

* This English manuscript is a translation of a paper originally published in the *Psychiatria et Neurologia Japonica*, Vol.125, No.3 p.183-193 which was translated by the Japanese Society of Psychiatry and Neurology and published with the author's confirmation and permission. If you wish to cite this paper, please use the original paper as the reference.

Original Article

Predictors of Employment Acquisition and Duration among People with Mental Illness Participating in Individual Placement and Support Programs in Japan

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Psychiatria et Neurologia Japonica 125: 183-193, 2023

Abstract

Objective: This study investigated the association between client characteristics and employment acquisition and duration among individuals with mental illness who were registered in Individual Placement and Support (IPS) programs.

Methods: A secondary analysis was conducted using data from a 2-year cohort study. Two hundred and two clients with a diagnosis of mental illness and who participated in IPS programs for job-seeking purposes were enrolled at 16 agencies providing these programs. Data on 11 client characteristics were collected at baseline (gender, age, diagnosis, education, living situation, receipt of disability certificate, disability pension or social security, work experience and hospitalization in the past year, and general functioning). For clients who were employed, data were also obtained on employment acquisition and the number of weeks worked. The associations between client characteristics and employment acquisition and duration were statistically analyzed.

Results: The Global Assessment of Functioning score showed a significant positive association with obtaining employment (OR: 1.04, 95% CI: 1.01 to 1.07, $P=0.003$) and

employment duration (B: 0.6, 95% CI: 0.2 to 1.0, $P=0.010$). Male participants were significantly more likely to obtain employment than female participants (OR: 2.12, 95% CI: 1.10 to 4.09, $P=0.025$). Regarding diagnosis, those with neurotic disorders had a significantly longer employment duration than those with schizophrenia or bipolar disorder. No significant associations were found between other characteristics.

Conclusions: Among clients of IPS programs in Japan, general functioning at the time of enrollment may affect employment outcomes. Women may be less likely to gain employment. Since client characteristics only modestly influence employment outcomes, future research should examine service and community characteristics, client job preferences, and working conditions that hinder or facilitate employment acquisition.

Keywords: Individual Placement and Support, supported employment, vocational rehabilitation, client predictors, mental illness

Introduction

It is well-known that people with mental illnesses often have difficulty finding work and thus show high rates of unemployment. However, many people with mental illnesses who are not employed want to work,¹⁵⁾ and there is a need for effective supported employment³⁴⁾ for reasons such as improvements of symptoms, functioning, and quality of life that can be achieved through employment. Individual Placement and Support (IPS) is a model of individualized supported employment developed in the United States and characterized by rapid job placement without the need for pre-employment training or post-employment support.⁵⁾ IPS is widely recognized as an evidence-based

practice⁶⁾¹⁴⁾²¹⁾²³⁾²⁶⁾ and has been introduced in Japan, where its effectiveness has been demonstrated.¹⁶⁾¹⁷⁾³⁶⁾ However, no research has been conducted in Japan to determine which characteristics make it easier for people to find work or stay in jobs longer.

Several reviews have been published on individual predictors of employment acquisition and retention for people with mental illness.⁴⁾¹⁰⁾²⁵⁾³¹⁾³⁵⁾ The most influential predictors are past work experience⁴⁾¹⁰⁾³¹⁾³⁵⁾ and high cognitive function.⁴⁾³¹⁾ In addition, the use of welfare systems such as disability benefits reportedly hinders employment.¹⁰⁾³¹⁾ Multiple studies reported that a younger age is advantageous,⁴⁾³¹⁾³⁵⁾ and the sex is

considered to have almost no relationship with employment outcomes.²⁵⁾³¹⁾³⁵⁾ There are reports that people with schizophrenia find it more difficult to secure employment than those with other diagnoses,³⁵⁾ but there are also reports that there is no relationship,²⁵⁾ and so the findings are inconsistent. However, another systematic review showed that the effects of IPS differ depending on the diagnosis.¹⁸⁾ Compared with conventional services, IPS was found to be significantly effective in increasing the employment rate and number of weeks worked for those with schizophrenia, but not significantly effective in increasing the number of weeks worked for bipolar disorder patients, and not significantly effective in increasing either the employment rate or number of weeks worked for those with depression. Thus, it is entirely possible that employment outcomes differ depending on the client's diagnosis. Some studies have reported that higher education levels are advantageous,³¹⁾ but others have found no relationship.¹⁰⁾ The findings on the relationship between hospitalization experience and employment outcomes are also inconsistent.⁴⁾²⁵⁾³¹⁾

