Measuring eudemonic well-being at work: a validation study for the 24-item the University of Tokyo Occupational Mental Health (TOMH) well-being scale among Japanese workers

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Abstract: Although the eudemonic perspective seems to be a promising in considering vocational identity among working population, well-being at work has been discussed primarily in terms of subjective/hedonic well-being. This study aimed to develop a new tool to measure eudemonic well-being at work (The University of Tokyo Occupational Mental Health [TOMH] well-being 24 scale) and investigate its validity in a collectivist culture. Two online surveys were conducted with a total of 1,760 workers in Japan. We created 89 potential items from existing scales. An exploratory factor analysis indicated eight factors for the dimensions of measurement. After item selection based on item response theory, the factor structure with three items from each of the eight dimensions indicated an excellent fit for another sample. Cronbach’s α and intra-class coefficients ranged from 0.671 to 0.845. The scores of the tool were more strongly associated with subjective well-being in the work context rather than well-being in general. In addition, the participants in the group demonstrating a higher risk for mental illness and a more stressful work environment indicated significantly lower scores, even after adjusting for general eudemonic well-being. The new measurement may be useful both for academic and practical applications for measuring eudemonic well-being at work, independent from general eudemonic well-being.

Key words: Scale development, Psychometry, Item response theory, Eudemonia, Workers

Introduction

Well-being has been a central concept for promoting health and positive psychology in recent years. Its importance is recognized not only in psychological and health
fields, but also in economics, sociology, management, and education. Well-being has critically different traits from the absence of negative factors, having independent impacts on health and mortality. For working populations, well-being is also an indispensable indicator of positive association with human capital and productivity.

There are two main conceptual types of well-being: hedonic and eudemonic. The former refers to emotional aspects of positive psychology. One of the famous theories in this type of well-being, theory of subjective well-being (SWB), suggested three dimensions of well-being: pleasant affect, unpleasant affect, and life satisfaction. SWB is defined as a person’s cognitive and affective evaluations of his or her life as a whole, including emotional reactions to events and cognitive judgements of satisfaction and fulfillment. High levels of subjective well-being are beneficial in lowering morbidity, decreasing symptoms and pain, and increasing longevity. The latter type of well-being focuses on elements of a “good” or valuable life, such as purpose, growth, and meaning. The most well-known example of this type of well-being is psychological well-being (PWB), a theory developed by Ryff indicating six dimensions of eudemonic well-being: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. PWB has deeper philosophical roots and captures the essence of ancient Greek imperatives: to know yourself and to become what you are. While these two types of well-being are correlated, their functions for health and productive outcomes differ. For instance, Straume and Vitterø reviewed functional differences between SWB and PWB, arguing that they are based on different groups of emotions: “pleasure” and “interest,” respectively. They also reported that the former group of emotions is strongly correlated with happiness and satisfaction while the latter is strongly correlated with engagement, involvement, and inspiration. These findings suggest that SWB and PWB play different roles in regulating behaviors and have different antecedents and outcomes.

Practice and research for well-being in various domains and contexts (e.g., school, home, workplace) have become more common. For example, concepts of positive psychology for children and adolescents require a developmental perspective and unique aspects. It is reasonable to consider unique structures and outcomes of well-being among children and adolescents since they may be more sensitive to adaptation in school life and academic evaluation, rather than to life in general. Among the working population, domain-specific concepts of well-being (i.e., well-being at work) are also applicable and useful as a major determinant of work-related outcomes such as productivity. A recent review on positive psychology at work indicated various positive concepts at work such as commitment, engagement, resilience, psychological capital, positive teamwork, and leadership. Some of them could be re-conceptualized as unique factors of well-being at work.

Unfortunately, well-being at work has been discussed primarily in subjective/hedonic terms and eudemonic well-being has rarely been investigated. Previous studies have noted that well-being at work consists of emotional (e.g., positive affect at work) and cognitive (e.g., job satisfaction) components, which are both included in subjective well-being. Indeed, many psychosocial intervention studies in work-related settings have adopted positive affect or job satisfaction as notable outcomes of well-being. The eudemonic perspective in working lives seems to be more important and useful than the subjective/hedonic perspective when considering vocational identity, career attainment, and relationships with co-workers. A previous study revealed that falling short of early career goals was associated with increased symptoms of depression and lower levels of life purpose. Another study indicated that scores on life purpose, personal growth, self-acceptance, and environmental mastery were associated with career commitment and work-personality development. Enhancing eudemonic well-being is also attractive for employers, in terms of less frequent and more fully solved conflicts, loyalty, civility, and increases in innovation at the workplace. Therefore, creating a concept for eudemonic well-being at work and developing tools for measurement are both important objectives.

There are several previous studies that have integrated both subjective/hedonic and eudemonic well-being at work and attempted to develop measurements for eudemonic well-being at work. The integrated models of well-being at work, for example, the one by Lent and Brown, have suggested social cognitive career theory to try unifying theoretical perspective on SWB and PWB. In this model, eudemonic processes serve as key routes by which people achieve and sustain hedonic well-being. The measurements for eudemonic well-being at work, for example, a recent study conducted in the US, suggests a new conceptualization for meaning-based job-related well-being beyond job satisfaction. Czerw conducted a large validation study in Poland to develop a scale for eudemonic well-being in the workplace context and proposed a scale consisting of 43 items within 4
dimensions: positive organization, positive relations with co-workers, contribution to the organization, and fit and development. However, conceptualization for eudemonic well-being at work is still not enough. Across differing cultural contexts, we should accumulate findings regarding structures, correlations, and similarities and differences in comparison to general eudemonic well-being in working populations. Previous studies suggested that evaluation and predictors for well-being were different between people in individualist and collectivist nations because collectivist cultures give priority to in-group, define the self in relational terms, and sacrifice positive emotions for the achievement of important goals. In addition, psychometric properties (i.e., reliability and validity), and interpretability for using the proposed measurements should be investigated since previous studies did not check for all aspects of these properties. Furthermore, considering practical use in workplace settings, scales with fewer items will be feasible.

This study aimed to develop a new measurement for eudemonic well-being at work (The University of Tokyo Occupational Mental Health [TOMH] well-being 24 scale) and investigate its structural validity, internal consistency, test-retest reliability, and convergent/know-groups validity. We conducted an exploratory examination of the factor structures of eudemonic well-being at work in Japan, which is predominated by a collectivist culture. We applied item response theory (IRT) to items and selected only three from each of the eight dimensions, with excellent performance for discrimination and difficulty. The developed scale is useful in both academic and practical terms owing to its confirmed psychometric properties and limited number of items. We hypothesized that the structures of the new measurement would overlap with those of general eudemonic well-being (i.e., six dimensions) and those of the previous study for work. The new measurement would be significantly different by known-groups (i.e., levels of psychological distress, job stressors), even after adjusting for general eudemonic well-being. According to previous findings, workers classified as high risk for mental illness and a stressful environment at work—that is, people who experience higher levels of psychological distress, higher job strain, lower social support—would show significantly lower scores on this measurement.

Subjects and Methods

Study design

This was a validation study of a measurement tool comprising two online surveys. The first survey (Survey 1) was conducted in February 2018 and the second survey (Survey 2) was conducted in February 2019. Survey 1 was consisted of a baseline survey and a two-week follow-up to explore the initial factor structure, item characteristics, internal consistency, test-retest reliability, and convergent/know-groups validity. Survey 2 was conducted to collect additional participants to confirm cross-validity for the factor structure by confirmatory factor analysis (CFA). The study protocol was approved by the ethics committee of the Graduate School of Medicine and the Faculty of Medicine, The University of Tokyo (No. 11242-(4)). This article was written according to the standard of development of measurement, Consensus-based Standards for the Selection of Health Measurement Instruments (COSMIN). The properties of the measurement (i.e., reliability and validity) were reported according to the COSMIN Risk-of-Bias checklist.

Participants

For Survey 1, a total of 1,030 workers who lived in all prefectures in Japan were recruited from registered respondents of an Internet survey company. The survey company had access to a sample of over 2,000,000 participants in Japan and asked them to complete a self-reported questionnaire, based on the eligibility criteria. The criteria for participants were (a) all types of workers, including people engaged in part-time and freelance jobs, and (b) aged 18 or older. There were no exclusion criteria. Eligible participants who registered with the survey company were sent an e-mail with a link to the questionnaire. To obtain informed consent, participants clicked “agree” after reading the terms and conditions of the survey on the first page of the questionnaire and before answering the questionnaire. At the two-week follow-up, the survey company randomly selected 100 participants from the
1,030 workers who completed the baseline questionnaire and invited them to join again. The participants received about 100 points as a reward for each survey, which could be cashed out or used for shopping (one point was equal to one Japanese yen). A response rate could not be calculated because the survey company recruited participants until the number of completers reached the target (i.e., 1,030). Survey 2 was conducted following the same method as Survey 1, recruiting 730 workers.

Development process of an item pool for the new measurement

First, we collected potential items and created an item pool for the TOMH well-being 24 scale. We collected items from previous measurements for general eudemonic well-being based on Ryff’s psychological well-being theory12) and relevant concepts treated as positive outcomes at work16) (e.g., commitment to work and work engagement), modified for the workplace context. A systematic search was conducted to explore existing scales for measuring eudemonic well-being at work by nine researchers (KW, KI, YO, ASH, HE, YK, HAd, HAr, and ASa), and a total of eight scales were selected to be suitable for creating the item pool: CASP-1933), Psychological Well-Being Scale (PWBS)34), Utrecht Work Engagement Scale35), Organizational Commitment Scales36, 37), Job Descriptive Index38), a modified version of Bar-On’s Emotional Quotient Inventory (EQ-I)39), and Workplace PERMA-Profiler3, 40).

