat few considering establishment size	-0.246	0.016	**
Fairly many considering establishment size	0.328	0.017	**
Many considering establishment size	0.524	0.042	**
None at all	-0.462	0.010	**
Change in sales [1=considerably lower to 5=considerably larger]	0.072	0.004	**

Source: Same as Table 1.

Notes: 1–3. Same as Table 1.

4. Same as note 5 of Table 6.

5. Same as note 6 of Table 6.

Table 9. Influence on Upward/Downward Trends of Employees Who Suffer from Mental Health Issues

Explained variable: upward/downward trend of employees who suffer from mental health issues [downward trend=1 to upward trend=5] Method: Two-stage least squares	N=49,102 Wald chi2(29)=6266.62 (p<0.000) Sargan chi2(1)=137,749 (p<=0.000) Basmann chi2(1)=138.049 (p<0.000)	
Explanatory variables	Coefficient	Standard error
Current priority placed on mental health [1 = not an important issue to 4= top priority issue]	1.917	0.081 **
Business category [RG: Manufacturing]		
Construction	0.027	0.034
Electricity, gas, heat supply and water	-0.211	0.068 **
Information and communications	-0.131	0.041 **
Transport and postal services	0.009	0.028
Wholesale and retail trade	0.216	0.021 **
Finance and insurance	-0.536	0.040 **
Real estate and goods rental and leasing	-0.208	0.072 **
Scientific research, professional and technical services	-0.484	0.058 **
Eating and drinking places, accommodations	0.430	0.036 **
Lifestyle and amusement-related services	0.226	0.086 **
Education, learning support	0.445	0.063 **
Medical, health care and welfare	0.104	0.032 **
Compound services (post offices, agricultural cooperatives, etc.)	-0.259	0.059 **
Other services (services not included in other classifications)	0.038	0.024
Size of establishment [RG: 100 to 299 employees]		
Fewer than 50 employees	0.290	0.024 **
50 to 99 employees	0.202	0.022 **
300 to 999 employees	-0.016	0.026
1,000 employees or more	-0.141	0.045 **
Change in number of regular employees [1=20% or more decrease to 7=20% or more increase]	-0.042	0.007 **
Change in number of non-regular employees [1=20% or more decrease to 7=20% or more increase]	0.005	0.005
Reinstatement of employees on leave [RG: Procedures/rules exist]		
Consultation in each instance	0.273	0.017 **
Left to supervisor	0.541	0.029 **
Situation of workers dealing with mental health issues [RG: Normal considering establishment size]		
Few considering establishment size	-0.477	0.018 **
Somewhat few considering establishment size	-0.116	0.023 **
Fairly many considering establishment size	0.205	0.027 **
Many considering establishment size	1.144	0.059 **
None at all	-0.677	0.045 **
Change in sales [1=considerably lower to 5=considerably larger]	-0.081	0.007 **
Constant	-1.944	0.216 **

Source: Same as Table 1.

Notes: 1–3. Same as Table 1.

4–6. Same as Table 6.

Table 10. Summary of the Results of the Analyses on Mental Health (List of Symbols of Statistically Significant Variables)

Influencing factors	Analysis items (1) Presence or absence of mental health measures (+: implementing measures)	(2) Substantiality of mental health measures (+: many = substantial)	(3) Current priority placed on mental health (+: top priority issue)	(4) Upward/downward trend of workers who suffer from mental health issues (+: upward)
Current priority placed on mental health [1 = not an important issue to 4= top priority issue]		+		+
Business category [RG: Manufacturing]				
Construction		+		
Electricity, gas, heat supply and water	+	+	+	−
Information and communications	+		+	−
Transport and postal services	−	−		
Wholesale and retail trade	−	−		+
Finance and insurance	+	−	+	−
Real estate and goods rental and leasing			+	−
Scientific research, professional and technical services	+	−	+	−
Eating and drinking places, accommodations	−		−	+
Lifestyle and amusement-related services	−		−	+
Education, learning support	−	−	−	+
Medical, health care and welfare	−	−		+
Compound services (post offices, agricultural cooperatives, etc.)	+	−	+	−
Other services (services not included in other classifications)	+	−		
Size of establishment [RG: 100 to 299 employees]				
Fewer than 50 employees	−	−	−	+
50 to 99 employees	−	+	−	+
300 to 999 employees	+	+	+	
1,000 employees or more	+	+	+	−
Change in number of regular employees [1=20% or more decrease to 7=20% or more increase]	+	−	+	−
Change in number of non-regular employees [1=20% or more decrease to 7=20% or more increase]				
Reinstatement of employees on leave [RG: Procedures/rules exist]				
Consultation in each instance	−	−	−	+
Left to supervisor	−	−	−	+
Situation of workers dealing with mental health issues [RG: Normal considering establishment size]				
Few considering establishment size	−		−	−
Somewhat few considering establishment size	−	+	−	−
Fairly many considering establishment size	−		+	+
Many considering establishment size	+	+	+	+
None at all	−		−	−
Change in sales [1=considerably lower to 5=considerably larger]			+	−