There are two reasons for investigating the relationship between individual client predictors and

employment outcomes. First, by clarifying the predictors related to employment outcomes, it becomes possible to improve and reinforce current interventions more effectively. For example, the finding that cognitive function is related to employment outcomes led to attempts to combine cognitive rehabilitation with IPS.²⁾¹¹⁾²⁰⁾ Another significance is that it reveals attributes that are not related to employment outcomes, suggesting that even people with attributes that may seem to be disadvantageous do not necessarily differ greatly in their chances of obtaining or maintaining employment from those with other attributes. It is considered that this will lead to service providers providing support without prejudice and people with mental illness having hope for employment. As mentioned above, a wealth of knowledge has been accumulated in this research area, but no studies that have been conducted involving people who use IPS-modeled employment service in Japan. Overseas, the welfare system for people with disabilities and economic and cultural backgrounds differ from those in Japan, and the form of supported employment (IPS or conventional vocational rehabilitation, etc.) also differs depending on the research, so the results of previous studies may not necessarily apply in Japan.

Therefore, the purpose of this study was to examine which predictors are associated with employment and its duration among people with mental disorders using IPS-modeled supported employment in Japan.

I. Methods

1. Research Design

This study was a secondary analysis of a multicenter cohort study involving a two-year follow-up. In the primary report, we examined fidelity scores (scores indicating the degree to which services provided are faithful to IPS model) of 16 institutions providing IPS-modeled supported employment, and compared persons by dividing them into high-fidelity and low-fidelity groups. The results showed that employment outcomes were significantly better for users of institutions in the high-fidelity group.³⁶⁾ The study was registered with the University Hospital Medical Information Network (UMIN) (No. UMIN000025648) and conducted with the approval of the National Center of Neurology and Psychiatry Ethics Committee (No. A2016-055). This paper also describes the study outline in accordance with STROBE guidelines.³³⁾

2. Setting

Sixteen organizations that had undergone a fidelity study and were aiming to provide IPS-modeled

supported employment participated in this study (Figure). Inclusion criteria were: (i) provision of both individual and group services, and (ii) no exclusion criteria for service users, so that anyone could access the service. The average length of time since the participating organizations began IPS-modeled supported employment was 4.3 years (range: 0.6 to 8.7 years). The average fidelity score measured using the Japanese version of the Individualized Supported Employment Fidelity scale (JiSEF)³⁰⁾ was 91.4 points (range: 77-108 points) in 2016 and 92.0 points (range: 68-115 points) in 2018.

3. Subjects

Participants were recruited at each organization. Inclusion criteria were: (i) being 20 years of age or older, (ii) having been diagnosed with a mental disorder, and (iii) having started receiving support for job-search purposes between January 1 and June 30, 2017. Posters were displayed at each organization to inform participants that data on their background predictors and employment outcomes would be collected from their service records and used in the study. If a participant requested that their information not be used, that person's information was deleted.

4. Measurement Items

With regard to participants' attributes, data on the sex, age, diagnosis (ICD-10), highest level of education, living arrangements, disability welfare-related attributes (presence or absence of a disability certificate, receipt of disability pension, receipt of public assistance), whether they had worked for more than 30 days in the past year, whether they had been hospitalized in the past year, and general functioning (Global Assessment of Functioning: GAF)¹⁾ were obtained from service records or intake/assessment sheets at the start of service use. The source of the diagnostic information was either derived from the doctor's diagnosis or obtained from the participant. GAF was scored by the agency staff. The staff received training and materials on GAF in advance.

For employment outcomes, we obtained data on whether participants were employed during the follow-up period, and the number of weeks worked by those who were employed, through records of service use, employment contracts, and interviews with participants. The number of weeks worked was calculated from the start and end dates of employment. If a participant had multiple employment periods, all weeks worked were added together. If a participant stopped using the service during the follow-up period, the service staff at the agency contacted

them and collected data on employment. If there were any missing data, the authors contacted the service staff at the agency and supplemented the data. The follow-up ended on June 30, 2019, and data collection was completed in December 2019.

5. Statistical Analysis

Employment acquisition was analyzed using a logistic regression mixed model, and the number of working weeks was analyzed using a linear mixed model. Service provider organizations were included as variables for the random intercept to account for differences between organizations. For categorical variables, if the proportion of participants belonging to one category was less than 1%, it was integrated with other categories for analysis. The highest level of education was categorized into two groups: university graduate or higher (university, graduate school), and below university graduate (middle school, high school, vocational school, junior college), and analyzed accordingly. After analyzing the relationship between employment acquisition and the number of weeks worked for each attribute (simple model), a model was created that included all attributes for which the correlation was significant as explanatory variables (multivariable

model) and analyzed. For the diagnosis, multiple comparisons were performed as post-hoc tests. In all models, the fidelity score of organizations was used as a control variable, based on previous reports.³⁶⁾ The significance level was set at 5%. Analysis was conducted using R version 4.0.4.

