

## Validation of a Japanese Version of the Work Engagement Scale for Students

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**Abstract:** We sought to verify the reliability and validity of the Japanese version of the Utrecht Work Engagement Scale for Students (UWES-S-J). We examined 824 university students. We calculated the goodness of fit for a single-factor model and the three-factor model. The fit to the data was better for the three-factor than for the single-factor model, but all factors were highly positively correlated. Additionally, the UWES-S-J had good internal consistency and test–retest reliability. For the content validity, there were significant positive correlations between the UWES-S-J score and social support, a resilience scale, and subjective happiness. The UWES-S-J has good reliability and validity and may therefore be used to assess study engagement among Japanese students.

**Key words:** study engagement, resilience, social support, subjective happiness, university students.

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In recent years, among college students in Japan, some attendance problems have emerged (e.g., withdrawing, taking time off, and dropping out; Uchida, 2010). One of the main causes of poor motivation seen in students with such a problem is presumed to be a lack of study engagement. Research examining workers' engagement has increased rapidly (Schaufeli, Bakker, & Salanova, 2006; Schaufeli, Salanova, González-Romá, & Bakker, 2002) and so has research on students' engagement (Caraway, Tucker, Reinke, & Hall, 2003;

Carter, McGee, Taylor, & Williams, 2007; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). Although students do not have a job and do therefore not “work” in the traditional economic sense, their academic activities can be seen as “work” from a psychological perspective. Namely, they are involved in a structured, goal-directed activity that has a coercive nature, such as attending classes and completing assignments. Research on work engagement is part of a more general emerging trend toward positive psychology that focuses on human strengths

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and optimal functioning as opposed to weaknesses and malfunctioning (Seligman & Csikszentmihalyi, 2000). In early student engagement studies, the Utrecht Work Engagement Scale for Students (UWES-S) was used, and its reliability and validity has been investigated (Schaufeli, Martínez, et al., 2002). So far, a psychometric study on the Japanese version of the UWES-S had not been carried out.

As in previous studies, the present study conceptualized study engagement as a persistent, positive affective–motivational state of fulfillment that includes three aspects: vigor, dedication, and absorption (Edwards, 2001; Salanova, Schaufeli, Martínez, & Bresó, 2010; Schaufeli & Salanova, 2007a; Schaufeli, Salanova, et al., 2002). As for the structure of the UWES, previous studies with workers (Schaufeli, Salanova, et al., 2002) and students (Schaufeli, Martínez, et al., 2002) claimed that there is a three-factor structure that consists of Vigor (six items), Dedication (five items), and Absorption (six items). *Vigor* is characterized by a prominent level of energy and mental resilience during work hours. *Dedication* refers to the state of strong involvement in one's work as well as experiencing a sense of significance and pride. Finally, *absorption* is characterized by full concentration and being happily engrossed in one's work. The UWES has demonstrated acceptable psychometric features (Schaufeli et al., 2006). More specifically, confirmatory factor analyses showed that the hypothesized three-factor structure of the UWES is superior to the one-factor model (Schaufeli & Bakker, 2004; Schaufeli, Salanova, et al., 2002); however, the three dimensions are highly correlated (Schaufeli, Salanova, et al., 2002). Therefore, it has been suggested that the total score of the UWES may also be used to assess engagement (Schaufeli, Salanova, et al., 2002; Shimazu et al., 2008). In a similar vein, a three-factor structure was also found for the UWES-S (Schaufeli, Martínez, et al., 2002).

Because students' activities can be considered "work" from a psychological perspective, the job demands–resources (JD-R) model (Bakker & Demerouti, 2007; Schaufeli, Bakker, & Van Rhenen, 2009) can be applied to

study engagement (Casuso-Holgado et al., 2013; Gomez et al., 2015; Salanova et al., 2010; Schaufeli, Martínez, et al., 2002). The JD-R model is an occupational stress model that suggests that strain is a response to an imbalance between job demands and job resources (Bakker & Demerouti, 2007; Schaufeli et al., 2009). In the JD-R model, engagement is crucially involved in the motivation process that is triggered by job resources (Hakanen, Bakker, & Schaufeli, 2006; Schaufeli & Bakker, 2004). According to the JD-R model, engagement plays a mediating role in the relationship between job resources (e.g., job control and performance feedback) and positive organizational outcomes (e.g., commitment and job performance; for an overview see Schaufeli & Salanova, 2007b). Previous studies have shown that study engagement predicts academic achievement, amongst others, in terms of grade point average derived from university records (Casuso-Holgado et al., 2013; Gomez et al., 2015; Salanova et al., 2010). Additionally, and in accordance with the JD-R model, study engagement mediated the relationship between facilitators (e.g., organizational facilitators, social facilitators, and personal facilitators), on the one hand, and future performance, on the other (Salanova et al., 2010).

