Validation of the Work Engagement Scale-3, used in the 5th Korean Working Conditions Survey

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ABSTRACT

Background: The purpose of this study was to assess the reliability and validity of the 3-item version of the Work Engagement Scale (WES-3), which is based on the Job Demands-Resources (JD-R) model and was used in the 5th Korean Working Conditions Survey (KWCS).

Methods: This study used data from the 5th KWCS (n = 50,205), which was conducted in 2017 with a sample of the Korean working population. The survey gathered comprehensive information on working conditions to define workforce changes and the quality of work and life. The reliability and internal consistency of the WES-3 were assessed using the corrected item-total correlation and Cronbach’s alpha coefficient. Confirmatory factor analysis (CFA) was used to test the construct validity of work engagement. The convergent validity was assessed using the correlation with the WHO-5 well-being index. Correlations between work engagement and JD-R factors were also calculated.

Results: The Cronbach’s alpha for work engagement was 0.776, indicating acceptable internal consistency. The model comprising 3 work engagement and 2 burnout items showed an excellent fit ($\chi^2$: 382.05, Tucker-Lewis index: 0.984, comparative fit index: 0.994, root mean square error of approximation: 0.043). The convergent validity was significant (correlation coefficient: 0.42). Correlations with burnout and job demands were negligible, whereas correlations with job resources and job satisfaction were weakly positive.

Conclusions: The results of our study confirm that the WES-3 has acceptable reliability and validity.

Keywords: Work engagement; KWCS; Validity; Reliability; Korean

BACKGROUND

Work engagement or employee engagement is an emerging concept in the area of employee well-being. Engagement was first conceptualized by Kahn as the “harnessing of organizational members’ selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances” [1]. A few years later, Maslach and Goldberg [2] proposed engagement as the antipode to burnout, i.e., a goal worth achieving to prevent workers from burnout.
With the rise of positive psychology [3], scholars’ interest in engagement changed from viewing it as a tool for the prevention of burnout to recognizing the positive aspects of engagement itself. Simply put, burnout results in negative performance [4], whereas engaged people show positive performance in their work. Several studies have shown that engaged employees perform better, are more productive, and have higher levels of job satisfaction [5-8]; furthermore, this effect increases over time [9]. Thus, questions about the level of workers’ engagement and how that engagement could be fostered became important.

The Job Demands-Resources (JD-R) model is considered to provide the best description of the factors contributing to work engagement and burnout. Job demands are defined as “aspects of the job that require sustained physical or mental effort” [10]. Work intensity and work-life conflicts are examples of job demands. Job demands, which are the most important predictors of burnout [11], are negatively related to work engagement. However, for those who are optimistic, job demands can be taken as a challenge and may therefore be positively related to work engagement [12]. Resources are defined as “aspects of the job that may do any of the following: i) be functional in achieving work goals; ii) reduce job demands and the associated physiological and psychological costs; and iii) stimulate personal growth and development” [10]. Coworker support, supervisor support, and organizational trust are examples of job resources. Job resources are the most important antecedents of work engagement, and they also protect workers from burnout by buffering the effects of high job demands [12].

Recently, various items measuring work engagement and burnout were added to the 6th Europe Working Conditions Survey (EWCS) and the 5th Korean Working Conditions Survey (KWCS). To measure work engagement, three items from the Utrecht Work Engagement Scale (UWES) were used. The UWES is the most widely used operationalization of work engagement in academic studies [13]. Schaufeli defined work engagement as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” [14]. The UWES originally consisted of a 17-item self-report questionnaire covering three dimensions of work engagement. A shorter version with 9 items was later introduced [15] and validated in many countries around the world, including Japan, China, and Brazil [16-18]. The UWES has since been shortened to a 3-item version [19], providing a simple measurement tool that can be easily incorporated into a variety of surveys. However, only the 9-item version has been translated into South Korean [20]. The purpose of the present study was to assess the reliability and validity of the 3-item version of the Work Engagement Scale (WES-3), using the items in the 5th KWCS.

**METHODS**

**Data**

This study was based on data from the 5th KWCS conducted in 2017 by the Korea Occupational Safety and Health Agency (KOSHA) with a sample of the Korean working population (n = 50,205). The basic sample design was multistage random sampling. Enumeration districts in the 2010 Population and Housing Census were used for sampling. Data were gathered via face-to-face interviews at homes using the questionnaire. The survey gathered comprehensive information on working conditions to define workforce changes and the quality of work and life. The survey targeted the economically active population aged ≥ 15 years who were paid workers or self-employed at the time of the interview [21].
study used data from the Korean Working Conditions Survey (2017) from the KOSHA. Thus, no separate ethics approval was required.