II. Results

Of the 219 people recruited, 206 were enrolled in the study, but 4 people requested that their data not be used during the follow-up period; thus, 202 people were included in the final analysis. Of these, 120 people (59.4%) worked at least once during the follow-up period, and the remaining 82 people did not work. The mean number of weeks worked by those who actually worked was 52.3 (SD=32.1). Table 1 shows the attributes of participants, average employment rate, and average number of weeks worked by attribute category. There were slightly more male participants (55.9%) and the average age was 34.9 (SD=9.9). The most common diagnosis was schizophrenia (38.1%), followed by developmental disorders (23.3%), depression (18.8%), bipolar disorder (9.4%), and neurotic disorders (8.4%). Personality disorders and intellectual disabilities each accounted for 1%. The highest level of education attained was a college degree or higher for 44.6% of participants.

Regarding living arrangements, 72.3% of participants lived with their families, while 26.7% lived alone. Only 1% of participants were institutionalized. In order of frequency, the most common social characteristics associated with disability were: having a disability certificate (72.3%), receiving a disability pension (38.6%), and receiving public assistance (14.9%). A total of 34.2% of participants had worked for more than 30 days in the past year, and 19.8% had been hospitalized. The final mean GAF score was 51.0 (SD=13.4).

Personality disorders and intellectual disabilities, which were each reported by less than 1% of participants, were combined and analyzed as a single category: “Other (personality disorders/intellectual disabilities)”. Similarly, institutionalized living was combined with living alone and analyzed.

1. Employment Acquisition

Looking at data by sex, the employment rate for men was 70.8%, while that for women was 44.9%. In statistical analysis, men were significantly more likely to be employed than women (OR: 2.27, 95% CI: 1.20-4.30, $P=0.012$) (Table 2). In addition, those with a college degree or higher were significantly more likely to be employed than those with less than a university degree (OR: 2.00, 95% CI:

1.05-3.92, $P=0.038$). Furthermore, those with a higher GAF score were significantly more likely to be employed (OR: 1.04, 95% CI: 1.02-1.07, $P=0.001$). There was no significant correlation between age, diagnosis, living arrangements, disability welfare-related attributes, work experience, or hospitalization and employment acquisition.

In the multiple regression model with significant attributes as explanatory variables, the sex (male, OR: 2.12, 95% CI: 1.10-4.09, $P=0.025$) and GAF (OR: 1.04, 95% CI: 1.01-1.07, $P=0.003$) were significantly correlated with employment acquisition, but final educational attainment was not (OR: 1.69, 95% CI: 0.86-3.41, $P=0.130$).

2. Number of Working Weeks

Concerning the relationship with the diagnosis, participants with neurotic disorders showed significantly more working weeks than those with schizophrenia (B: 30.4, 95% CI: 6.4 to 54.4, $P=0.017$) (Table 3). However, when multiple comparisons were performed as a post-hoc test and P -values were adjusted, the difference was not significant, and it was shown that neurotic disorders were significantly longer than bipolar disorders ($P=0.029$, adjusted using the Tukey method). In addition, participants who had worked more than 30 days in the past year

showed significantly more working weeks (B: 13.1, 95% CI: 1.7-24.5, $P=0.027$). GAF was also significantly correlated with working weeks (B: 0.5, 95% CI: 0.1-1.0, $P=0.025$). There was no significant correlation between the number of working weeks and sex, age, highest level of education, living arrangements, disability welfare-related attributes, or hospitalization.

In the multiple regression model that included the significant attributes as explanatory variables, the number of working weeks was significantly higher for those with neurotic disorders than schizophrenia (B: 29.2, 95% CI: 5.9 to 52.5, $P=0.019$), GAF was also significantly correlated (B: 0.6, 95% CI: 0.2-1.0, $P=0.010$), but work experience was not (B: 7.3, 95% CI: -3.9-18.6, $P=0.217$).

III. Discussion

This study investigated the attributes that can be used to predict the acquisition of employment and its length among people using IPS-modeled supported employment. Those with higher GAF scores at the start of using the service tended to be more likely to find employment and remain employed for longer. Men were more likely to find employment than women. There was a difference in the length of employment only in some comparisons of diagnoses. There were no significant correlations

with other characteristics, including the use of disability benefit systems, which was pointed out in previous studies.