Source: Same as Table 1.

Notes: 1–3. Same as Table 1.

4. Same as Table 6.
5. The appropriate symbol is displayed for statistically significant variables of less than 5% in the results of the analyses in Tables 6 to 9.
6. Same as Table 6.
7. The analysis of (2) focused solely on establishments that “are implementing” mental health measures.

category taking the most proactive approach to mental health measures is "electricity, gas, heat supply and water." It appears that this category implements mental health measures, that these measures are substantial, that mental health is seen as a priority issue, and that the number of employees suffering from mental disorders is trending downward. Of course, it should be noted that these results illustrate the situation in September 2010, prior to the Great East Japan Earthquake of March 2011, and therefore the situation may have changed since the disaster. The second most proactive category is "information and communications." Although the actual substantiality of measures here could not be discerned, responses for all of the other three items demonstrate enthusiasm for mental health measures. Meanwhile "finance and insurance," "scientific research, professional and technical services" and "compound services," while scoring low in terms of substantiality of measures, appeared proactive in terms of the other results.

Conversely, "business categories" that appear apathetic toward mental health measures are "transport and postal services," "wholesale and retail trade," "eating and drinking places, accommodations," "lifestyle and amusement services," "education, learning support" and "medical, health care and welfare." These categories do not implement mental health measures, have low substantiality in their mental health measures (although this varies depending on the category), and do not consider mental health to be a priority issue (also varies depending on the category). Moreover, almost all have rising numbers of employees suffering from mental disorders.

As for the other categories—namely, "construction," "real estate and goods rental and leasing" and "other services"— no clear conclusions can be drawn from the results of the analyses.

The results for size of establishment were as predicted. Establishments with "fewer than 50 employees" or "50 to 99 employees" do not implement mental health measures, place relatively little emphasis on mental health, and have increasing numbers of employees dealing with mental health issues. Conversely, establishments with "300 to 999 employees" or "1,000 or more employees" do implement mental health measures, of which many have a high degree of substantiality, place relatively strong emphasis on mental health, and (for those with "1,000 employees or more") have a decreasing number of employees suffering from mental disorders. Therefore, it can be concluded that, even when factors other than size of establishment are controlled, larger enterprises are more proactive about mental health measures.

Results for "change in number of regular employees" and "change in number of non-regular employees" are also clear in a sense. Specifically, "change in number of non-regular employees" appears to have very little connection with mental health in the workplace. On the other hand, with regard to "change in number of regular employees," it appears that an "increasing" number of regular employees is correlated with implementation of mental health measures and relative importance placed on mental health. Moreover, enterprises with an increasing number of regular employees appear to be seeing real decreases

in the number of employees suffering from mental disorders. In other words, it appears that enterprises have some degree of concern with the mental health of regular employees, but little concern with that of non-regular employees. As mentioned earlier, past research studies have used the variable "change in number of employees"; however, in this paper, the author distinguishes between "regular employees" and "non-regular employees." It might prove beneficial to future studies, as well, to classify this variable into numbers of regular and non-regular employees, rather than simply "number of employees."