Second, items were selected from the eight scales which related to components of eudemonic well-being at work, based on discussion among the researchers. Third, sentences of the items were modified into the context of working life. Finally, the item pool for the measurement consisting of 89 items was created (Appendix 1). All items were rated on a seven-point Likert scale (0=strongly disagree, 6=strongly agree). The scale consists of six factors, each of which includes 7 items: autonomy (e.g., ‘I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people,’), environmental mastery (e.g., ‘In general, I feel I am in charge of the situation in which I live,’), personal growth (e.g., ‘I think it is important to have new experiences that challenge how you think about yourself and the world,’), positive relations with others (e.g., ‘Most people see me as loving and affectionate,’), purpose in life (e.g., ‘I have a sense of direction and purpose in life,’), and self-acceptance (e.g., ‘In general, I feel confident and positive about myself.’). All items are rated on a seven-point Likert scale (1=strongly disagree, 7=strongly agree). The sum of scores in each factor were calculated and used in analyses. Cronbach’s α of the scale in Survey 1 ranged from 0.647 to 0.843.

Positive and negative affect

As one indicator of subjective/hedonic well-being, positive and negative affect in general were measured using the Japanese version of the twenty-item Positive and Negative Affect Schedule (PANAS)42). PANAS is widely used in many languages to measure positive and negative affect. The two-factor structure, internal consistency, and convergent validity of the Japanese version of PANAS were also confirmed42). We used total scores of 10 items each for positive (e.g., excited) and negative (e.g., afraid) affects measured on a six-point Likert scale (1=not at all, 6=very much so). Cronbach’s α of the scale in Survey 1 ranged from 0.874 to 0.893.

Life and job satisfaction

Another concept of subjective well-being, satisfaction in life and job, were measured with questions from the Brief Job Stress Questionnaire (BJSQ)43). This scale has been widely used to assess stress responses in Japan. Job and life satisfaction measures consisted of one item each: ‘I am satisfied with my job’ and ‘I am satisfied with my family life,’ respectively. The two items are rated on a four-point Likert scale (1=dissatisfied, 4=satisfied), with higher scores indicating higher satisfaction.

Psychological distress

As an indicator of known-groups validity, psychological distress was measured with the Japanese version of the K6 scale44). The scale consists of six items (e.g., ‘About how often did you feel nervous?’), asking respondents how often they had experienced symptoms of psychological distress during the last 30 days. All items were rated on a
five-point Likert scale (0=none of the time, 4=all the time). The reliability and validity of the K6 were confirmed in a previous study. In this study, we divided the participants into three groups based on previous cut-off points: light distress (<5), subthreshold-level distress (≥5), and severe mental illness (≥13). Cronbach’s α of the scale in Survey 1 was 0.916.

Job stressors
As other indicators of known-groups in the workplace context, three variables of job stressors (job demands, job control, and social support from supervisors and colleagues) were measured by items from the BJSQ for job demands (three items, e.g., ‘I have an extremely large amount of work to do’), job control (three items, e.g., ‘I can work at my own pace’), and social support from supervisors and colleagues (six items, e.g., ‘How reliable are your superiors when you are troubled?’). All items are rated on a four-point Likert scale (for job demands and job control: 1=not at all, 4=very much so; for social support: 1=not at all, 4=extremely). Higher scores mean higher job demands, job control, and social support. We calculated medians for each variable and divided participants into four groups based on the level of job demands and job control (low strain, passive, active, and high strain) and into two groups based on the level of social support (low and high). We supposed that workers experiencing higher job strain and lower social support were more stressful groups. Cronbach’s α of the scale in Survey 1 ranged from 0.745 to 0.868.

Analysis
Of the completers, participants who seemed to answer the items irresponsibly were excluded from analyses based on two criteria: (a) responding to all potential items for the TOMH well-being 24 scale with 3 (neither disagree or agree) or (b) scores between non-reversed and reversed items were extremely different (more than 2 SD). Descriptive statistics (mean, SD, minimum and maximum values) for the 89 items in the item pool were calculated. For selection of the items, item-total (I-T) correlations (r) were calculated. If items had 0.40 or less correlations with total scores of the 89 items, the items were excluded afterward. Exploratory factor analysis (EFA) was conducted to investigate factor structure, using the maximum likelihood method for extraction and oblimin rotation (oblique=0). After exploring dimensionality, IRT analysis was conducted for each dimension using the generalized partial credit model (GPCM). We estimated discrimination (a) and difficulty (b, thresholds) for the items and selected three items per each dimension based on the excellence of these parameters. To confirm factor structure in the selected items, CFA was conducted for participants of Survey 2, using a maximum likelihood estimation. Internal consistency and test-retest reliability were tested by calculating Cronbach’s α and ICC. To examine for measurement errors, the standard error of measurement (SEM) and the smallest detectable change (SDC) were calculated. SEM describes the standard deviation of repeated measures in one participant, and SDC represents the minimal change that one participant must show on the measure to ensure that the observed change is real and not just measurement error. Convergent validity of the measurement was investigated by correlations (r) with general eudemonic well-being, positive and negative affect, and life and job satisfaction. An analysis of variance (ANOVA) was conducted to investigate mean differences among known-groups (i.e., psychological distress, job strain, and social support). Differences of estimated means, after adjusting for general eudemonic well-being, were also tested by analysis of covariance (ANCOVA). There were no missing values in the data since participants could not finish the survey until they completed all items in the questionnaire. SPSS version 25 (IBM software) for ANOVA and ANCOVA and Mplus version 8.2 for all other analyses were used.

Results
Characteristics of the participants
For both Survey 1 and Survey 2, recruiting continued until 1,030 and 730 participants completed the questionnaire. At the two-week follow-up of Survey 1, a total of 88 participants of the 100 workers randomly sampled completed the questionnaire again (response rate=88.0%). Of those who completed both surveys, 66 participants in Survey 1 and 53 in Survey 2 were excluded from analyses based on the criteria that they seemed to answer the items irresponsibly. As a result, a total of 964, 82, and 677 workers were analyzed. Table 1 shows characteristics of the participants, the majority of which were full-time and day-time shift workers, had university degrees, and engaged in clerical jobs.

Factor structure and item parameters
Table 2 shows factor structures, discrimination (a) and difficulty (b, thresholds) for potential items on the TOMH well-being 24 scale. From the 89 items, 12 were initially excluded...
owing to low correlations with the total score in the I-T analysis. As a result of EFA, eight factors seemed to be appropriate as dimensions for measurement. The first ten eigenvalues for factors were 32.825, 2.846, 2.421, 2.181, 1.800, 1.373, 1.090, 1.064, 0.921, and 0.899 (A scree plot in EFA is shown in Appendix 2). According to these values and Guttman’s standard, we adopted eight dimensionalities. One of the items (Item No. 65) was excluded due to multiple loading to the factors. The second EFA for the remaining 76 items presented simple eight-factor structures. We named the eight factors, “F1: Role-oriented future prospects,” “F2: Autonomy,” “F3: Role-oriented positive perception,” “F4: Personal growth and development,” “F5: Negative schema,” “F6: Occupational self-esteem,” “F7: Relationship,” and “F8: Meaningful work.” Inter-factor correlations among the eight factors ranged from 0.230 to 0.566. In each dimension, IRT analysis revealed discrimination and difficulty parameters of the items. Some items had low discrimination and reversed transition points for difficulty even if they had strong loadings to the factors. Standard errors for estimating latent factors (θ) ranged from 0.206 to 0.424. A total 24 items (three items for each of the eight factors) were selected as items for the final version of the TOMH well-being 24 scale.

### Table 1. Characteristics of the participants

|                          | Survey 1 (N=964) | Survey 1 follow-up (N=82) | Survey 2 (N=677) |
|--------------------------|------------------|--------------------------|------------------|
|                          | N (% )           | N (% )                   | N (% )           |
| **Sex**                  |                  |                          |                  |
| Male                     | 477 (49.5)       | 45 (54.9)                | 336 (49.6)       |
| Female                   | 487 (50.5)       | 37 (45.1)                | 341 (50.4)       |
| **Mean age (SD)**        | M=45.09 (SD=13.7)| M=44.39 (SD=13.0)        | M=45.14 (SD=14.1) |
| **Educational status**   |                  |                          |                  |
| Junior high school       | 15 (1.6)         | 1 (1.2)                  | 16 (2.4)         |
| High school              | 269 (27.9)       | 22 (26.8)                | 172 (25.4)       |
| Vocational/technical college | 223 (23.1)    | 14 (17.0)                | 181 (26.7)       |
| University               | 405 (42.0)       | 41 (50.0)                | 275 (40.6)       |
| Graduate school          | 49 (5.1)         | 4 (4.9)                  | 31 (4.6)         |
| Other/unknown            | 3 (0.3)          | 0 (0.0)                  | 2 (0.3)          |
| **Employment status**    |                  |                          |                  |
| Full-time                | 529 (54.9)       | 45 (54.9)                | 360 (53.2)       |
| Part-time                | 235 (24.4)       | 23 (28.0)                | 189 (27.9)       |
| Contract/dispatched      | 94 (9.7)         | 5 (6.1)                  | 61 (9.0)         |
| Freelance                | 95 (9.8)         | 8 (9.7)                  | 58 (8.6)         |
| Other                    | 11 (1.1)         | 1 (1.2)                  | 9 (1.3)          |
| **Employment shift**     |                  |                          |                  |
| Daytime shift            | 868 (90.0)       | 73 (89.0)                | 602 (88.9)       |
| Rotation/night shift     | 96 (10.0)        | 9 (11.0)                 | 75 (11.1)        |
| **Occupations**          |                  |                          |                  |
| Managerial               | 101 (10.5)       | 16 (19.5)                | 61 (9.0)         |
| Professional/technical   | 173 (17.9)       | 13 (15.9)                | 110 (16.2)       |
| Clerical                 | 218 (22.6)       | 14 (17.1)                | 162 (23.9)       |
| Sales                    | 130 (13.5)       | 10 (12.2)                | 84 (12.5)        |
| Services                 | 144 (14.9)       | 15 (18.3)                | 108 (16.0)       |
| Transport/construction   | 38 (4.0)         | 6 (7.3)                  | 35 (5.1)         |
| Production/skilled       | 83 (8.7)         | 5 (6.0)                  | 51 (7.5)         |
| Agriculture/forestry/fisheries | 7 (0.7)        | 1 (1.2)                  | 2 (0.3)          |
| Safety                   | 5 (0.5)          | 1 (1.2)                  | 10 (1.5)         |
| Other                    | 65 (6.7)         | 1 (1.2)                  | 54 (8.0)         |