1. GAF Score and Employment

Fewer previous studies examined the relationship between the GAF score and employment outcomes than those that assessed other predictors. Michon, H.W.C. et al.,²⁵⁾ the only ones to have conducted a literature review, reported that the GAF score and employment outcomes were not associated, which is opposite to the results of this study. Apart from the literature review, there have been at least two secondary analyses of randomized controlled trials (RCTs) of IPS since 2000. Of these, the report by Rössler, W. et al.²⁸⁾ identified a relationship between the GAF score and employment rate/duration, which is consistent with the results of this study, while the report by Catty, J. et al.⁹⁾ identified no such relationship, being inconsistent with the present results. The reason for this discrepancy is considered to be the different diagnoses of participants in the studies. In the study by Rössler et al., 10% of participants had schizophrenia, while the majority had diagnoses other than schizophrenia, such as depressive or neurotic disorders. In contrast, in the study by Catty et al., 80% of participants had schizophrenia. The characteristics of participants in the

present study were similar to those in the study by Rössler et al., with 60% having diagnoses other than schizophrenia. This may explain why the results were consistent with the finding that a higher GAF score was associated with better employment outcomes. A study by Ciampa, M.A. et al. also showed that among participants with 90% emotional disorders, those with higher scores on the Functional Assessment Short Test (FAST) were more likely to be employed.¹²⁾

Based on the results of previous studies and this study, it can be inferred that when supporting users with a variety of diagnoses other than schizophrenia, the GAF score and employment outcomes are likely to be related. Thus, it can also be considered that for people with schizophrenia, receiving employment support may help to mask their low general functioning. The fact that the effects of IPS on people with severe mental illness have been shown to be greater than those on people with other illnesses also supports this.¹³⁾ In addition to IPS, other evidence-based social interventions for people with severe mental illness include Housing First and family intervention.²¹⁾ These interventions may share a common feature in that they involve significant outreach to people around the individual and adjustments to the environment. It is

considered that creating a work environment that is easy to work in by working with one's boss, colleagues, family, and doctor makes it possible for people with schizophrenia to be employed, regardless of their general functioning. However, this is still only a hypothesis, and further research is needed to determine which aspects of IPS match which symptoms/disabilities.

2. Sex and Employment

While there is much literature on the absence of a relationship between the sex and employment outcomes,⁷⁻⁹⁾²⁵⁾²⁸⁾³¹⁾³²⁾³⁵⁾ the results of this study showed that men are more likely to be employed. Japan has a more pronounced sex gap than other developed countries overseas. According to the World Economic Forum's 2022 Gender Gap Index, Japan ranked 116th out of 146 countries, the lowest among all developed countries, with a particularly large gap in the "economy" category.²⁷⁾ This study suggests that the social background is also a barrier to employment for people with mental illness. Women with disabilities may be subject to double discrimination due to their disability and sex. However, in Japan, there has been very little research into the relationship between the sex and employment for people with disabilities.²²⁾ In the future, it is hoped that research on sex discrimination in

the employment of people with disabilities will be conducted and the actual situation will be clarified.

3. Diagnosis and Employment

Regarding diagnosis, people with neurotic disorders have been shown to be employed for longer than those with schizophrenia or bipolar disorder, and other comparisons have not identified a relationship with employment outcomes. A meta-analysis reported that people with schizophrenia have more difficulty obtaining and maintaining employment than those with other diagnoses, which is partially consistent with the results of this study.³⁵⁾ However, several studies did not identify a relationship between diagnosis and employment outcomes.⁹⁾²⁵⁾²⁸⁾ In a secondary analysis of RCT, Campbell, K. et al.⁸⁾ reported that the diagnosis was not related to employment outcomes in the IPS group, but was associated in the conventional vocational rehabilitation group. Therefore, conducting IPS can reduce the difficulties of working due to a serious illness, and it is possible that the gap associated with diagnosis can be bridged. This study provided IPS-modeled supported employment, and the fact that only a limited relationship was noted between the diagnosis and employment outcomes is generally consistent with this finding. However, the tendency for people with neurotic

disorders to show longer employment periods was first suggested by this study. Thus, further verification by other studies is required.

It should be noted that the differences by diagnosis described above are not differences between IPS and other interventions, but rather comparisons within the IPS group. In this study, all participants used IPS-modeled supported employment, so it should be considered that the employment outcomes of people with severe mental disorders were improved and then compared with other diagnoses. While IPS has been shown to be particularly effective for people with severe mental disorders compared with other interventions, evidence supporting its effectiveness for people with emotional disorders and neurotic disorders is relatively weak (Table 4).¹³⁾¹⁸⁾ It is important to note that people with schizophrenia and bipolar disorder benefit markedly from IPS.