Specifically, social support is an important job resource. Job resources correlate positively with future work engagement (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Several cross-sectional studies have revealed a positive and significant association between social support and work engagement using the UWES as an indicator (Hakanen et al., 2006; Schaufeli & Bakker, 2004). It was revealed that high study demands in combination with low control and poor social support decreased students' well-being and subsequently resulted in poor academic performance (Cotton, Dollard, & De Jonge, 2002).

Like job resources, personal resources correlate positively with future work engagement (Xanthopoulou et al., 2009). In a longitudinal study with students, it was revealed that there was a longitudinal relationship between personal resources and study engagement

(Ouweneel, Le Blanc, & Schaufeli, 2011). Personal resources, such as resilience, also play a role in the JD-R model. In a prospective study for workers, it was found that resilience predicted vigor, dedication, and absorption (Nishi et al., 2016). Thus, resilience and work engagement are closely related (Jeve, Oppenheimer, & Konje, 2015; Nishi et al., 2016; Rothmann & Storm, 2003).

Finally, happiness may be considered as an outcome of study engagement. A previous experimental study showed that a high level of work engagement enhances happiness during tasks (Bakker & Oerlemans, 2016). In a survey among Nepalese nurses, overall work engagement was significantly positively associated with happiness (Panthee, Shimazu, & Kawakami, 2014). In another study with Spanish couples, work engagement affected participants' happiness as well as that of their respective partners (Rodríguez-Muñoz, Sanz-Vergel, Demerouti, & Bakker, 2014). Given that work engagement is positively related to happiness among workers, we can also assume that study engagement may be related to happiness among students.

Emergent problems among college students in Japan are tied to school attendance and mental health. In recent years, college students in Japan have exhibited problems with school attendance (e.g., withdrawing, taking time off, and dropping out). In a 2005 survey of 400,000 national university students, 2.56% of students took time off (interrupted) and 1.51% left school (Uchida, 2010). In the same study, men's rate of repeating academic years was 7.46%, with women settling at a rate of 3.11% (Uchida, 2010). The importance of developing and enhancing services for college students as a preventive strategy has been suggested as a solution for such problems (Cook, 2007). For students as well as workers, burnout is associated with mental health issues, including depression, anxiety (Cotton et al., 2002), and suicidal ideation (Dyrbye et al., 2008). Therefore, study engagement is important for maintaining good school attendance and mental health.

The major purpose of the present study was to utilize the UWES-S in a student assessment

setting. Specifically, we devised a version of the UWES-S and sought to verify its reliability and validity. Our specific hypotheses were as follows:

Hypothesis 1: The Japanese version of the UWES-S (UWES-S-J) would have a similar three-factor structure to that of the original UWES-S.

Hypothesis 2: The UWES-S-J would have a good internal consistency and test-retest reliability.

Hypothesis 3: The UWES-S-J would correlate positively with resilience, social support, and happiness, respectively.

## Methods

### Translation

With the original authors' permission, we translated the English UWES-S into Japanese. Following international guidelines (Beaton, Bombardier, Guillemin, & Ferraz, 2000), the translation process used the following steps. First, the English version of the UWES-S was translated into Japanese by the first author of this study (J.T.). This translation was revised by the two researchers to improve comprehensibility (A.S. and M.T.). Then, a back-translation into English was performed by a bilingual university graduate in psychology (A.T.). The back-translation was done on the translated Japanese items without referencing the original source text. Lastly, cooperating with another author (W.S.), we compared the English and back-translated versions, and created a preliminary Japanese version (see Appendix) after some corrections for wording, meaning, and content.

### Participants

In accordance with a previous study (Arnett, 2000), we defined the participants in this study as young adults aged 18–25 years. A total of 824 individuals aged 18–25 years took part in the present study ( $M_{\text{age}} = 20$  years,  $SD = 1$ ). They consisted of 412 women and 412 men. No specific inclusion or exclusion criteria were used. To examine the test-retest reliability,

120 people were selected randomly and were surveyed at baseline and after 2 weeks. The study protocol was approved by the Ethics Committee of Nagasaki University (12053008).

### Survey Procedure

We conducted online surveys in February 2018. Participants were recruited from an online panel database provided by a Japanese Internet research company, Macromill, Inc. An equal number of participants, with equal sex distribution, were assigned to the survey.