The final version of the measurement

Table 3 shows the results of CFA and factor characteristics of the final version of the TOMH well-being
| Item No. | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | Factor 7 | Factor 8 |
|---------|----------|----------|----------|----------|----------|----------|----------|----------|
|         | Role-oriented future prospects | Autonomy | Role-oriented positive perception | Personal growth and development | Negative schema | Occupational self-esteem | Relationship | Meaningful work |
| 14      | 0.550    | 0.075    | 0.103    | 0.019    | -0.036   | 0.103    | 0.158    | -0.038   |
| 87      | 0.417    | 0.109    | 0.166    | 0.112    | 0.110    | 0.069    | -0.010   | 0.157    |
| 48      | 0.395    | 0.138    | 0.201    | 0.150    | 0.057    | 0.123    | -0.018   | -0.033   |
| 88      | 0.366    | 0.126    | 0.120    | 0.004    | 0.042    | 0.253    | 0.025    | 0.087    |
| 15      | 0.339    | 0.041    | 0.237    | 0.084    | 0.088    | 0.054    | 0.186    | 0.046    |
| 3       | 0.318    | 0.190    | 0.152    | -0.109   | 0.037    | 0.129    | 0.159    | -0.041   |
| 45      | 0.206    | 0.273    | 0.102    | 0.165    | 0.044    | 0.073    | -0.028   | 0.134    |
| 16      | 0.059    | 0.764    | -0.084   | 0.064    | -0.067   | 0.111    | 0.026    | -0.032   |
| 20      | -0.017   | 0.695    | 0.019    | -0.091   | 0.208    | -0.130   | 0.079    | 0.012    |
| 22      | -0.060   | 0.466    | 0.034    | 0.177    | -0.061   | 0.059    | 0.011    | 0.017    |
| 19      | 0.130    | 0.428    | -0.040   | 0.139    | -0.031   | 0.295    | -0.112   | 0.030    |
| 86      | 0.249    | 0.196    | 0.175    | 0.089    | 0.078    | -0.055   | 0.151    |

**Table 2. Factorial structures of the items in exploratory factor analysis and item response theory analysis**

**Exploratory factor analysis (Survey 1, N=964)**

| Item No. | Discrimination | Difficulty (h, threshold) | SE for theta (θ) | Final version |
|----------|----------------|---------------------------|------------------|---------------|
|          | (a)            | b1 | b2 | b3 | b4 | b5 | b6 |
| 14       | 0.940          | -0.768  | -1.426  | -1.133  | 1.227  | 1.933  | 2.018  |
| 87       | 1.652          | -2.450  | -2.364  | -1.950  | 0.963  | 2.292  | 3.850  |
| 48       | 1.427          | -1.947  | -2.449  | -1.737  | 1.040  | 2.040  | 2.867  |
| 88       | 1.242          | -1.763  | -2.063  | -1.479  | 1.008  | 2.324  | 2.909  |
| 15       | 1.393          | -1.923  | -2.121  | -1.836  | 0.955  | 2.066  | 2.625  |
| 3        | 0.753          | -1.367  | -1.085  | -1.218  | 0.972  | 1.524  | 1.677  |
| 45       | 1.244          | -1.666  | -2.479  | -1.857  | 0.754  | 1.745  | 2.563  |
| 16       | 1.927          | -3.028  | -3.122  | -2.082  | 0.785  | 2.222  | 3.365  |
| 20       | 0.930          | -1.340  | -1.760  | -1.494  | 0.806  | 1.412  | 1.587  |
| 22       | 0.721          | -1.524  | -1.877  | -2.042  | 0.663  | 1.402  | 1.568  |
| 19       | 1.019          | -1.289  | -2.242  | -1.885  | 0.870  | 1.833  | 2.150  |
| 86       | 0.822          | -0.676  | -2.445  | -1.474  | 0.596  | 1.490  | 1.716  |
| 61       | 1.212          | -2.066  | -1.764  | -1.970  | 0.813  | 1.768  | 2.367  |
| 66       | 1.991          | -2.757  | -2.727  | -2.179  | 0.272  | 1.933  | 3.267  |
| 7        | 1.853          | -2.704  | -2.741  | -2.095  | 0.537  | 2.551  | 3.080  |
| 59       | 1.625          | -1.869  | -2.755  | -1.959  | 0.394  | 1.986  | 2.906  |
| 29       | 1.237          | -1.718  | -2.100  | -1.689  | 0.933  | 1.962  | 2.528  |
| 2        | 0.995          | -1.850  | -1.522  | -1.622  | 0.672  | 1.431  | 2.176  |
| 24       | 1.699          | -2.466  | -2.421  | -2.069  | 0.507  | 1.861  | 3.137  |
| 60       | 1.317          | -1.807  | -2.033  | -1.918  | 0.515  | 2.008  | 2.827  |
| 62       | 0.940          | -1.287  | -1.917  | -1.300  | 0.740  | 1.929  | 2.121  |
| 78       | 1.233          | -1.942  | -2.166  | -1.834  | 0.678  | 1.828  | 2.905  |
| 46       | 1.663          | -2.166  | -2.243  | -1.700  | 0.907  | 2.547  | 3.387  |
| 30       | 1.638          | -2.374  | -2.057  | -1.874  | 0.795  | 2.416  | 3.187  |
| 84       | 1.497          | -2.316  | -2.320  | -2.275  | 0.337  | 1.772  | 2.609  |
| 13       | 1.068          | -1.489  | -1.446  | -1.587  | 0.662  | 1.622  | 2.201  |
| 63       | 0.937          | -1.534  | -2.108  | -2.166  | 0.418  | 1.207  | 1.819  |
| 58       | 1.267          | -2.170  | -1.994  | -2.010  | 0.903  | 1.381  | 2.239  |
| 67       | 1.489          | -2.625  | -2.333  | -1.743  | 0.517  | 1.745  | 2.786  |
| Item No. | Role-oriented future prospects | Personal growth and development | Negative Occupational relationship | Meaningful work | Difficulty | Exploratory factor analysis (Survey 1, N=964) IRT analysis (Survey 1, N=964) |
|---------|--------------------------------|--------------------------------|-----------------------------------|----------------|------------|---------------------------------------------------------------|
|         | Role-oriented                  | Personal growth                | Negative occupational relationship | Meaningful       | theta (θ)  | theta (θ)                                                     |
|         | factor                        | factor                          |                                   | factor          | discrimination | Final version                                                 |
|         |                               |                                |                                   | alpha           |             |                                                               |
| 34      | 0.199                         | 0.097                          | 0.079                             | 0.068           | 0.054       | 0.044                                                       |
| 35      | −0.117                        | 0.110                          | 0.099                             | 0.061           | 0.044       | 0.044                                                       |
| 36      | 0.053                         | 0.071                          | 0.061                             | 0.056           | 0.044       | 0.044                                                       |
| 37      | 0.111                         | 0.101                          | 0.081                             | 0.061           | 0.044       | 0.044                                                       |
| 38      | 0.068                         | 0.081                          | 0.061                             | 0.056           | 0.044       | 0.044                                                       |
| 39      | 0.011                         | 0.099                          | 0.081                             | 0.061           | 0.044       | 0.044                                                       |
| 40      | −0.121                        | 0.110                          | 0.099                             | 0.061           | 0.044       | 0.044                                                       |
| 41      | 0.068                         | 0.081                          | 0.061                             | 0.056           | 0.044       | 0.044                                                       |
| 42      | 0.011                         | 0.099                          | 0.081                             | 0.061           | 0.044       | 0.044                                                       |
| 43      | −0.121                        | 0.110                          | 0.099                             | 0.061           | 0.044       | 0.044                                                       |
| 44      | 0.068                         | 0.081                          | 0.061                             | 0.056           | 0.044       | 0.044                                                       |
| 45      | 0.011                         | 0.099                          | 0.081                             | 0.061           | 0.044       | 0.044                                                       |
| 46      | 0.175                         | 0.101                          | 0.095                             | 0.081           | 0.071       | 0.067                                                       |
| 47      | −0.098                        | 0.207                          | 0.175                             | 0.082           | 0.071       | 0.067                                                       |
| 48      | 0.096                         | −0.083                         | 0.084                             | 0.074           | 0.071       | 0.067                                                       |
| 49      | 0.202                         | 0.195                          | 0.190                             | 0.189           | 0.170       | 0.162                                                       |
| 50      | 0.102                         | 0.093                          | 0.089                             | 0.084           | 0.071       | 0.067                                                       |
| 51      | 0.021                         | 0.084                          | 0.075                             | 0.066           | 0.056       | 0.046                                                       |
| 52      | 0.154                         | −0.026                         | 0.022                             | 0.020           | 0.015       | 0.014                                                       |
| 53      | −0.031                        | 0.054                          | 0.048                             | 0.045           | 0.039       | 0.038                                                       |
| 54      | 0.220                         | 0.069                          | 0.061                             | 0.056           | 0.046       | 0.045                                                       |
| 55      | 0.032                         | 0.054                          | 0.048                             | 0.045           | 0.039       | 0.038                                                       |
| 56      | 0.085                         | 0.026                          | 0.020                             | 0.015           | 0.014       | 0.014                                                       |
| 57      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 58      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 59      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 60      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 61      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 62      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 63      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 64      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 65      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 66      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 67      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 68      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 69      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 70      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 71      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 72      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 73      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 74      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 75      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 76      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 77      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 78      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 79      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 80      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 81      | 0.189                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |
| 82      | 0.175                         | 0.057                          | 0.044                             | 0.039           | 0.033       | 0.032                                                       |