**Measures**

The measures are listed in Table 1. The items in the 5th KWCS were translated from the master version of the 6th EWCS.

**Data analysis**

The reliability and internal consistency of the items were assessed using the corrected item-total correlation and Cronbach’s alpha coefficient. For the corrected item–total correlation, a cutoff value of 0.4 for item deletion was used [24]. For the Cronbach’s alpha coefficient, a threshold of 0.7 was considered acceptable, a value > 0.8 was considered good, and a value > 0.9 was considered to show excellent internal consistency [25].

### Table 1. Items from the 5th KWCS used in this study

| Variables                          | Question                                                                 | Response options                        |
|------------------------------------|--------------------------------------------------------------------------|-----------------------------------------|
| **Work engagement**                | (1) At work, I feel bursting with energy (vigor); (2) I am enthusiastic about my job (dedication); (3) Time flies when I am working (absorption) | 1 (Always) to 5 (Never)                  |
| **Burnout**                        | (4) I feel exhausted at the end of the working day (exhaustion); (5) I doubt the importance of my work (cynicism); (6) In my opinion, I am good at my job (professional efficacy) | 1 (Always) to 5 (Never)                  |
| **Work-family conflict**           | How often in the last 12 months, have you... (1) worried about work when you were not working; (2) felt too tired after work to do some of the household jobs that need to be done; (3) found that your job prevented you from giving the time you wanted to give to your family; (4) found it difficult to concentrate on your job because of family responsibilities; (5) found that your family responsibilities prevented you from giving the time you should to your job. | 1 (Always) to 5 (Never)                  |
| **Work intensity**                 | Do you have enough time to get the job done?                             | 1 (Always) to 5 (Never)                  |
| **Emotional demands**              | Does your main paid job involve being in situations that are emotionally disturbing for you? | 1 (All of the time) to 7 (Never)         |
| **Job control**                    | Are you able to choose or change... (1) the order of your tasks; (2) your methods of work; (3) the speed or rate of work? | Yes or No                                 |
| **Supervisor support**             | Your manager helps and supports you.                                     | 1 (Always) to 5 (Never)                  |
| **Coworker support**               | Your colleagues help and support you.                                    | 1 (Always) to 5 (Never)                  |
| **Opportunities for development (quality)** | Do you agree or disagree with the following statements regarding the training received over the last 12 months? (1) The training has helped me improve the way I work; (2) I feel that my job is more secure because of my training; (3) I feel that my prospects for future employment are better. | 1 (Strongly agree) to 5 (Strongly disagree) |
| **Opportunities for development (quantity)** | Over the past 12 months, how many days in total did you spend in training paid for or provided by your employer? | 1 day or less, 2–3 days, 4–5 days, 6–9 days, 10–19 days, 20 days or more |
| **Organizational trust**           | These questions are about your workplace. To what extent do you agree or disagree with the following statements? (1) Employees are appreciated when they have done a good job. (2) The management trusts the employees to do their work well. (3) Conflicts are resolved in a fair way. (4) The work is distributed fairly. (5) There is good cooperation between you and your colleagues. (6) in general, employees trust management. | 1 (Strongly agree) to 5 (Strongly disagree) |
| **Role clarity**                   | You know what is expected of you at work.                                | 1 (All of the time) to 5 (At no time)     |
| **Psychological well-being**       | Please indicate which of the following five statements is closest to how you have been feeling over the last two weeks. (1) I have felt cheerful and in good spirits. (2) I have felt calm and relaxed. (3) I have felt active and vigorous. (4) I wake up feeling fresh and rested. (5) My daily life has been filled with things that interest me. | 1 (All of the time) to 5 (At no time)     |
| **Job satisfaction**               | On the whole, how would you describe your feelings about the working conditions in your main paid job? | Very satisfied; Satisfied; Not very satisfied; Not at all satisfied |

KWCS: Korean Working Conditions Survey; WHO-5: World Health Organization Five Well-Being Index.

*aThe inter-rater reliability of the psychological well-being measure (WHO-5) in a previous study was 0.80 [23].