This study conformed to the ethical guidelines mentioned in the Helsinki Policy Statements, which are comparable to guidelines followed by institutional review boards in U.S. universities. First, participants were instructed about the research aim and the intended use of the survey data. They were guaranteed anonymity, should they decide to take part. Individuals who agreed to the stated procedures and conditions were able to participate in the current study. After they provided their consent, the participants filled out demographic questions on the Internet. After completing the questionnaires, each of them received approximately 50 cents U.S. as pay for their participation through the Macromill, Inc. system. Since individual pieces of data were acquired through an Internet research company, data from this study are not appropriate for public deposition. With regard to data availability, all relevant data are included within the paper.

### Measures

**Study engagement.** Study engagement was evaluated using a preliminary 14-item UWES-S in Japanese. The items of the UWES-S were categorized into three subscales that reflect the underlying dimensions of engagement: Vigor (six and three items for the full and short versions, respectively), Dedication (five and three items for the full and short versions, respectively), and Absorption (six and three items for the full and short versions, respectively). All items were scored on a 7-point Likert scale, which ranged from

0 (*never*) to 6 (*always*). Intercorrelations and internal consistencies (Cronbach's  $\alpha$  on the diagonal) of the three subscales of the UWES-S original version (Vigor, Dedication, and Absorption) are sufficient, respectively (Schaufeli, Martinez, et al., 2002).

**Resilience.** Resilience was evaluated using the 14-item Resilience Scale (RS-14; Wagnild & Young, 1993). Each item is rated on a 7-point Likert scale (total score range = 14–98), with higher scores indicating more resilience. The RS-14 evolved after qualitative studies showing participants who successfully adapted after they experienced a recent loss (e.g., spouse, health, or employment; Abiola & Udofia, 2011; Damásio, Borsa, & da Silva, 2011; Wagnild, 2009; Wagnild & Young, 1993). The Japanese version has a known validity and reliability (Nishi, Uehara, Kondo, & Matsuoka, 2010). The Cronbach's alpha coefficient for the RS-14 was .88. Additionally, the RS-14 has been negatively correlated with the Center for Epidemiologic Studies Depression Scale in a Japanese sample ( $p < .05$ ).

**Social Support Questionnaire.** The Social Support Questionnaire (SSQ) assesses the perceived availability of and satisfaction with social support, which is usually defined as the existence or availability of people on whom one can rely (Sarason, Levine, Basham, & Sarason, 1983; Sarason, Sarason, Shearin, & Pierce, 1987). The internal consistency, factor validity, and construct validity of the Japanese version of the SSQ are high (Furukawa, Harai, Hirai, Kitamura, & Takahashi, 1999). The short version of the SSQ consists of 12 items. Each item has two parts. Six of the items measure the perceived amount of social support, and the other six items measure satisfaction with social support. The items that measure satisfaction with social support are rated on a 6-point Likert scale (1 = *very dissatisfied* to 6 = *very satisfied*). The average scores for the two domains are calculated. The Cronbach's alpha coefficient for the SSQ Number subscale was .91, and that for the SSQ Satisfaction subscale was .94 (Furukawa et al., 1999). In this study, we only used the Number subscale. Since satisfaction with social

support (as indexed by the SSQ) is related to social desirability and neuroticism (Sarason et al., 1983), it was not assessed in the present study.

**Subjective Happiness Scale.** Lyubomirsky and Lepper developed the Subjective Happiness Scale (SHS) in 1999. It depicts four items that are rated on a Likert scale of 1–7. Four of the items measure subjective happiness. Each item of the subjective happiness scores ranged from 1 (*low happiness*) to 7 (*high happiness*). Then, the averages of the scores for each item are calculated (range = 1–7). The calculation generated by the average score of each item suggests that higher scores reflect greater happiness. The Japanese version has known validity and reliability (Shimai, Otake, Utsuki, Ikemi, & Lyubomirsky, 2004). The Cronbach's alpha coefficient for the SHS was .82.