**Table 2. continued**
| Item No. | Role-oriented future prospects | Role-oriented positive perception | Personal growth and development | Negative schema | Occupational self-esteem | Relationship | Meaningful work |
|---------|-------------------------------|----------------------------------|-------------------------------|----------------|------------------------|-------------|-----------------|
| 83      | 0.096                         | 0.144                            | 0.182                         | -0.109         | -0.128                 | 0.006       | 0.641           |
| 39      | 0.035                         | 0.007                            | 0.002                         | -0.001         | 0.257                  | -0.074      | 0.580           |
| 43      | 0.029                         | 0.077                            | -0.005                        | 0.066          | -0.025                 | 0.186       | 0.511           |
| 25      | 0.011                         | 0.014                            | -0.132                        | 0.113          | 0.293                  | 0.100       | 0.501           |
| 42      | 0.105                         | -0.005                           | 0.007                         | 0.144          | 0.209                  | -0.077      | 0.481           |
| 38      | -0.092                        | 0.076                            | 0.163                         | 0.032          | 0.263                  | 0.025       | 0.465           |
| 81      | -0.122                        | -0.011                           | 0.109                         | 0.251          | -0.009                 | -0.084      | 0.442           |
| 40      | 0.098                         | 0.032                            | 0.036                         | 0.299          | -0.029                 | 0.149       | 0.408           |
| 51      | 0.221                         | -0.030                           | 0.195                         | 0.142          | -0.012                 | 0.186       | 0.271           |
| 68      | -0.055                        | 0.046                            | 0.052                         | 0.020          | -0.004                 | 0.179       | 0.267           |
| 69      | 0.159                         | 0.028                            | 0.107                         | 0.053          | 0.095                  | 0.072       | 0.023           |
| 85      | 0.110                         | 0.115                            | 0.220                         | 0.136          | 0.052                  | -0.017      | 0.098           |
| 89      | -0.271                        | 0.138                            | 0.192                         | 0.043          | 0.049                  | 0.246       | 0.075           |
| 26      | 0.117                         | 0.125                            | -0.049                        | 0.048          | 0.047                  | 0.332       | -0.006          |
| 23      | -0.283                        | 0.252                            | 0.071                         | 0.198          | 0.050                  | 0.145       | 0.036           |
| 37      | 0.076                         | -0.008                           | -0.143                        | 0.248          | -0.065                 | 0.174       | 0.294           |
| 10      | 0.071                         | 0.119                            | 0.285                         | 0.275          | 0.043                  | -0.127      | 0.109           |
| 49      | 0.268                         | 0.240                            | 0.014                         | 0.011          | 0.154                  | 0.063       | -0.113          |

IRT: item response theory; SE: standard error. Exploratory factor analysis was conducted in maximum likelihood method and oblimin rotation. IRT analysis was conducted in the generalized partial credit model.
## Table 3. Items, structures, means, internal consistency, and test-retest reliability of the final version of the scale (TOMH wellbeing 24)

| Factor Characteristic (Survey 1, N=964 and N=82) | Factor Name | Item | No. loading | Item in English (not validated) | Min | Max | Mean | SD | Cronbach \( \alpha \) | Test-retest Reliability (ICC) \( \dagger \) | SEM \( \dagger \) | SDC \( \dagger \) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Role-oriented future prospects | F1 | 87 | 0.761 | In my working life, I feel I am making progress towards accomplishing my goals. | 0 | 6 | 3.13 | 1.1 | 0.820 | 0.738 | 0.507 | 1.407 |
| | | 16 | 0.716 | In my working life, I am not afraid to voice my opinions, even when they are in opposition to the opinions of people. | 6 | 3.3 | 1 | 0.761 | 0.749 | 0.486 | 1.348 |
| Role-oriented positive perception | F2 | 19 | 0.576 | In my working life, I feel that the future looks good for me. | 6 | 3.23 | 1 | 0.761 | 0.749 | 0.486 | 1.348 |
| | | 15 | 0.761 | In my working life, I am not afraid to voice my opinions, even when they are in opposition to the opinions of people. | 0 | 6 | 3.13 | 1 | 0.820 | 0.738 | 0.507 | 1.407 |
| Personal growth and development | F3 | 66 | 0.831 | In my working life, I feel challengingness. | 0 | 6 | 3.48 | 1.1 | 0.863 | 0.731 | 0.624 | 1.731 |
| | | 60 | 0.780 | In my working life, I am generally motivated to continue, even when things get difficult. | 0 | 6 | 3.48 | 1.1 | 0.863 | 0.731 | 0.624 | 1.731 |
| | | 34 | 0.622 | For me, working life has been a continuous process of learning, changing, and growth. | 6 | 3.3 | 1 | 0.761 | 0.749 | 0.486 | 1.348 |
| | | 33 | 0.645 | In my working life, I have the same sense of what I am trying to accomplish and the same sense of what I will be. | 0 | 6 | 3.48 | 1.1 | 0.863 | 0.731 | 0.624 | 1.731 |
| | | 43 | 0.640 | In my working life, I feel challenged by the challenges of life. | 0 | 6 | 3.48 | 1.1 | 0.863 | 0.731 | 0.624 | 1.731 |
| | | 74 | 0.736 | In my working life, I feel that I am generally motivated to continue, even when things get difficult. | 0 | 6 | 3.48 | 1.1 | 0.863 | 0.731 | 0.624 | 1.731 |
| | | 70 | 0.804 | I feel sure of myself in my working life. | 0 | 6 | 3.16 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| | | 68 | 0.753 | In my working life, I feel confident and positive about myself. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| | | 76 | 0.612 | In my working life, I feel that I am generally motivated to continue, even when things get difficult. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| | | 83 | 0.675 | In my working life, I feel that I am generally motivated to continue, even when things get difficult. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| Meanings of work | F4 | 85 | 0.773 | In my working life, I am needed. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| | | 83 | 0.675 | In my working life, I am needed. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| | | 68 | 0.753 | In my working life, I feel confident and positive about myself. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| | | 76 | 0.612 | In my working life, I feel that I am generally motivated to continue, even when things get difficult. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |
| | | 83 | 0.675 | In my working life, I feel that I am generally motivated to continue, even when things get difficult. | 0 | 6 | 3.40 | 1 | 0.845 | 0.826 | 0.651 | 1.831 |

\( \dagger \) N=82. TOMH: The University of Tokyo Occupational Mental Health; ICC: intra-class correlation coefficient; SEM: standard error of measurement; SDC: smallest detectable change.
Convergent validity of the measurement

Table 4 shows a matrix of correlation coefficients between the eight factors of the TOMH well-being 24 scale, general eudemonic well-being measured by the PWBS, and subjective/hedonic well-being measured by the PANAS and BJSQ (life and job satisfaction). Correlations among the eight factors of the TOMH well-being 24 scale ranged from 0.490 to 0.777, indicating moderate-to-strong interrelations between one another. The eight factors of the new measurement also had moderate-to-strong and positive correlations with general eudemonic well-being and week-to-moderate correlations with subjective/hedonic well-being. When compared with correlations between general eudemonic well-being and job satisfaction (0.204 to 0.468), correlations between the TOMH well-being 24 scale and job satisfaction were relatively stronger (0.351 to 0.633).

Known-groups validity

Table 5 shows descriptive and estimated means by levels of psychological distress, job strain, and social support. The scores of the TOMH well-being 24 scale were lower in the groups of severe psychological distress, high job strain and passive for job strain, and low social support. The mean differences in most factors of the TOMH well-being 24 scale among the known-groups were still significant even after adjusting for scores of general eudemonic well-being. Workers with severe distress and low social support had lower scores, and those with active for job strain scored higher; however some of the differences in scores were not statistically significant: F1, F2, F4, or F7 for psychological distress; F5 for job strain or social support.

Discussion

Our study suggested eight dimensions for eudemonic well-being at work among Japanese workers. Some of them were similar to previous findings and the others might be unique in the workplace context and/or collectivist cultures. Other indicators for validity and reliability of the final version of the measurement, which consists of the selected 24 items based on the IRT analysis, were enough-to-excellent. Scores were more strongly associated with subjective well-being in work contexts (i.e., job satisfaction). In addition, participants in the higher risk for mental illness and stressful environment at work indicated significantly lower scores, even after adjusting for general eudemonic well-being. The TOMH well-being 24 scale may be useful both for academic and practical use to measure eudemonic well-being at work, independent from the general concept of eudemonic well-being.