The author uses "reinstatement procedures for employees who have taken leave" as a proxy variable for "policy of employing people with mental disorders," which appeared in the reviewed literature, and clear results were obtained here as well. Specifically, regarding "reinstatement of employees who have taken mental health leave," enterprises giving the response "in-house procedures and rules for reinstatement have been established" are more active in implementing medical health measures than those giving the response "reinstatement procedures are left to staff in charge of human resources, based on consultations held in each instance" or "reinstatement procedures are left to each worksite supervisor to determine." Likewise, these enterprises implement more substantial measures and place relatively greater emphasis on them, and they have declining numbers of employees who suffer from mental health issues (when looking at the table's symbols from the "procedures/rules exist" side). Because size of establishment is controlled, this means that enterprises with more solid "reinstatement procedures for employees who have taken leave" in place are correspondingly more concerned with mental health, even if they are small or medium-size enterprises. Clearly, these results are significant because they indicate that concern with mental health is not necessarily limited to large enterprises.

The influence of "situation of workers currently dealing with mental health issues" is slightly difficult to interpret. Enterprises having "a large number [of such employees] considering the business's size" are more likely to implement mental health measures, implement measures with a high degree of substantiality, and place emphasis on those measures, but also have increasing numbers of employees suffering from mental disorders. This variable is used as a proxy variable for "experience employing people with mental disorders" based on past research. The endogeneity of this explanatory variable with the explained variables (1), (2), (3) and (4) has been in doubt from the very beginning. However, space limitations in this paper make further analysis here difficult. For this reason, the author wishes to address this issue in the future with a more advanced analysis that will incorporate the influence of this variable.

Results for the last item, "change in sales," indicate that enterprises with growing sales emphasize mental health, and have decreasing numbers of employees suffering from mental disorders. However, it has no influence on the presence or absence of mental health measures, or on the substantiality of measures. The author also uses a variable concerning business activity for control purposes; however, as this variable is ambiguous as an ordinal scale, it is probably best to avoid making any clear interpretations here.

V. Summary and Future Issues

This last section will summarize the results of the paper's analyses and discuss research issues for the future. To begin, there are the points in which clear results could not be demonstrated.

"Current priority of mental health" has no influence on whether measures are actually implemented or not, although it does have a positive influence on the number of measures implemented. Meanwhile, the number of employees suffering from mental disorders is trending upward. From these observations, it does not appear that awareness of the relative importance of mental health has much of an influence on the actual circumstances of mental health. Similarly, because the endogeneity of "the situation of workers currently dealing with mental health issues" with individual explained variables is in doubt, it is probably too early to make any determinations based on the results of this paper alone. Also, assessment of "change in sales" requires precise numerical data on business activities.

Additionally, because the author handles the ordinal scales "change in number of regular employees," "change in number of non-regular employees" and other such items as continuous variables, they, like "sales," are no more than "pseudo" explanatory variables. Handling them as dummy variables may be an option, but in fact these are variables that ought to be handled as numerical data. While this presents a thorny problem when issues such as the questionnaire recovery rate are taken into account, the author intends to examine methods that would make it possible for respondents to enter precise numerical values.

In the author's case, what immediately comes to mind when considering workplace mental health issues is long work hours. Based on experience conducting research surveys thus far, the author believes that many people suffer from mental disorders in workplaces that demand long work hours. As work hours and other conditions vary greatly from individual to individual, the best approach would be to conduct simultaneous surveys of enterprises and their employees, since matching sets of data would likely lead to the discovery of even more issues. Although in practical terms it would be difficult to handle data for employees currently on leave or reinstated after leave due to mental disorders, having such micro data would be ideal.

Despite the above-mentioned issues, the analyses presented here did lead to the discovery of several useful facts. First, there are the differences that emerged among the business categories. Examining solely the influence on the four explained variables, it is evident that the category adopting the most proactive approach to mental health measures is "electricity, gas, heat supply and water." In second place is "information and communications" and tied for third place are "finance and insurance," "scientific research, professional and technical services" and "compound services."

Conversely, business categories that do not take a proactive approach to mental health measures are "transport and postal services," "wholesale and retail trade," "eating and drinking places, accommodations," "lifestyle and amusement-related services," "education,

learning support" and "medical, health care and welfare." Although some differences among enterprises in these apathetic categories emerge when viewed in detail, it can generally be concluded that they are unconcerned with mental health. Thus, employees in these categories are at a disadvantage compared to those in other categories.