[https://aoemj.org](https://aoemj.org) [https://doi.org/10.35371/aoem.2020.32.e27]
Validation

CFA was used to test the construct validity of work engagement. The UWES assessment of work engagement comprises three theoretical constructs and is based on the idea that engagement is the antithesis of burnout. Four sets of models were tested to evaluate the work engagement construct and to determine whether work engagement could be differentiated from burnout (Fig. 1). The first model (M1) assumed that all items were loaded on one general well-being factor. The second model (M2) assumed that three work engagement items represented one factor and three burnout items represented another. The third model (M3) grouped four positive items (three items addressing work engagement and one differentiating professional efficacy from burnout) into one factor and two negative items (exhaustion and cynicism components of burnout) into another. In this case, professional efficacy was not reverse scored. The final model (M4) grouped three work engagement items into one and two negative items regarding burnout into a second factor. For the fit indices, the chi-square test, comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA) were used. Generally, CFI and TLI values ≥ 0.95 and RMSEA ≤ 0.06 are considered acceptable [26,27]. Pearson’s correlation coefficients between work engagement and the World Health Organization Five Well-Being Index (WHO-5) well-being index were calculated to examine convergent validity. Correlations between work engagement and other JD-R factors were also calculated. Correlations below 0.20 were considered weak, those between 0.2 and 0.30 were considered moderate, and those greater than 0.30 were considered strong [28]. IBM SPSS AMOS ver. 25 software (IBM Corp., New York, NY, USA) was used for analyses.

Fig. 1. Models for construct validity.
RESULTS

Characteristics of the study population

Respondents' characteristics are shown in Table 1. The total number of respondents came to 50,205 (male 57%, female 43%). Of these, 69, 106, and 79 people refused to answer or provided unclear responses to the vigor, dedication, and absorption items, respectively. The highest proportion of respondents in terms of age were people in their 40s (24.5%), and professionals were the most frequent respondents in terms of occupational category (20.0%). Sixty percent of respondents were employees who had been employed for more than a year at their current position (Table 2).

Reliability

The corrected item-total correlation was 0.56–0.65; thus, no item was deleted. The Cronbach's alpha for work engagement was 0.776, indicating acceptable internal consistency (Table 3).

Table 2. Characteristics of the study population

| Variables                      | No. (%) |
|--------------------------------|---------|
| Total                          | 50,205 (100.0) |
| Gender                         |         |
| Men                            | 28,679 (57.1) |
| Women                          | 21,526 (42.9) |
| Age (years)                    |         |
| 15–19                          | 417 (0.8) |
| 20–29                          | 7,002 (13.9) |
| 30–39                          | 10,578 (21.1) |
| 40–49                          | 12,323 (24.5) |
| 50–59                          | 11,704 (23.3) |
| 60 and older                   | 8,182 (16.3) |
| Occupation                     |         |
| Managers                       | 291 (0.6) |
| Professionals and related workers | 10,027 (20.0) |
| Office clerks                  | 9,496 (18.9) |
| Service workers                | 6,020 (12.0) |
| Sales workers                  | 6,623 (13.0) |
| Skilled agricultural, forestry, and fishery workers | 2,725 (5.4) |
| Crafts and related workers     | 4,670 (9.7) |
| Machine operation and assembly workers | 5,381 (10.7) |
| Elementary workers             | 4,653 (9.3) |
| Military workers               | 119 (0.2) |
| Employment status              |         |
| Self-employed                  | 10,707 (21.3) |
| Employee (≥ 1 year)            | 30,125 (60.0) |
| Employee (< 1 year) & miscellaneous | 9,373 (18.7) |

Table 3. Corrected item-total correlations and Cronbach's alpha of WES-3

| Items                  | Corrected item-total correlation | Cronbach's alpha if item was deleted |
|------------------------|----------------------------------|-------------------------------------|
| Vigor                  | 0.628                             | 0.681                               |
| Dedication             | 0.651                             | 0.654                               |
| Absorption             | 0.559                             | 0.756                               |
| Cronbach's alpha       | 0.776                             |                                     |

A value above the threshold of 0.7 is considered acceptable, > 0.8 is considered good, and a value > 0.9 indicates excellent internal consistency.

WES: 3-item version of the Work Engagement Scale.
Validity

The results of CFA are shown in Table 3. As expected, M1, with one latent well-being factor, was not a good fit for the data. M2, with 2 different well-being factors, i.e., work engagement and burnout, also showed a poor fit. M3, which included four positive items (3 work engagement items and 1 unreversed burnout item) showed an excellent model fit (fit indices: $\chi^2[9]$: 633.97, TLI: 0.986, CFI: 0.993, RMSEA: 0.039). M4, which had three work engagement and 2 burnout items, also showed an excellent fit ($\chi^2[4]$: 382.05, TLI: 0.984, CFI: 0.994, RMSEA: 0.043) (Table 4). The convergent validity was significant, with correlation coefficients of 0.42 for vigor, 0.37 for dedication, and 0.27 for absorption.