Among the suggested eight factors, autonomy (F2) and relationship (F7) were very similar to factors in general eudemonic well-being since Ryff’s PWB scale has the same dimensions. The previous scale also indicated relationships with co-workers as one of the main dimensions. These two factors may also be important at work. The other three factors, role-oriented future prospects (F1), personal growth and development (F4), and occupational self-esteem (F6), were similar but slightly different with those in general eudemonic well-being and the previous scale. While items in F1 included overlapping concepts of achievement, purpose in life, and self-realization, the most important concept of this factor might be “prospects” of working life in the future. Career development and management across working lives are closely related to health and well-being. In addition, safe and positive status control during occupational life are well-known as rewards that evoke a person’s sense of mastery, efficacy, and esteem. Thus, positive evaluation of their future prospects may be a central concept for eudemonic well-being among workers. Items in the factor of personal growth (F4), which is also a dimension of general eudemonic well-being, might contain expanding experiences and skills, as well as continuation of working even when the work is stressful and difficult. Items in F6 represented occupational self-esteem rather than self-acceptance and optimism. These factors might overlap but express different aspects of well-being than eudemonic well-being in general. The extracted factors were consistent with eudemonic well-being in terms of self-determination theory (SDT), especially in the work context. According
Table 4. Convergent validity ($r$) of the TOMH well-being 24 (Survey 1, N=964)

| TOMH well-being 24       | Mean (SD) | F1    | F2    | F3    | F4    | F5    | F6    | F7    | F8    | Autonomy | Mastery | Growth | Relation | Purpose | Acceptance |
|--------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------|--------|----------|---------|------------|
| F1 Role-oriented future prospects | 3.13 (1.1) | 1.000 |       |       |       |       |       |       |       |         |         |        |          |         |            |
| F2 Autonomy              | 3.23 (1.0) | 0.527 | 1.000 |       |       |       |       |       |       |         |         |        |          |         |            |
| F3 Role-oriented positive perception | 3.31 (1.2) | 0.777 | 0.506 | 1.000 |       |       |       |       |       |         |         |        |          |         |            |
| F4 Personal growth and development | 3.48 (1.1) | 0.708 | 0.542 | 0.747 | 1.000 |       |       |       |       |         |         |        |          |         |            |
| F5 Negative schema       | 3.43 (1.1) | 0.600 | 0.558 | 0.599 | 0.616 | 1.000 |       |       |       |         |         |        |          |         |            |
| F6 Occupational self-esteem | 3.16 (1.1) | 0.650 | 0.660 | 0.641 | 0.643 | 0.617 | 1.000 |       |       |         |         |        |          |         |            |
| F7 Relationship          | 3.30 (1.0) | 0.615 | 0.490 | 0.637 | 0.621 | 0.555 | 0.610 | 1.000 |       |         |         |        |          |         |            |
| F8 Meaningful work       | 3.40 (1.1) | 0.660 | 0.527 | 0.699 | 0.710 | 0.629 | 0.653 | 0.666 | 1.000 |         |         |        |          |         |            |

| General eudemonic well-being | Mean (SD) | Autonomy | Mastery | Growth | Relation | Purpose | Acceptance |
|------------------------------|-----------|----------|---------|--------|----------|---------|------------|
| Autonomy                    | 29.55 (6.0) | 0.406    | 0.749   | 0.366  | 0.429    | 0.500   | 0.564      | 0.335    | 0.390    | 1.000    |        |         |          |         |            |
| Mastery                     | 30.03 (5.7) | 0.604    | 0.596   | 0.581  | 0.601    | 0.708   | 0.649      | 0.580    | 0.576    | 0.600    | 1.000   |        |          |         |            |
| Growth                      | 31.17 (6.4) | 0.657    | 0.510   | 0.617  | 0.727    | 0.694   | 0.584      | 0.569    | 0.626    | 0.498    | 0.742   | 1.000   |        |          |         |            |
| Relation                    | 30.59 (6.3) | 0.524    | 0.443   | 0.506  | 0.577    | 0.609   | 0.533      | 0.682    | 0.627    | 0.351    | 0.676   | 0.704   | 1.000   |        |          |         |            |
| Purpose                     | 30.09 (5.0) | 0.589    | 0.455   | 0.534  | 0.584    | 0.602   | 0.512      | 0.468    | 0.564    | 0.445    | 0.647   | 0.746   | 0.588   | 1.000   |        |          |         |            |
| Acceptance                  | 29.12 (6.3) | 0.649    | 0.562   | 0.585  | 0.594    | 0.679   | 0.695      | 0.568    | 0.603    | 0.526    | 0.770   | 0.739   | 0.662   | 0.641   | 1.000   |        |          |         |            |

| Subjective/hedonic well-being | Mean (SD) | Positive affect | Negative affect | Life satisfaction | Job satisfaction |
|-------------------------------|-----------|-----------------|-----------------|------------------|-----------------|
| Positive affect               | 33.19 (7.3) | 0.647 | 0.519 | 0.606 | 0.582 | 0.521 | 0.600 | 0.519 | 0.567 | 0.422 | 0.554 | 0.581 | 0.492 | 0.529 | 0.605 |
| Negative affect               | 29.43 (8.4) | -0.379 | -0.431 | -0.403 | -0.412 | -0.545 | -0.453 | -0.458 | -0.397 | -0.443 | -0.614 | -0.492 | -0.468 | -0.373 | -0.531 |
| Life satisfaction             | 2.78 (0.8) | 0.314 | 0.203 | 0.309 | 0.274 | 0.267 | 0.239 | 0.293 | 0.250 | 0.168 | 0.350 | 0.325 | 0.337 | 0.280 | 0.386 |
| Job satisfaction              | 2.55 (0.8) | 0.552 | 0.351 | 0.633 | 0.485 | 0.454 | 0.419 | 0.529 | 0.486 | 0.204 | 0.478 | 0.444 | 0.399 | 0.359 | 0.468 |

All correlations were statistically significant ($p<0.05$). TOMH: The University of Tokyo Occupational Mental Health; SD: Standard deviation.
Table 5. Known-groups validity of the TOMH well-being (Survey 1, N=964)

| Psychological distress (K6) | Descriptive statistics | Estimated means (Adjusted by Ryff’s 6 factors of PWB) |
|-----------------------------|------------------------|------------------------------------------------------|
|                             | Light (<5, N=348)      | Subthreshold (≥5, N=460) | Severe (≥13, N=156) | Light <br> Mean | SE | Subthreshold <br> Mean | SE | Severe <br> Mean | SE | p for ANCOVA |
| F1 Role-oriented future prospects | 3.53, 1.1 | 3.07, 0.9 | 2.41, 1.2 | 3.10, 0.05 | 3.18, 0.04 | 3.06, 0.07 | 0.174 |
| F2 Autonomy | 3.63, 1.0 | 3.18, 0.9 | 2.51, 1.2 | 3.25, 0.04 | 3.26, 0.03 | 3.13, 0.06 | 0.127 |
| F3 Role-oriented positive perception | 3.78, 1.2 | 3.25, 1.1 | 2.48, 1.3 | 3.34, 0.05 | 3.36, 0.04 | 3.12, 0.08 | 0.033 |
| F4 Personal growth and development | 3.88, 1.0 | 3.38, 0.9 | 2.87, 1.2 | 3.47, 0.04 | 3.49, 0.03 | 3.46, 0.06 | 0.855 |
| F5 Negative schema | 4.00, 1.1 | 3.30, 0.9 | 2.57, 1.1 | 3.54, 0.04 | 3.41, 0.03 | 3.27, 0.06 | 0.003 |
| F6 Occupational self-esteem | 3.59, 1.1 | 3.14, 1.0 | 2.28, 1.3 | 3.10, 0.05 | 3.24, 0.04 | 3.07, 0.07 | 0.007 |
| F7 Relationship | 3.76, 0.9 | 3.18, 0.9 | 2.62, 1.2 | 3.38, 0.04 | 3.27, 0.03 | 3.20, 0.07 | 0.097 |
| F8 Meaningful work | 3.80, 1.1 | 3.36, 0.9 | 2.64, 1.4 | 3.38, 0.05 | 3.47, 0.04 | 3.26, 0.07 | 0.025 |
| Job strain (BJSQ) | | | | | | | |
| Low strain (N=251) | | | | | | | |
| F1 Role-oriented future prospects | 3.32, 1.1 | 2.72, 0.9 | 3.60, 1.0 | 2.87, 1.2 | 3.10, 0.05 | 3.00, 0.05 | 3.40, 0.05 | 3.08, 0.05 | <0.001 |
| F2 Autonomy | 3.53, 0.9 | 2.87, 0.9 | 3.67, 1.0 | 2.87, 1.1 | 3.27, 0.04 | 3.14, 0.05 | 3.42, 0.04 | 3.12, 0.04 | <0.001 |
| F3 Role-oriented positive perception | 3.52, 1.2 | 2.81, 1.0 | 3.93, 1.1 | 2.99, 1.3 | 3.29, 0.06 | 3.09, 0.06 | 3.68, 0.06 | 3.20, 0.06 | <0.001 |
| F4 Personal growth and development | 3.62, 1.1 | 3.02, 0.9 | 3.93, 1.0 | 3.30, 1.1 | 3.41, 0.05 | 3.33, 0.05 | 3.67, 0.05 | 3.48, 0.05 | <0.001 |
| F5 Negative schema | 3.73, 1.0 | 3.09, 0.9 | 3.80, 1.1 | 3.11, 1.1 | 3.45, 0.05 | 3.41, 0.05 | 3.51, 0.05 | 3.37, 0.04 | 0.162 |
| F6 Occupational self-esteem | 3.35, 1.1 | 2.81, 1.0 | 3.65, 1.1 | 2.84, 1.2 | 3.06, 0.05 | 3.10, 0.05 | 3.38, 0.05 | 3.12, 0.05 | <0.001 |
| F7 Relationship | 3.56, 0.9 | 2.97, 0.9 | 3.65, 1.1 | 3.01, 1.1 | 3.35, 0.05 | 3.23, 0.05 | 3.45, 0.05 | 3.18, 0.05 | <0.001 |
| F8 Meaningful work | 3.56, 1.0 | 2.88, 1.0 | 3.87, 1.1 | 3.27, 1.2 | 3.34, 0.05 | 3.18, 0.06 | 3.62, 0.05 | 3.45, 0.05 | <0.001 |
| Social support by supervisor and colleagues (BJSQ) | | | | | | | |
| Low support (N=419) | | | | | | | |
| F1 Role-oriented future prospects | 2.80, 1.1 | 3.39, 1.1 | | | 3.02, 0.04 | 3.21, 0.03 | <0.001 |
| F2 Autonomy | 2.98, 1.0 | 3.43, 1.0 | | | 3.14, 0.03 | 3.31, 0.03 | <0.001 |
| F3 Role-oriented positive perception | 2.89, 1.2 | 3.64, 1.1 | | | 3.12, 0.05 | 3.46, 0.04 | <0.001 |
| F4 Personal growth and development | 3.16, 1.0 | 3.72, 1.0 | | | 3.40, 0.04 | 3.54, 0.03 | 0.006 |
| F5 Negative schema | 3.13, 1.0 | 3.67, 1.1 | | | 3.39, 0.04 | 3.47, 0.03 | 0.099 |
| F6 Occupational self-esteem | 2.85, 1.1 | 3.40, 1.1 | | | 3.09, 0.04 | 3.22, 0.03 | 0.012 |
| F7 Relationship | 2.84, 0.9 | 3.65, 1.0 | | | 3.08, 0.04 | 3.47, 0.03 | <0.001 |
| F8 Meaningful work | 3.03, 1.1 | 3.69, 1.0 | | | 3.27, 0.04 | 3.50, 0.04 | <0.001 |