Enterprise size, as well, is clearly an important factor. Even when the influences of various variables are controlled, larger establishments tend to have greater concern with mental health. This may be because small and medium-size enterprises lack the human and financial resources needed to properly take charge of mental health. One wonders why they cannot initiate some sort of response.

Unfortunately, working as a non-regular employee appears to bring disadvantages in terms of mental health. However, enterprises do not consider changes in the number of non-regular employees as a mental health-related issue.

Moreover, enterprises that take treatment of employees on mental health leave more seriously tend to have more concern with mental health, regardless of their size. Information on particular enterprises' mental health measures would likely help people seeking employment or attempting to change jobs, particularly those dealing with mental health issues.

This paper presents an experimental study of mental health in the workplace, a topic that has received little attention in previous studies. The results presented above suggest that priority should be given to implementing mental health measures for certain business categories, small and medium-sized enterprises, non-regular employees, and other vulnerable populations.

Research on this problem must move forward so that people suffering from mental disorders or dealing with mental health issues have the option of remaining employed, and are not cut off from their workplaces or careers. This topic is not the exclusive province of medical or psychological specialists. Indeed, the author believes that an interdisciplinary approach encompassing a variety of fields could be employed to resolve or alleviate this problem.

Appendix Table: Descriptive Statistics

	N	Average	Standard deviation	Minimum	Maximum
"Implementing" mental health measures dummy [implementing = 1, not implementing = 0]	120397	0.527		0	1
Number of mental health measures implemented [1 to 14]	61936	3.319	2.177	1	14
Current priority placed on mental health [1 = not an important issue to 4= top priority issue]	121875	2.502	0.771	1	4
Upward/downward trend of employees who suffer from mental health issues [downward trend=1 to upward trend=5]	64199	3.076	1.031	1	5
Business category					
Construction	125465	0.057		0	1
Manufacturing	125465	0.258		0	1
Electricity, gas, heat supply and water	125465	0.013		0	1
Information and communications	125465	0.024		0	1
Transport and postal services	125465	0.085		0	1
Wholesale and retail trade	125465	0.256		0	1
Finance and insurance	125465	0.080		0	1
Real estate and goods rental and leasing	125465	0.011		0	1
Scientific research, professional and technical services	125465	0.014		0	1
Eating and drinking places, accommodations	125465	0.038		0	1
Lifestyle and amusement-related services	125465	0.010		0	1
Education, learning support	125465	0.015		0	1
Medical, health care and welfare	125465	0.035		0	1
Compound services (post offices, agricultural cooperatives, etc.)	125465	0.011		0	1
Other services (services not included in other classifications)	125465	0.093		0	1
Size of establishment					
Fewer than 50 employees	124487	0.559		0	1
50 to 99 employees	124487	0.175		0	1
100 to 299 employees	124487	0.187		0	1
300 to 999 employees	124487	0.058		0	1
1,000 employees or more	124487	0.022		0	1
Change in number of regular employees [1=20% or more decrease to 7=20% or more increase]	122483	3.685	1.289	1	7
Change in number of non-regular employees [1=20% or more decrease to 7=20% or more increase]	103779	3.761	1.367	1	7
Reinstatement of employees on leave					
Procedures/rules exist	117173	0.354		0	1
Consultation in each instance	117173	0.465		0	1
Left to supervisor	117173	0.182		0	1
Situation of workers dealing with mental health issues					
Few considering establishment size	122844	0.227		0	1
Somewhat few considering establishment size	122844	0.079		0	1
Normal considering establishment size	122844	0.256		0	1
Fairly many considering establishment size	122844	0.054		0	1
Many considering establishment size	122844	0.010		0	1
None at all	122844	0.374		0	1
Change in sales [1=considerably lower to 5=considerably larger]	119819	2.499	1.079	1	5
Change in overall amount of work at workplace [1=decreased to 5=increased]	123181	3.332	1.177	1	5
3-year change in personnel distribution [1=decreased compared to before to 5=increased compared to before]	124127	2.845	1.103	1	5

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