4. Other Attributes and Employment

Although abundant previous literature suggested that the use of disability benefit systems is related to employment outcomes,⁴⁾¹⁰⁾²⁴⁾²⁹⁾³¹⁾ the results of the present study contradict this. In overseas disability benefit systems, benefits may be reduced if income increases or a certain period of time has passed since the person started

working. Beneficiaries are said to be discouraged from working because they fear that working or continuing to work will lead to a reduction in their overall income. Previous studies suggested that not only is the motivation of non-working beneficiaries impaired, but that people who use IPS for job-search purposes are significantly less likely to find work or work for shorter periods of time than those who do not receive disability benefits.³⁾⁸⁾ In Japan, although there are regional differences, employment does not immediately affect the amount of disability pension, so it is considered that it was not a significant factor preventing employment in this study.

In this study, we investigated the relationship between employment acquisition and the number of weeks worked for 11 attributes, but 6 of these attributes (age, living arrangements, disability certificate, disability pension, public assistance, hospitalization in the past year) were not related to employment outcomes in any of the statistical models. There were also two attributes (educational background and employment experience in the past year) that showed an association in the simple but not multivariable model. Some of these (age, disability pension, employment experience) were also reported to be associated in multiple literature reviews. However, there were

also attributes for which an association was not strongly expected based on previous research, but an association was found in this study (general functioning and the sex). The reasons for this may be the characteristics of the participants in this study and regional characteristics of Japan, as discussed above. As there are few studies or literature reviews that have analyzed whether the characteristics related to employment outcomes differ between IPS and other interventions separately for IPS and control groups, it is difficult to draw a clear conclusion; this is an issue for future research.

The fact that many characteristics were not found to be related to employment outcomes suggests that people with these characteristics are able to obtain and maintain employment to the same extent as those without them. This can be seen as supporting the “zero exclusion criteria” (anyone who wants to work can use the service, regardless of their level of career readiness, work experience, illness or severity of illness, etc.),⁵⁾ which is one of the eight principles of the IPS model. In addition, as evidenced by the often inconsistent results of previous studies, it is not possible to fully predict the employment outcomes of people with mental illness based on their personal characteristics. Bond, G.R. et al. reported that the most

powerful predictor of employment is receiving effective personalized employment support, as typified by IPS, and that personal attributes have only a modest relationship with employment.⁴⁾ In addition, Metcalfe, J.D. et al. consider that it is insufficient to predict employment outcomes without taking into account service-related factors, such as the intensity of employment support services and skills of staff, as well as regional economic and cultural factors.²⁴⁾ Furthermore, in another secondary analysis using data from this study, it was found that when the employment conditions desired by users (type of work, monthly income, working hours, commuting time, and disclosure of disability) are more likely to be met in actual employment, the length of employment is longer.¹⁹⁾ In the future, it is hoped that the characteristics of employment support service providers, characteristics of the areas in which users live, and desires and employment conditions of users will be expanded, and the factors that inhibit or promote the employment of people with mental illness will be explored.

5. Strengths and Limitations

This is the first study in Japan to examine the relationship between client predictors and employment outcomes. It also uses data from the only longitudinal study of IPS-modeled

supported employment research in Japan. The study's discussion of the findings in light of the social context in Japan and wealth of overseas research could provide suggestions for future research and practice. However, the study was limited by the small sample size, which may have resulted in deficient statistical power.

Conclusion

This study examined the relationship between the attributes of IPS-modeled supported employment users and their acquisition of employment and number of weeks worked, and clarified the possibility that general functioning at the start of use may affect employment outcomes. Furthermore, it was shown that men were more likely to find employment, suggesting that there is a risk that women's employment is being inhibited by sex-related disparities. Overall, however, the characteristics of individual users had little effect on employment outcomes, and there is a need to examine how the content and intensity of services, regional characteristics, user preferences, and employment conditions promote or inhibit employment in the future.

This study was supported by a Grant-in-Aid for Scientific Research from the Ministry of Education, Culture, Sports, Science and Technology (Principal

Investigator: Sosei Yamaguchi) No. 16K21661, 20H01611) and the Comprehensive Research and Development Project for Persons with Disabilities from the Japan Agency for Medical Research and Development (Principal Investigator: Sayaka Sato, No. 17dk0307074h0001). This study was a secondary analysis, and the details of the original study were reported by Yamaguchi et al.³⁶⁾

There are no conflicts of interest to disclose in relation to this paper.