TOMH: The University of Tokyo Occupational Mental Health; PWB: psychological well-being; BJSQ: the brief job stress questionnaire; SD: standard deviation; SE: standard error; ANCOVA: analysis of covariance.
to this theory, human beings possess three basic, innate needs: relatedness, competence, and autonomy. In the work context, mastery and meaningfulness are additional basic psychological needs. Fulfillment of these basic needs by work can trigger intrinsic motivation and would affect work performance\(^{53}\).

Role-oriented positive perception (F3), negative schema (F5), and meaningful work (F8) might be unique dimensions in the workplace context. Items in F3, named as role-oriented positive perception, might represent meaningful and challenging work and might be indispensable for discussing positive aspects. This factor may be similar to existing concepts of work engagement\(^{54}\) and engagement in the Seligman’s PERMA model\(^{55}\). Our measurement suggested one more unique and important dimension, meaningful work (F8). When compared to daily personal life, working life may place more emphasis on how their work and work roles are meaningful, which reveal each worker’s strengths and values as distinguishable from other employees. Previous studies also supported this finding, indicating that role conflict and unclarity for roles at work are adverse job stressors\(^{56}\). It is worth investigating whether dimension of negative schema (F5) is unique only in collectivist cultures. This factor comprised only reversed items, which seemed to indicate an absence of negative cognition for working lives. Given the previous finding that East Asians tend to sacrifice positive emotions for achievement of important goals\(^{14, 30}\), the negative aspects might stand out when discussing their well-being. Absence of negative cognition about their working lives might therefore be important for eudemonic well-being at work among Japanese workers.

Results for reliability have supported our hypothesis, indicating good internal consistency and test-retest reliability. The measurement also indicated reasonable values for SEM and SDC and can detect meaningful change in eudemonic well-being at work, at around a 1.5-point change in scores.

The hypotheses for convergent/known-groups were also supported. Scores of the eight factors of the TOMH well-being 24 scale had moderate-to-strong and positive correlations with general eudemonic well-being and subjective/hedonic well-being. Relatively strong correlations were observed between autonomy (F2) and autonomy of the PWBS, and between relationship (F7) and relation in the PWBS. These results might be based on the similarity of these concepts. In addition, positive correlations between the factors and job satisfaction, which represents subjective well-being at work, were stronger than those between general eudemonic well-being and job satisfaction. The results might suggest that concepts measured by the TOMH well-being 24 scale are close to concepts in the workplace context. The most interesting result was that negative schema (F5) displayed a relatively strong correlation with general eudemonic well-being. This could have been owing to the basic traits of the target population; that is, East Asians tend to emphasize negative aspects when discussing well-being. The negative schema score (F5) significantly differed by the level of psychological distress but not by the level of job stressors (i.e., job strain and social support by supervisors and colleagues). Therefore, in collectivist cultures, the negative aspects of eudemonic well-being at work could be associated with general health status and not with domain-specific factors.

For mean scores of the new measurement by levels of psychological distress, differences between workers who had severe and light distress ranged from 1.01 to 1.43. Thus, a change in scores of over 1-point might be clinically meaningful. In addition, lower scores of the TOMH well-being 24 scale might be related to adverse psychosocial factors at work: high job strain and passive jobs, and low social support. Furthermore, results of the ANCOVA indicate that variances explained by the levels of psychological distress and job stressors were significantly different with those relating to general eudemonic well-being. The concepts measured by the TOMH well-being 24 scale might be distinguished from concepts measured by PWBS. High well-being scores in active jobs may be explained by existing findings that associations between job resources (including job control) and positive outcomes at work are exaggerated when levels of job demands are high\(^{57}\).

The study has several limitations. First, because the response rate could not be calculated and because an online survey was used, selection bias might exist. For instance, participants who were unhealthy and had low eudemonic well-being at work may have been reluctant to participate in the survey. Secondly, there may have been errors in measuring assessment of the standards of convergent validity. Third, other confounders not measured in this study, such as psychological capital (e.g., self-efficacy, optimism, and intrinsic motivation), might have distorted the results of the correlation analyses. Forth, some of the measurement properties, such as content validity and responsiveness, could not be discussed. Finally, the generalizability of the results to workers from other cultural backgrounds could be questioned owing to the sampling method. Compared to a recent national Labour Force Survey in Japan\(^{58}\), our sample included more workers engaged in managerial
jobs (1.9% in the national survey) and more workers who had graduated from university (27.7% in the national survey). These workers could be related to higher levels of job stressors and higher scores of well-being.

**Conclusion**

The newly developed measurement, named the TOMH well-being 24 scale, indicated good reliability and validity. It may be a useful measurement tool for eudemonic well-being at work, as an independent concept from general eudemonic well-being. Regarding practical implications, this scale can be used for preventing psychological distress; assessing key indicators for improving work performance and productivity; and considering vocational identity, career commitment, work-personality development, and relationships with colleagues.

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**Conflict of Interest**

The authors declare that they have no conflict of interest.