### Data Analyses

Based on previous studies (Schaufeli & Bakker, 2004; Schaufeli, Salanova, et al., 2002; Shimazu et al., 2008), we calculated the goodness of fit of the single-factor model and the three-factor model. In this study, we referred to the following indices of model fit: chi-squared statistic for overall model fit, comparative fit index (CFI), root-mean-square error of approximation (RMSEA), standardized root-mean residual (SRMR), and Akaike information criterion (AIC). CFI values from .90 to .94, RMSEA values from .07 to .10, and SRMR values from .09 to .10 suggest an acceptable fit of the model to the data, whereas a CFI value above .95, RMSEA values below .06, and SRMR values below .08 suggest a good fit (Hu & Bentler, 1999). The AIC is often used to compare non-nested models. Models with lower values of this index are associated with better data-model-fit and, therefore, are championed over models with higher values (Bandalos & Finney, 2010).

To examine the UWES-S-J's internal consistency, we calculated Cronbach's alphas for the subscales and the overall scale score. The test-retest correlation coefficient and correlations between the UWES-S-J and other measures were conducted through Pearson's correlation analyses.

For verification of the examination of content validity, we performed the correlation analysis between the scores of UWES-S-J and the other variables (i.e., the amount of social support, total score on the RS-14, and average score on the SHS). All data analyses were performed using the statistical software package SPSS, version 13.0J, for Windows and Amos 19.0 (SPSS Japan Inc., Tokyo, Japan).

## Results

We tested the single-factor and three-factor models of the UWES-S-J. As shown in the results of the model comparison in Table 1, a confirmatory factor analysis revealed that the single-factor model provided unacceptable fit indices,  $\chi^2(77) = 1,342.84$ ;  $p < .001$ , CFI = .86, RMSEA = .14, RMSEA 90% CI [.14, .15], SRMR = .06, AIC = 1,398.84. Also, the unconstrained three-factor model, which assumed that the three factors (vigor, dedication, and absorption) were correlated with each other, did not fit well to the data:  $\chi^2(74) = 686.40$ ;  $p < .001$ , CFI = .93, RMSEA = .10, RMSEA 90% CI [.09, .11], SRMR = .05, AIC = 748.40. Therefore, as in the previous study (Schaufeli, Salanova, et al., 2002), we added two error terms in accordance with the modification indices because these error terms of pairs of items assessed similar aspects of vigor (Items 4 and 5) and dedication (Items 6 and 9), respectively. The content of Item 4 is "When studying, I feel strong and vigorous" and the content of Item 5 is "When I get up in the morning, I feel like going to class." The content of Item 6 is "I find my studies to be full of meaning and purpose" and that of Item 9 is "I am proud of my studies." This re-specified model provided an acceptable fit to the data,  $\chi^2(72) = 470.06$ ;  $p < .001$ , CFI = .95, RMSEA = .08, RMSEA 90% CI [.08, .09], SRMR = .04, AIC = 536.06. Each item significantly loaded onto the specified factor ranging from .54 to .89 ( $p < .001$ ) and there were significantly positive correlations between the three factors in this model ( $r = .80-.86$ ;  $p < .001$ ). In addition, Cronbach's alphas for these subscales and overall score of the UWES-S-J indicated

**Table 1** Model comparisons of the UWES-S based on confirmatory factor analyses in Japanese undergraduates ( $N = 824$ )

Model	$\chi^2$	<i>df</i>	CFI	RMSEA	90% CI	SRMR	AIC
Single-factor model	1,342.84	77	.86	.14	.14–.15	.06	1,398.84
Unconstrained three-factor model <sup>a</sup> (uncorrected)	686.40	74	.93	.10	.09–.11	.05	748.40
Unconstrained three-factor model (corrected <sup>b</sup> )	470.06	72	.95	.08	.08–.09	.04	536.06

Note. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval; SRMR = standardized root-mean square residual; AIC = Akaike information criterion.

<sup>a</sup> It was hypothesized that three factors (vigor, dedication, and absorption) were correlated with each other and that there must be a higher-order factor to account for these three factors. <sup>b</sup> Error terms between Item 4 and Item 5, and Item 6 and Item 9 were added based on modification index.

**Table 2** Descriptive statistics of the UWES-S-J ( $N = 824$ )

Variables	Mean	<i>SD</i>	Range	Cronbach's $\alpha$
Age	20.68	1.48	18–25	—
Men (%)	50			—
UWES-S-J				
Vigor	11.82	5.02	0–30	.83
Dedication	13.94	6.36	0–30	.93
Absorption	9.87	4.92	0–24	.89
Overall	35.63	14.85	0–84	.95

sufficient internal consistency (Vigor = .83, Dedication = .93, Absorption = .89, and overall = .95). Furthermore, the UWES-S-J had good test–retest reliability (Vigor:  $r = .59$ ,  $p < .01$ ; Dedication:  $r = .62$ ,  $p < .01$ ; Absorption:  $r = .66$ ,  $p < .01$ ; and total score:  $r = .66$ ,  $p < .01$ ). We calculated the scores of the three subscales and overall score of the UWES-S-J (Table 2). Moderate positive correlations were found between each subscale of the UWES-S-J (Vigor and Dedication:  $r = .52$ ,  $p < .001$ ; Vigor and Absorption:  $r = .54$ ,  $p < .001$ ; and Dedication and Absorption:  $r = .58$ ,  $p < .001$ ).