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図 IPS型就労支援提供機関の所在地方

Figure: Location of IPS-modeled supported employment providers

表 1 IPS 型就労支援利用者の属性と就労率・就労週数

	n = 202	期間中 1 回以上 就労あり n = 120	就労週数 (就労者のみ) n = 120
	n (%) / mean (SD)	n (%)	mean (SD)
性別			
男	113 (55.9%)	80 (66.7%)	53.1 (32.4)
女	89 (44.1%)	40 (33.3%)	50.8 (31.8)
年齢	34.9 (9.9)	NA	NA
診断 (ICD-10)			
統合失調症 [F2]	77 (38.1%)	48 (40.0%)	52.3 (32.5)
うつ病 [F3]	38 (18.8%)	24 (20.0%)	47.4 (35.1)
双極性障害 [F3]	19 (9.4%)	11 (9.2%)	33.9 (25.0)
神経症性障害 [F4]	17 (8.4%)	7 (5.8%)	83.9 (15.1)
パーソナリティ障害 [F6]	2 (1.0%)	0 (0.0%)	NA
知的障害 [F7]	2 (1.0%)	2 (1.7%)	66.2 (40.7)
発達障害 [F8]	47 (23.3%)	28 (23.3%)	55.1 (29.3)
最終学歴			
大卒未満	112 (55.4%)	60 (50.0%)	28.8 (36.0)
大卒以上	90 (44.6%)	60 (50.0%)	34.0 (35.2)
居住形態			
家族と同居	146 (72.3%)	84 (70.0%)	53.6 (30.9)
一人暮らし	54 (26.7%)	35 (29.2%)	50.5 (35.0)
施設	2 (1.0%)	1 (0.8%)	13.0 NA
障害者手帳			
あり	146 (72.3%)	89 (74.2%)	54.5 (30.9)
なし	56 (27.7%)	31 (25.8%)	46.1 (35.0)
障害年金受給			
あり	78 (38.6%)	51 (42.5%)	49.9 (32.4)
なし	124 (61.4%)	69 (57.5%)	54.2 (32.0)
生活保護受給			
あり	30 (14.9%)	15 (12.5%)	50.0 (37.4)
なし	172 (85.1%)	105 (87.5%)	52.7 (31.4)
過去 1 年間に 30 日以上の就労経験			
あり	69 (34.2%)	48 (40.0%)	60.5 (32.3)
なし	133 (65.8%)	72 (60.0%)	46.9 (31.0)
過去 1 年間の入院			
あり	40 (19.8%)	22 (18.3%)	46.5 (35.2)
なし	162 (80.2%)	98 (81.7%)	53.7 (31.4)
全体的機能 (GAF)	51.0 (13.4)	NA	NA

Table 1: Attributes of IPS-modeled supported employment users and employment rate/number of working weeks

n=202

At least one working day during period

n=120

Number of working weeks (only for those who worked)

n=120

n (%) / mean (SD) n (%) mean (SD)

Sex

Male	113 (55.9%)	80 (66.7%)	53.1 (32.4)
Female	89 (44.1%)	40 (33.3%)	50.8 (31.8)

Age 34.9 (9.9) NA NA

Diagnosis (ICD-10)

Schizophrenia [F2]	77 (38.1%)	48 (40.0%)	52.3 (32.5)
Depression [F3]	38 (18.8%)	24 (20.0%)	47.4 (35.1)
Bipolar disorder [F3]	19 (9.4%)	11 (9.2%)	33.9 (25.0)
Neurotic disorders [F4]	17 (8.4%)	7 (5.8%)	83.9 (15.1)
Personality disorders [F6]	2 (1.0%)	0 (0.0%)	NA
Intellectual developmental disorders [F7]	2 (1.0%)	2 (1.7%)	66.2 (40.7)
Developmental disorders [F8]	47 (23.3%)	28 (23.3%)	55.1 (29.3)

Highest level of education

Below college graduate	112 (55.4%)	60 (50.0%)	28.8 (36.0)
College degree or higher	90 (44.6%)	60 (50.0%)	34.0 (35.2%)

Living arrangements

Living with family	146 (72.3%)	84 (70.0%)	53.6 (30.9%)
Living alone	54 (26.7%)	35 (29.2%)	50.5 (35.0%)
In facility	2 (1.0%)	1 (0.8%)	13.0 NA

Disability certificate

Yes	146 (72.3%)	89 (74.2%)	54.5 (30.9)
No	56 (27.7%)	31 (25.8%)	46.1 (35.0)

Receiving disability pension

Yes	78 (38.6%)	51 (42.5%)	49.9 (32.4%)
No	124 (61.4%)	69 (57.5%)	54.2 (32.0%)

Receiving public assistance

Yes 30 (14.9%) 15 (12.5%) 50.0 (37.4%)
No 172 (85.1%) 105 (87.5%) 52.7 (31.4%)