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| Item No. | Developed item | Item in English (not validated) | Original scale | Min | Max | Mean | SD |
|---------|----------------|---------------------------------|----------------|-----|-----|------|----|
| 1       | 職業生活において、私は年齢のためにしたいことができない。(R) | In my working life, my age prevents me from doing the things I would like to do. (R) | CASP-19 | 0   | 6   | 3.46 | 1.3 |
| 2       | 職業生活において、私に起こることは自分ではコントロールできない。(R) | In my working life, what happens to me is out of my control. (R) | CASP-19 | 0   | 6   | 3.19 | 1.3 |
| 3       | 職業生活において、私は自由に将来の計画をたてられる。 | In my working life, I can be free to plan for the future. | CASP-19 | 0   | 6   | 2.98 | 1.3 |
| 4       | 職業生活において、私は物事から取り残されている。(R) | In my working life, I am left out of things. (R) | CASP-19 | 0   | 6   | 3.52 | 1.3 |
| 5       | 職業生活において、私は自分のしたいことができない。 | In my working life, I can do the things I want to do. | CASP-19 | 0   | 6   | 3.23 | 1.3 |
| 6       | 職業生活において、私は家族への責任のためにしたいことができない。(R) | In my working life, family responsibilities prevent me from doing the things I want to do. (R) | 0   | 6   | 3.50 | 1.3 |
| 7       | 職業生活において、私は自分がすることを楽しんでいる。 | In my working life, I can please myself what I do. | CASP-19 | 0   | 6   | 3.26 | 1.3 |
| 8       | 職業生活において、私は自分の健康状態のためにしたいことができない。 | In my working life, my health stops me from doing the things I want to do. (R) | CASP-19 | 0   | 6   | 3.69 | 1.5 |
| 9       | 職業生活において、私はお金が足りないためにしたいことができない。(R) | In my working life, shortage of money stops me from doing things I want to do. (R) | CASP-19 | 0   | 6   | 3.03 | 1.5 |
| 10      | 私の職業生活には意味がある。 | My working life has meaning. | CASP-19 | 0   | 6   | 3.55 | 1.3 |
| 11      | 職業生活において、私はやる気に満ちている。 | In my working life, I feel full of energy. | CASP-19 | 0   | 6   | 3.06 | 1.3 |
| 12      | 職業生活において、私はこれまでにしたことのないことを選ぶ。 | In my working life, I choose to do things that I have never done before. | CASP-19 | 0   | 6   | 2.84 | 1.2 |
| 13      | 私はこれまでしてきた職業生活に満足している。 | I feel satisfied with the way my working life has turned out. | CASP-19 | 0   | 6   | 3.15 | 1.4 |
| 14      | 私の職業生活はチャンスに満ちている。 | My working life is full of opportunities. | CASP-19 | 0   | 6   | 3.28 | 1.4 |
| 15      | 職業生活において、将来は私が正しいものであるように感じる。 | In my working life, I feel that the future looks good for me. | CASP-19 | 0   | 6   | 3.14 | 1.3 |
| 16      | 職業生活において、他の人と意見が違っていても、私は自分の意見を言うことを恐れない。 | In my working life, I am not afraid to voice my opinions, even when they are in opposition to the opinions of people. | PWBS | 0   | 6   | 3.27 | 1.3 |
| 17      | 職業生活において、私は何かを決めると時に他人の行動に影響されない。 | In my working life, my decisions are not usually influenced by what everyone else is. | PWBS | 0   | 6   | 3.12 | 1.2 |
| 18      | 職業生活において、私は強い意見を持つ人に影響されがちだ。(R) | In my working life, I tend to be influenced by people with strong opinions. (R) | PWBS | 0   | 6   | 3.06 | 1.2 |
| 19      | 職業生活において、私は自分の考えが一般的に合意されていることと違っていても、自分の考えに自信を持っている。 | In my working life, I have confidence in my opinions, even if they are contrary to the general consensus. | PWBS | 0   | 6   | 3.22 | 1.2 |
| 20      | 職業生活において、私は意見の分かれることについて自分の意見を言いたくない。 | In my working life, It’s difficult for me to voice my opinions on controversial matters. (R) | PWBS | 0   | 6   | 3.21 | 1.3 |
| 21      | 職業生活において、私は他の人からどのように思われているか心配している。 (R) | In my working life, I tend to worry about what other people think of me. (R) | PWBS | 0   | 6   | 3.06 | 1.4 |
| 22      | 職業生活において、私は他の人の価値観ではなく、自分が大切だと考える価値観で自分のことを判断している。 | In my working life, I judge myself by what I think is important, not by the values of what others think is important. | PWBS | 0   | 6   | 3.39 | 1.1 |
| 23      | 職業生活において、私は自分の前を把握している。 | In my working life, I am in charge of the situation in front of me. | PWBS | 0   | 6   | 3.67 | 1.1 |
| 24      | 職業生活において、私は日々やらないならばならないことに愕然（がくぜん）とする。 (R) | The demands of everyday working life often get me down. (R) | PWBS | 0   | 6   | 3.37 | 1.3 |
| Item No. | Developed item | Item in English (not validated) | Original scale | Min | Max | Mean | SD |
|---------|----------------|-------------------------------|----------------|-----|-----|------|----|
| 25      | 職業生活において、私は周囲にあまり合っていない。 (R) | In my working life, I do not fit very well with the people around me. (R) | PWBS | 0   | 6   | 3.39 | 1.4 |
| 26      | 職業生活において、私は日々いくつもある責任を乗り越えるように努力している。 (R) | I am quite good at managing the many responsibilities of daily working life. | PWBS | 0   | 6   | 3.16 | 1.2 |
| 27      | 職業生活において、私は自分の責任にしばしば押しつぶされそうになる。 (R) | In my working life, I often feel overwhelmed by my responsibilities. (R) | PWBS | 0   | 6   | 3.24 | 1.4 |
| 28      | 私は自分が満足できるように職業生活を工夫することは難しい。 (R) | I have difficulty arranging my working life in a way that is satisfying to me. (R) | PWBS | 0   | 6   | 3.13 | 1.2 |
| 29      | 私は自分の好みに合った職場環境や働き方を築くことはできている。 (R) | I have been able to build a work environment and how to work for myself that is much to my liking. (R) | PWBS | 0   | 6   | 3.21 | 1.3 |
| 30      | 職業生活において、私は自分の視野を広げる活動に関心がない。 (R) | In my working life, I am not interested in activities that will expand my horizons (R) | PWBS | 0   | 6   | 3.43 | 1.3 |
| 31      | 職業生活を通じて、自分や世の中についての考え方が変わるような新しい経験をすることは大切だと思う。 | I think it is important to have new experiences in working life that challenge how I think about myself and the world. | PWBS | 0   | 6   | 3.67 | 1.2 |
| 32      | 職業生活において、過去何年も私は本当に成長していない。 (R) | In my working life, I haven't really improved much as a person over the years (R) | PWBS | 0   | 6   | 3.32 | 1.4 |
| 33      | 職業生活において、私はこれまでとても成長してきたと思う。 | In my working life, I have the sense that I have developed a lot over time. | PWBS | 0   | 6   | 3.52 | 1.3 |
| 34      | 私にとって職業生活とは、学び続け、変化し続け、成長し続けるものである。 | For me, working life has been a continuous process of learning, changing, and growth. | PWBS | 0   | 6   | 3.53 | 1.3 |
| 35      | 職業生活をとてもよいものにしようと、変えようとすることは、私はどうの昔にあきらめた。 (R) | I gave up trying to make big improvements or changes in my working life a long time ago. (R) | PWBS | 0   | 6   | 3.27 | 1.4 |
| 36      | 私は新しい環境を楽しめない。 (R) | In my working life, I do not enjoy being in new situations that require me to change my old familiar ways of doing things. (R) | PWBS | 0   | 6   | 3.25 | 1.3 |
| 37      | 職業生活において、たいていの人は私を誠実で信頼に厚いと思っている。 | In my working life, most people see me as loving and affectionate. | PWBS | 0   | 6   | 3.36 | 1.1 |
| 38      | 私は本当に良い関係を維持することは私にとって難しく、欲求不満のものになっている。 (R) | In my working life, maintaining close relationships has been difficult and frustrating for me (R) | PWBS | 0   | 6   | 3.35 | 1.3 |
| 39      | 職業生活において、職場には自分の悩みをうちかければならない人がほとんどないので、私は孤独だからと思う。 (R) | In my working life, I feel lonely because I have few close people with whom to share my concerns. (R) | PWBS | 0   | 6   | 3.27 | 1.5 |
| 40      | 私は周りの人たちとやり取りを楽しんでいた。 | In my working life, I enjoy personal and mutual conversations with others. | PWBS | 0   | 6   | 3.39 | 1.3 |
| 41      | 私は他の人のために時間を費やす面倒見のいい人だと言われる。 | In my working life, people would describe me as a giving person, willing to share my time with others. | PWBS | 0   | 6   | 3.07 | 1.2 |
| 42      | 私は他の人に対する信頼が大いに重要なので、信頼関係をもつことはそれほど難しい。 (R) | In my working life, I have not experienced many warm and trusting relationships with others. (R) | PWBS | 0   | 6   | 3.36 | 1.4 |
| 43      | 私は周りの人を信頼しているし、周りの人を私を信頼している。 | In my working life, I know that I can trust others, and they know they can trust me | PWBS | 0   | 6   | 3.34 | 1.2 |
| Item No. | Developed item | Item in English (not validated) | Original scale | Min | Max | Mean | SD |
|---------|----------------|---------------------------------|----------------|-----|-----|------|----|
| 44      | 私は今、一日一日を生きていた。 | I live my working life one day at a time and don’t really think about the future. (R) | PWBS | 0   | 6   | 3.27 | 1.3 |
| 45      | 私は将来のことを深く考えていらない。 | I have a sense of direction and purpose in my working life. | PWBS | 0   | 6   | 3.26 | 1.2 |
| 46      | 私は自分が何を成し遂げるよう思っているのかよくわからない。 (R) | I don’t have a good sense of what it is I’m trying to accomplish in my working life. (R) | PWBS | 0   | 6   | 3.27 | 1.3 |
| 47      | 私の日常生活は、すぐに短くて、大切なことではないように感じる。 (R) | My daily activities often seem trivial and unimportant to me (R) | PWBS | 0   | 6   | 3.30 | 1.2 |
| 48      | 私は将来の計画をたて、それを実現させることに楽しんでいる。 | In my working life, I enjoy making plans for the future and working to make them a reality | PWBS | 0   | 6   | 3.13 | 1.3 |
| 49      | 私は自分ができないことをやったことに満足している。 | Some people wander aimlessly through working life, but I am not one of them. | PWBS | 0   | 6   | 3.27 | 1.3 |
| 50      | 私は将来の計画をたて、それを享楽することができる。 | I sometimes feel as if I’ve done all there is to do in my working life. | PWBS | 0   | 6   | 2.84 | 1.2 |
| 51      | 私は自分の職業生活を振り返ってみて、結果として起きていることをうれしく思う。 | When I look at the story of my working life, I am pleased with how things have turned out. | PWBS | 0   | 6   | 3.27 | 1.2 |
| 52      | 私は自分自身に対して自信がある。 | In my working life, I feel confident and positive about myself. | PWBS | 0   | 6   | 3.13 | 1.3 |
| 53      | 私の日常生活は、人当たりの多い人ほど、私に比べてより多くのものを得てきたと感じる。 (R) | I feel like many of the people I know have gotten more from working life than I have. (R) | PWBS | 0   | 6   | 2.91 | 1.1 |
| 54      | 私の性格の大部分は好きである。 (R) | In my working life, I like most parts of my personality. (R) | PWBS | 0   | 6   | 3.15 | 1.3 |
| 55      | 私の日常生活において、私は自分が成し遂げたことの多くに失望している。 | I feel disappointed about my achievements in my working life. (R) | PWBS | 0   | 6   | 3.54 | 1.4 |
| 56      | 私の日常生活において、私は自分に対して他の人ほど肯定的ではない。 (R) | In my working life, my attitude about myself is probably not as positive as most people feel about themselves. (R) | PWBS | 0   | 6   | 3.01 | 1.2 |
| 57      | 私の日常生活において、同僚や知人を比べてみて、私は自分全然人間であるかということに満足を感じている。 | When I compare myself to others, it makes me feel good about who I am in working life. | PWBS | 0   | 6   | 3.02 | 1.2 |
| 58      | 私の日常生活において、私は勤勉である。 | I am enthusiastic in my working life. | UWES-9 | 0   | 6   | 3.40 | 1.3 |
| 59      | 私の日常生活において、私は活力を得ている。 | In my working life, I feel bursting with energy. | UWES-9 | 0   | 6   | 3.32 | 1.4 |
| 60      | 私の日常生活において、私は自分の職業生活に誇りを感じている。 | I am proud of my working life. | UWES-9 | 0   | 6   | 3.31 | 1.4 |
| 61      | 私の日常生活において、私は自己価値観に非常に合っている。 | My values and my working life are very similar. | Organizational commitment scales (Mowday et al., 1979) | 0   | 6   | 3.23 | 1.3 |
| 62      | 私の日常生活において、私は自己価値観に非常に合っている。 | My working life has personal meaning for me. | Organizational commitment scales (Meyer et al., 1993) | 0   | 6   | 3.24 | 1.3 |
| Item No. | Developed item | Item in English (not validated) | Original scale | Min | Max | Mean | SD |
|---------|----------------|---------------------------------|----------------|-----|-----|------|----|
| 63      | 私がこれまでの職業生活を送ってきたのは、そう望んでいたと同時に必要であったからだ。 | My spent working life is a matter of necessity as much as desire. | Organizational commitment scales (Meyer et al., 1993) | 0   | 6   | 3.51 | 1.2|
| 64      | 私にとってこれまでの職業生活は、忠誠を持ってやる価値があった。 | My spent working life deserves my loyalty. | Organizational commitment scales (Meyer et al., 1993) | 0   | 6   | 3.24 | 1.2|
| 65      | 職業生活において、私は尊重されている。 | In my working life, I am respected. | Job Descriptive Index (JDI) | 0   | 6   | 3.22 | 1.2|
| 66      | 職業生活において、私はやりがいを感じる。 | In my working life, I feel challengingness. | Job Descriptive Index (JDI) | 0   | 6   | 3.37 | 1.4|
| 67      | 職業生活において、私は達成感がある。 | My working life gives me sense of accomplishment. | Job Descriptive Index (JDI) | 0   | 6   | 3.30 | 1.3|
| 68      | 職業生活において、私は必要とされている。 | In my working life, I am needed. | Job Descriptive Index (JDI) | 0   | 6   | 3.51 | 1.3|
| 69      | 職業生活において、私は重要なことをしている。 | In my working life, what I do is important. | Job Descriptive Index (JDI) | 0   | 6   | 3.36 | 1.3|
| 70      | 職業生活において、私は自信がある。 | I feel sure of myself in my working life. | EQ-I | 0   | 6   | 3.15 | 1.3|
| 71      | 職業生活において、私は難しい状況をきちんと取り仕切ることができる。 | In my working life, I can manage tough situations. | EQ-I | 0   | 6   | 3.26 | 1.2|
| 72      | 職業生活において、私は楽観的である。 | In my working life, I am optimistic. | EQ-I | 0   | 6   | 3.20 | 1.3|
| 73      | 職業生活において、私はやめて良い結果が得られると予測している。 | In my working life, I generally hope for the best. | EQ-I | 0   | 6   | 3.18 | 1.2|
| 74      | 職業生活において、困難があるときでも、私は継続する意欲がある。 | In my working life, I am generally motivated to continue, even when things get difficult. | EQ-I | 0   | 6   | 3.37 | 1.2|
| 75      | 職業生活において、時々は失敗しても、私は物事が手っ取り早く期待する。 | In my working life, I expect things will turn out alright, despite setbacks from time to time. | EQ-I | 0   | 6   | 3.42 | 1.2|
| 76      | 職業生活において、私は問題のほとんどに対処する力がある。 | In my working life, I believe in my ability to handle most upsetting problems. | EQ-I | 0   | 6   | 3.21 | 1.3|
| 77      | 職業生活において、何か新しいことを始める前に、私はたいいてい失敗すると思う。 (R) | Before beginning something new in my working life, I usually feel that I will fail. (R) | EQ-I | 0   | 6   | 3.49 | 1.3|
| 78      | 職業生活において、私は自分のしていることに没頭している。 | In my working life, I am absorbed in what I am doing. | Workplace PERMA profiler | 0   | 6   | 3.09 | 1.2|
| 79      | 職業生活において、私はわくわくしたり、興味を感じたりしている。 | I feel excited and interested in my working life. | Workplace PERMA profiler | 0   | 6   | 3.13 | 1.3|
| 80      | 職業生活において、楽しんでいるとき、私はしばしば時間がたつのを忘れ。 | In my working life, I often lose track of time while enjoying. | Workplace PERMA profiler | 0   | 6   | 3.36 | 1.4|
| Item No. | Developed item | Item in English (not validated) | Original scale | Min | Max | Mean | SD |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 81 | 職業生活において、私は必要なときに周囲の人たちから手助けや協力を得ている。 | In my working life, I receive help and support from others when I need it. | Workplace PERMA profiler | 0 | 6 | 3.63 | 1.2 |
| 82 | 職業生活において、私は周囲の人たちから感謝されている。 | In my working life, I feel being appreciated by others. | Workplace PERMA profiler | 0 | 6 | 3.24 | 1.1 |
| 83 | 職業生活において、私は人間関係に満足している。 | In my working life, I am satisfied with human relations. | Workplace PERMA profiler | 0 | 6 | 3.17 | 1.4 |
| 84 | 私の職業生活は、意味や目的のあるものである。 | My working life is purposeful and meaningful. | Workplace PERMA profiler | 0 | 6 | 3.41 | 1.3 |
| 85 | 職業生活において、私は自分のしていることが重要で価値のあることだと感じる。 | I feel that what I do in my working life is valuable and worthwhile. | Workplace PERMA profiler | 0 | 6 | 3.34 | 1.3 |
| 86 | 職業生活において、私は目的や方向性を持っていると感じている。 | I feel that I have a sense of direction in my working life. | Workplace PERMA profiler | 0 | 6 | 3.28 | 1.2 |
| 87 | 職業生活において、私は目標達成に向かって進んでいると感じている。 | In my working life, I feel I am making progress towards accomplishing my goals. | Workplace PERMA profiler | 0 | 6 | 3.12 | 1.3 |
| 88 | 職業生活において、私は自分で立てた大切な目標を達成できている。 | In my working life, I achieve the important goals I have set for myself. | Workplace PERMA profiler | 0 | 6 | 3.02 | 1.2 |
| 89 | 職業生活において、私は責任を果たすことができている。 | In my working life, I can handle my responsibilities. | Workplace PERMA profiler | 0 | 6 | 3.63 | 1.2 |