Regarding the criterion-related validity, there were significant positive correlations among all variables (Table 3). Therefore, all hypotheses were supported.

## Discussion

The present study revealed that data fit was better for a three-factor than for a single-factor model. Furthermore, highly significant positive correlations between the three factors were observed. Factor loadings from each item onto

specified factors were also significantly positive. The UWES-S-J had good internal consistency and test–retest reliability. Furthermore, there were significant positive correlations between the UWES-S-J and social support, resilience, and average SHS scores. Finally, fit indices, factor loadings, and Cronbach's alpha values were consistent with previous studies (Schaufeli, Martinez, et al., 2002).

Overall, we confirmed that the UWES-S three-factor structure was similar to that found in previous research (Schaufeli, Salanova, et al., 2002). On the other hand, the one-factor model did not provide a good model fit. However, as in a previous study, the correlations between the UWES-S-J subscales were high, and the total score internal consistency was also high. Therefore, it would be possible to interpret engagement as one dimension for the UWES, as previously suggested (Schaufeli et al., 2006).

For the unconstrained three-factor model (corrected), covariance was likely related to the fact that items with similar meanings were

**Table 3** Correlations between the UWES-S and related variables ( $N = 824$ )

	Amount of social support	Resilience	Subjective happiness
Vigor	.24*	.45*	.31*
Dedication	.25*	.46*	.32*
Absorption	.16*	.39*	.30*
UWES-S total	.24*	.48*	.34*

\*  $p < .001$ .

included in the same factor. In other words, it is possible that the error variance for the unconstrained three-factor model (re-specified) was an item that measured similar content within the same factor. In a previous study (Schaufeli, Salanova, et al., 2002), error covariance was set between items within the same factor based on modification indices. In the present study, we considered the three-factor model acceptable as a result of processing similar to the previous research. Future research should uncover whether the three dimensions have different causes and consequences so that a differentiation between the three aspects would be preferred over a single score.

In the epidemiological study with the total sample of 76,437 using an international database (cf. <http://www.schaufeli.com/>), it was found that work engagement of Japanese workers assessed by the short version of the UWES (consisting of nine items) was lower than that in 15 other countries (i.e., Australia, Belgium, Canada, China, the Czech Republic, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, South Africa, Spain, and Sweden; Shimazu, Schaufeli, Miyataka, & Iwata, 2010). In a previous cross-cultural study, data were collected in Western Europe, including the Netherlands ( $N = 10,162$ ), Spain ( $N = 3,481$ ), and Finland ( $N = 3,472$ ), and in East Asia, including China ( $N = 2,977$ ) and Japan ( $N = 2,520$ ); work engagement in East Asia was found to be lower than that in Western Europe (Hu et al., 2014). As reference values (Hu et al., 2014), the average  $\pm$   $SD$  for Vigor in the Netherlands, Spain, and Finland was  $3.85 \pm 1.11$ ,  $4.07 \pm 1.36$ , and  $4.64 \pm 1.16$ ,

respectively, while the mean  $\pm$   $SD$  in Japan was  $2.61 \pm 1.27$ . The average  $\pm$   $SD$  for Dedication in the Netherlands, Spain, and Finland was  $4.16 \pm 1.18$ ,  $4.30 \pm 1.36$ , and  $4.85 \pm 1.14$ , respectively, while the mean  $\pm$   $SD$  in Japan was  $3.08 \pm 1.28$ . Similarly, the average  $\pm$   $SD$  for Absorption in the Netherlands, Spain, and Finland was  $3.57 \pm 1.19$ ,  $4.00 \pm 1.60$ , and  $4.39 \pm 1.34$ , respectively, while the mean  $\pm$   $SD$  in Japan was  $2.02 \pm .72$ . Therefore, although there is no evidence that Japanese students' work engagement is low, student engagement may be low. By using the UWES-S, as has been done in Spain, Portugal, and the Netherlands (Schaufeli, Martinez, et al., 2002), the scientific assessment of work engagement among university students can be conducted. Consequently, in Japan's universities, efforts aimed at improving job and personal resources can be enriched.