Work experience of 30 days or more in past year

Yes 69 (34.2%) 48 (40.0%) 60.5 (32.3)
No 133 (65.8%) 72 (60.0%) 46.9 (31.0)

Hospitalization in past year

Yes 40 (19.8%) 22 (18.3%) 46.5 (35.2)
No 162 (80.2%) 98 (81.7%) 53.7 (31.4)

Global Assessment of Functioning (GAF) 51.0 (13.4) NA NA

表 2 IPS 型就労支援利用者の属性と就労獲得の関係

	単純モデル		多変数モデル	
	OR (95%CI)	P	OR (95%CI)	P
性別, 男	2.27 (1.20~4.30)	0.012*	2.12 (1.10~4.09)	0.025*
年齢	1.02 (0.99~1.06)	0.184		
診断 (ICD-10)				
統合失調症 [F2] (参照)				
うつ病 [F3]	0.86 (0.34~2.15)	0.746		
双極性障害 [F3]	0.74 (0.24~2.30)	0.603		
神経症性障害 [F4]	0.40 (0.12~1.30)	0.127		
発達障害 [F8]	0.82 (0.35~1.89)	0.635		
その他 (パーソナリティ障害 [F6]/知的障害 [F7])	0.45 (0.04~4.86)	0.514		
最終学歴, 大卒以上	2.00 (1.05~3.92)	0.038*	1.69 (0.86~3.41)	0.130
居住形態, 家族と同居 ¹	0.85 (0.42~1.71)	0.655		
障害者手帳あり	1.00 (0.47~2.12)	0.998		
障害年金受給あり	1.29 (0.66~2.49)	0.455		
生活保護受給あり	0.50 (0.20~1.21)	0.126		
過去 1 年間に 30 日以上就労経験あり	1.92 (0.98~3.85)	0.060		
過去 1 年間の入院あり	0.84 (0.38~1.85)	0.664		
全般的機能 (GAF)	1.04 (1.02~1.07)	0.001**	1.04 (1.01~1.07)	0.003**

* $P < 0.05$, ** $P < 0.01$

¹ “一人暮らし/施設” との比較

Table 2: Relationship between attributes of IPS-modeled supported employment users and obtaining employment

Simple model

OR (95% CI) P

Multivariable model

OR (95% CI)	P			
Sex, male	2.27 (1.20-4.30)	0.012*	2.12 (1.10-4.09)	0.025*
Age	1.02 (0.99-1.06)	0.184		
Diagnosis (ICD-10)				
Schizophrenia [F2] (reference)				
Depression [F3]	0.86 (0.34-2.15)	0.746		
Bipolar disorder [F3]	0.74 (0.24-2.30)	0.603		
Neurotic disorders [F4]	0.40 (0.12-1.30)	0.127		
Developmental disorders [F8]	0.82 (0.35-1.89)	0.635		
Other (personality disorder [F6] / intellectual developmental disorders [F7])	0.45 (0.04 - 4.86)	0.514		
Highest level of education, college graduate or higher				
	2.00 (1.05 - 3.92)	0.038*		
	1.69 (0.86 - 3.41)	0.130		
Living arrangements, living with family ¹	0.85 (0.42-1.71)	0.655		
Disability certificate	1.00 (0.47-2.12)	0.998		
Receiving disability pension	1.29 (0.66-2.49)	0.455		
Receiving public assistance	0.50 (0.20-1.21)	0.126		
Experience of working for more than 30 days in past year				
	1.92 (0.98-3.85)	0.060		
Hospitalization in past year	0.84 (0.38-1.85)	0.664		
GAF score	1.04 (1.02-1.07)	0.001**	1.04 (1.01-1.07)	0.003**

** $P < 0.05$, ** $P < 0.01$

¹ Comparison with “living alone/in facility”