Correlations with JD-R factors

Correlations with other items in the 5th KWCS are shown in Table 5. The correlations with other work engagement items were moderate (0.47 to 0.60), and those with the total score were high (0.80 to 0.85). Correlations for exhaustion and cynicism were negligible (−0.04 to 0.07), and that for reduced professional efficacy was weak to moderate and negative (−0.59 to −0.44). Correlations with job demands were negligible (−0.23 to 0.05), and those with job resources (0.02 to 0.44) and job satisfaction (0.20 to 0.30) were weakly positive (Table 5).

| Model          | $\chi^2$ | df | TLI  | CFI   | RMSEA |
|----------------|---------|----|------|-------|-------|
| M1             | 12608.18| 9  | 0.624| 0.839 | 0.167 |
| M2             | 12599.72| 8  | 0.577| 0.839 | 0.177 |
| M3             | 634.97  | 8  | 0.986| 0.993 | 0.039 |
| M4             | 382.05  | 4  | 0.984| 0.994 | 0.043 |

CFI and TLI values ≥ 0.95 and RMSEA ≤ 0.06 are considered to indicate excellent fit. TLI: Tucker-Lewis index; CFI: comparative fit index; RMSEA: root mean square error of approximation; WES-3: 3-item version of the Work Engagement Scale.

Table 5. Correlation coefficients of WES-3 with KWCS items

| Measures                  | Vigor | Dedication | Absorption | Total   |
|---------------------------|-------|------------|------------|---------|
| Work engagement           |       |            |            | 0.83    |
| Vigor                     | 1     |            |            |         |
| Dedication                | 0.60  | 1          |            | 0.85    |
| Absorption                | 0.47  | 0.50       | 1          | 0.80    |
| Burnout                   |       |            |            |         |
| Exhaustion                | 0.04  | 0.02       | 0.07       | 0.05    |
| Cynicism                  | −0.01 | −0.05      | −0.04      | −0.04   |
| Reduced professional efficacy | −0.51 | −0.51     | −0.44      | −0.59   |
| Psychological well-being  | 0.42  | 0.37       | 0.27       | 0.42    |
| Job demands               |       |            |            |         |
| Work-family conflict       | −0.06 | −0.07      | −0.08      | −0.09   |
| Work intensity            | −0.19 | −0.20      | −0.17      | −0.23   |
| Emotional demands         | −0.02 | −0.03      | −0.03      | −0.03   |
| Job resources             |       |            |            |         |
| Job control               | 0.02  | 0.06       | 0.07       | 0.06    |
| Supervisor support        | 0.36  | 0.38       | 0.34       | 0.31    |
| Coworker support          | 0.24  | 0.26       | 0.22       | 0.29    |
| Opportunities for development (quality) | 0.21 | 0.19 | 0.13 | 0.22 |
| Opportunities for development (quantity) | 0.05 | 0.09 | 0.08 | 0.09 |
| Organizational trust      | 0.36  | 0.38       | 0.33       | 0.44    |
| Role clarity              | 0.27  | 0.33       | 0.27       | 0.35    |
| Job satisfaction          | 0.28  | 0.26       | 0.20       | 0.30    |

Only 30,125 answers from employees with > 1 year on the job were used for “Supervisor support” and “Opportunities for development (quantity).”

WES-3: 3-item version of the Work Engagement Scale; KWCS: Korean Working Conditions Survey.

*p < 0.05. All other correlations, p < 0.01.
DISCUSSION

The current study is the first to validate the three-item version of the Work Engagement Scale in Korea. The internal consistency was acceptable; Cronbach’s alpha was > 0.776, and inter-item and item-total correlations were > 0.40. The construct validity of work engagement was assessed via CFA. The model with three work engagement items and two burnout items showed an excellent fit ($\chi^2[4]$: 382.05, TLI: 0.984, CFI: 0.994, RMSEA: 0.043). Convergent validity using the WHO-5 well-being index was significant. These results suggest that the WES-3 is a reliable measure of work engagement in the Korean context.

We assumed that work engagement consists of three dimensions and that it is antithetical to burnout. Among our tested models, M3 and M4 showed excellent fit (Table 4). Vigor and dedication vs. exhaustion and cynicism are considered the core dimensions of work engagement and burnout, and absorption vs. professional inefficacy constitute, to some degree, a consequence of the former dimensions [11,29]. Some controversies about the relationships among these dimensions have arisen, e.g., associating professional efficacy with work engagement or with burnout [14,29,30]. Our data from M3 suggested that professional efficacy was associated with work engagement. However, this association may be the result of our using the third item measuring burnout, which is a positive item that asks about professional efficacy. However, it is questionable whether inefficacy can be assessed by simply reversing the score for efficacy [30]. The single item addressing professional efficacy may have been interpreted as referring to self-efficacy in personal resources. Thus, a questionnaire consisting only of negative items may be needed to avoid the reverse-scoring dilemma. M4 also showed an excellent fit, indicating that the 3 work engagement items and two core burnout items represent distinctive components of well-being.