(R): rating are reversed when calculating scores. PWBS: psychological well-being scale, UWES: Utrecht work engagement scale, EQ-I: emotional quotient inventory.
Appendix 2. Scree plot in exploratory factor analysis
Appendix 3. The TOMH well-being 24 scale

### The TOMH well-being 24 scale

| Item | Description | Level 0 | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 | Level 6 |
|------|-------------|--------|--------|--------|--------|--------|--------|--------|
| 1    | 職業生活において、我是目標達成に向かって進んでいると感じている。 |  |  |  |  |  |  |  |
| 2    | 職業生活において、他の人と意見が違っても、私は自分の意見を言うことを恐れない。 |  |  |  |  |  |  |  |
| 3    | 職業生活において、私はやりがいを感じる。 |  |  |  |  |  |  |  |
| 4    | 私にとって職業生活とは、学び続け、変化し続け、成長し続けるものである。 |  |  |  |  |  |  |  |
| 5    | 職業生活において、私は自分がしてきたことの多くに失望している。 |  |  |  |  |  |  |  |
| 6    | 職業生活において、私は自信がある。 |  |  |  |  |  |  |  |
| 7    | 職業生活において、私は周囲の人が信頼しているし、周りの人は私を信頼している。 |  |  |  |  |  |  |  |
| 8    | 職業生活において、私は必要とされている。 |  |  |  |  |  |  |  |
| 9    | 職業生活において、私は将来の計画をたて、それを実現させることに楽しみを見いだす。 |  |  |  |  |  |  |  |
| 10   | 職業生活において、私は自分の考えが一般的に合意されていることと違っていても、自分の考えに自信を持っている。 |  |  |  |  |  |  |  |
| 11   | 職業生活において、私は自分がすることを楽しんでいる。 |  |  |  |  |  |  |  |
| 12   | 職業生活において、私はこれまでとても成長してきたと思う。 |  |  |  |  |  |  |  |
| 13   | 職業生活において、何か新しいことを始める前には、私はたいてい失敗すると感じる。 |  |  |  |  |  |  |  |
| 14   | 職業生活において、私は自分自身に対して自信があり肯定的だ。 |  |  |  |  |  |  |  |
| 15   | 職業生活において、私は知り合った人たちとのやり取りを楽しんでいる。 |  |  |  |  |  |  |  |
|   | 職業生活において、私は重要なことをしている。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|-------------------------------------------|---|---|---|---|---|---|---|
| 16 |                                           | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 17 | 職業生活において、将来は私にとって良いものであるように感じる。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 18 | 職業生活において、私は意見の分かれる事柄について自分の意見を言いにくい。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 19 | 私は自分の職業生活に誇りを感じる。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 20 | 職業生活において、困難があるときでも、私は継続する意欲がある。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 21 | 職業生活において、私は自分が何を成し遂げようとしているのかよくわかっていない。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 22 | 職業生活において、私は問題のほとんどに対処する力がある。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 23 | 職業生活において、私は人間関係に満足している。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 24 | 職業生活において、私は自分のしていることが重要で価値のあることだと感じる。 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

Scoring

F1. Role-oriented future prospects = \( (\text{No.1} + \text{No.9} + \text{No.17}) / 3 \)

F2. Autonomy = \( (\text{No.2} + \text{No.10} + (6 - \text{No.18})) / 3 \)

F3. Role-oriented positive perception = \( (\text{No.3} + \text{No.11} + \text{No.19}) / 3 \)

F4. Personal growth and development = \( (\text{No.4} + \text{No.12} + \text{No.20}) / 3 \)

F5. Negative schema = \( ((6 - \text{No.5}) + (6 - \text{No.13}) + (6 - \text{No.21})) / 3 \)

F6. Occupational self-esteem = \( (\text{No.6} + \text{No.14} + \text{No.22}) / 3 \)

F7. Relationship = \( (\text{No.7} + \text{No.15} + \text{No.23}) / 3 \)

F8. Meaningful work = \( (\text{No.8} + \text{No.16} + \text{No.24}) / 3 \)

If you want to use the TOMH well-being 24 scale, please contact the first author, Kazuhiro Watanabe.

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