表 3 IPS 型就労支援利用者の属性と就労週数の関係

	単純モデル		多変数モデル	
	B (95%CI)	P	B (95%CI)	P
性別, 男	0.6 (-11.6~12.8)	0.920		
年齢	0.0 (-0.6~0.5)	0.889		
診断 (ICD-10) ¹				
統合失調症 [F2] (参照)				
うつ病 [F3]	-6.9 (-21.9~8.1)	0.381	-6.2 (-20.9~8.5)	0.425
双極性障害 [F3]	-17.3 (-37.2~2.6)	0.098	-18.4 (-37.6~0.9)	0.072
神経症性障害 [F4]	30.4 (6.4~54.4)	0.017*	29.2 (5.9~52.5)	0.019*
発達障害 [F8]	2.3 (-11.8~16.4)	0.758	3.5 (-10.1~17.1)	0.627
その他 (パーソナリティ障害 [F6]/知的障害 [F7])	8.3 (-35.0~51.6)	0.714	8.7 (-33.5~50.9)	0.695
最終学歴, 大卒以上	-1.3 (-12.7~10.2)	0.829		
居住形態, 家族と同居 ²	3.6 (-8.8~16.0)	0.574		
障害者手帳あり	10.5 (-2.5~23.5)	0.119		
障害年金受給あり	-3.9 (-15.4~7.6)	0.508		
生活保護受給あり	-3.1 (-20.3~14.1)	0.727		
過去 1 年間に 30 日以上の就労経験あり	13.1 (1.7~24.5)	0.027*	7.3 (-3.9~18.6)	0.217
過去 1 年間の入院あり	-5.0 (-19.9~9.9)	0.514		
全般的機能 (GAF)	0.5 (0.1~1.0)	0.025*	0.6 (0.2~1.0)	0.010*

* $P < 0.05$

¹ post hoc test として多重比較を行ったところ, 就労週数において神経症性障害 > 双極性障害 ($P = 0.029$, tukey 法による調整済)

² “一人暮らし/施設” との比較

Table 3: Relationship between attributes of IPS-modeled supported employment users and number of working weeks

Simple model

B (95% CI) P

Multivariable model

B (95% CI) P

Sex, male 0.6 (-11.6 to 12.8) 0.920

Age 0.0 (-0.6 to 0.5) 0.889

Diagnosis (ICD-10)¹

Schizophrenia [F2] (reference)

Depression [F3] -6.9 (-21.9 to 8.1) 0.381 -6.2 (-20.9 to 8.5) 0.425

Bipolar disorder [F3] -17.3 (-37.2 to 2.6) 0.098 -18.4 (-37.6 to 0.9) 0.072

Neurotic disorders [F4] 30.4 (6.4 to 54.4) 0.017* 29.2 (5.9 to 52.5) 0.019*

Developmental disorders [F8] 2.3 (-11.8 to 16.4) 0.758 3.5 (-10.1 to 17.1) 0.627

Other (personality disorder [F6] / intellectual developmental disorders [F7])

8.3 (-35.0 to 51.6) 0.714 8.7 (-33.5 to 50.9) 0.695

Highest level of education, college graduate or higher -1.3 (-12.7 to 10.2) 0.829

Living arrangements, living with family² 3.6 (-8.8 to 16.0) 0.574

Disability certificate holder	10.5 (-2.5 to 23.5)	0.119
Receiving disability pension	-3.9 (-15.4 to 7.6)	0.508
Receiving public assistance	-3.1 (-20.3 to 14.1)	0.727
Employment experience of 30 days or more in past year	13.1 (1.7 to 24.5)	0.027* 7.3 (-3.9 to 18.6) 0.217
Hospitalization in past year	-5.0 (-19.9 to 9.9)	0.514
GAF score	0.5 (0.1 to 1.0)	0.025* 0.6 (0.2 to 1.0) 0.010*

* $P < 0.05$

¹ When multiple comparisons were conducted as a post-hoc test, neurotic disorders > bipolar disorders ($P=0.029$, adjusted using the Tukey method)

² Comparison with “living alone/in facility”

表 4 診断別の IPS の効果

	他の就労支援との比較	
	就労率	就労期間
統合失調症 ¹	有意差あり	有意差あり
双極性障害 ¹	有意差あり	有意差なし
大うつ病 ¹	有意差なし	有意差なし
重度精神疾患 ²	有意差あり	有意差あり
CMD ²	有意差あり	有意差なし

¹ 文献 18) より結果を抜粋。

² 文献 13) より結果を抜粋。重度精神疾患は主に統合失調症・双極性障害、CMD (common mental disorders) は主に感情障害・神経症性障害。就労率への IPS の効果の大きさについて、重度精神疾患と CMD で有意差あり (重度精神疾患 > CMD)。

Table 4: IPS effectiveness by diagnosis

Comparison with other types of supported employment

Employment rate	Employment period	
Schizophrenia ¹	Significant difference	Significant difference
Bipolar disorder ¹	Significant difference	No significant difference
Major depression ¹	No significant difference	No significant difference
Severe mental illness ²	Significant difference	Significant difference
CMD ²	Significant difference	No significant difference

¹ Results extracted from reference 18)

² Results extracted from reference 13). Severe mental disorders mainly include schizophrenia and bipolar disorder, while common mental disorders (CMD) mainly include affective and neurotic disorders. There was a significant difference in the effect of IPS on employment rates between those with severe mental disorders and CMD (severe mental disorders > CMD).