Convergent validity was assessed using Pearson’s correlation. Correlations with psychological well-being were moderate to strong, consistent with the findings of a previous study [31]. Correlations with other psychosocial factors at work were also assessed. The expected results were observed in correlations between work engagement and the JD-R model. As described earlier, work demands may lower work engagement; however, in certain personalities, they may increase work engagement. Thus, a negligible or weakly negative correlation was expected. In a study that validated the work engagement scale in 5 separate countries [19], the correlations of work engagement with work overload, emotional demand, and work–home conflict ranged from −0.01 to 0.17, −0.07 to 0.10, and −0.10 to −0.08, respectively. In our study, correlations with emotional demand and work–home conflict were consistent with those in other countries. Work intensity was also negligible, although it differed from work overload. Correlations with job resources were mostly weakly positive, consistent with other studies [19]. Correlations with supervisor support, coworker support, role clarity, and organizational trust were 0.19 to 0.37, 0.11 to 0.30, 0.29 to 0.37, and 0.37 to 0.39, respectively. However, the correlations of job control and opportunity with development were lower than those reported in other studies. Survey items may have differed among countries; observed differences may also have varied according to the culture of the country. Investigations of cross-national invariances of these measures are needed.

Correlations with job satisfaction were also positive, consistent with other studies [32,33]. However, the correlation with burnout was unexpected. We anticipated a weakly negative correlation between work engagement and burnout [16,20], but our results showed no correlation. The following considerations may explain this result. First, unlike most
other studies, our research included a variety of occupations. There are 5 types of burnout questionnaires, which differ among occupational groups. The items used in this study were from the Maslach Burnout Inventory-General Survey (MBI-GS) questionnaire, which is best suited for general use. Nonetheless, it cannot assess burnout of workers in all occupations. This was apparent for certain occupational groups who answered the questionnaire [30].

Second, work engagement and burnout could be independent factors from the beginning. Although work engagement and burnout are conceptual opposites, in reality, work engagement and burnout can coexist in one’s mind. For example, an employee can be engaged in task A, while feeling burnout in task B. If employees were asked whether they were feeling engaged or experiencing burnout in their job, they might well say both. These reactions can coexist, and they might be mutually independent. Finally, the translation may have affected the results. KOSHA translated items from the EWCS and then used those items in the KWCS. The translated wording was not identical to the Korean version of UWES [20] and the MBI-GS [34]. The psychological meaning of questionnaire items can be altered during the translation process. Such changes may have lowered the correlation between work engagement and burnout, as compared to findings from other studies.

This study had some limitations. First, the WES-3 was not directly compared with other validated versions of UWES. However, the WES-3 showed good reliability and excellent validity in this study. Further studies comparing WES-3 and the existing UWES-K [20] are needed. Second, the evaluation of convergent and divergent validity based on the JD-R model was limited because the questionnaires in the KWCS were not previously validated. Although we reported the correlation coefficients of those factors (Table 5), the ability of the KWCS to show convergent and divergent validity remains limited. Further studies assessing the validity of the psychosocial factors of work in the KWCS are needed. Finally, the WES-3 differs from the ultra-short version of UWES. For instance, the same items were used for the vigor and dedication dimensions, but not for absorption. “Time flies when I am working” was used in WES-3, whereas “I am immersed in my work” was used in the ultra-short version of UWES. Since this is a developer-selected item, it is likely that the UWES-3 items would be used in subsequent surveys.

Despite these limitations, this study is the first to validate the three-item version of the Work Engagement Survey in South Korea. The nine-item Korean version of UWES [20] was validated in 2017, but in aspects of decreasing respondent burden and increasing response rates due to survey length [35], validation of the WES-3 is very meaningful. We used the survey data from the KWCS, a large sample of more than 50,000 Korean workers that includes all occupational groups. Thus, we can generalize the validation of the WES-3 to Korean workers in general. Because the questionnaire measuring work engagement was included in the national survey, we hope that data on work engagement become more accessible and central to human resources management in Korea.

**CONCLUSIONS**

In summary, this study confirmed that the WES-3 has acceptable internal consistency, excellent model fit, and significant positive correlation with psychological well-being. Therefore, the WES-3 is an acceptable measure of work engagement in South Korea.
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