The total score and subscale scores of the UWES-S-J correlated positively with resilience, social support, and subjective happiness, respectively. The JD-R model assumes that resilience (a personal resource) and social support (a job resource) are positively related to work engagement. In a previous study with workers, it was revealed that resilience (Nishi et al., 2016) and social support (Hakanen et al., 2006; Schaufeli & Bakker, 2004) were related to work engagement. Another study observed that work engagement was positively related to happiness (Panthee et al., 2014; Rodríguez-Muñoz et al., 2014). Although the present study is cross-sectional in nature, we observed that also among students, resilience and social support may influence happiness via work engagement.

The degree of relevance between the perceived amount of social support and study engagement may actually be weak. In other words, the perceived amount of social support as assessed by the scale used in this study may not necessarily lead to study engagement. Therefore, it is possible that the correlation between the perceived amount of social support and the total score and subscale scores of the UWES-S-J was weak. The reason for the very weak correlation between absorption and social support could be related to human attentional capacity. Absorption is characterized by being

happily engrossed in one's work. In other words, in the context of engagement, absorption refers to attention paid to one's work (studies). However, with respect to social support, attention is directed toward other individuals. For each aspect of absorption and social support, the direction of attention may be internal and external.

Current counseling services on campuses conduct brief psychological interventions, which are mainly provided for students with mental health problems (Pinkerton & Rockwell, 1994). However, it has not been shown that practical psychotherapy and educational approaches that target students' negative emotions and behaviors are effective in preventing school dropouts and suicide problems; therefore, their effects might have limitations. Finding ways to engage students and promote positive well-being may lead to the prevention of university withdrawal and suicide.

Distinct levels of intervention have been conducted to raise the engagement and well-being of workers: individual (Vuori, Toppinen-Tanner, & Mutanen, 2012), team (Bishop, 2013), and organization (White, Wells, & Butterworth, 2014). In a previous study, the positive intervention for college students focused on "thoughts of gratitude" and "acts of kindness," which seemed to foster positive emotions and academic engagement (Ouweneel, Le Blanc, & Schaufeli, 2014).

There is an important limitation to this study. Since the present study relied on self-administered questionnaires, it is possible that the relationship among factors may be inflated by common method variance. Future studies need to analyze potential covariates related to study engagement, resilience, social support, and happiness.

In terms of school health, staff who support students, including teachers, will be able to assess students' school engagement by utilizing the UWES-S-J. There are two major advantages of evaluating school engagement. The first is to use the evaluation of students' school engagement to revitalize the organization and the second is to make students' school engagement evaluation useful for their individual

support. A previous study reported that increasing structural job resources is associated with higher work engagement and lower psychological distress in some adult workers (Sakuraya et al., 2017). For students going through puberty and adolescence, increasing structural job resources may increase school engagement and improve their mental health.

In conclusion, the UWES-S-J had high reliability and validity. It would be appropriate to use the UWES-S-J to evaluate engagement among Japanese students.

## Conflict of Interest

The authors declare no conflicts of interest associated with this manuscript.

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## Appendix

### The Japanese version of the Utrecht Work Engagement Scale for Students (UWES-S-J)

#### 活力 (Vigor)

1. 勉強しているとき, 気持ちをはつらつとしている。(When I'm studying, I feel mentally strong.)
2. 長時間休まずに, 勉強し続けることができる。(I can continue for a very long time when I am studying.)
3. 勉強をしていると, 活力がみなぎるように感じる。(When I study, I feel like I am bursting with energy.)
4. 学校では, 元気が出て精力的になるように感じる。(When studying I feel strong and vigorous.)
5. 朝に目が覚めると, さあ学校へ行こう, という気持ちになる。(When I get up in the morning, I feel like going to class.)

#### 熱意 (Dedication)

1. 自分の学業に, 意義や価値を大いに感じる。(I find my studies to be full of meaning and purpose.)
2. 学業は, 私に活力を与えてくれる。(My studies inspire me.)
3. 学業に熱心である。(I am enthusiastic about my studies.)
4. 自分が取り組んでいる学業に誇りを感じる。(I am proud of my studies.)
5. 私にとって学業は, 意欲をかきたてるものである。(I find my studies challenging.)

#### 没頭 (Absorption)

1. 勉強をしていると, 時間のたつのが速い。(Time flies when I'm studying.)
2. 勉強をしていると, 他のことは全て忘れてしまう。(When I am studying, I forget everything else around me.)
3. 学業に没頭しているとき, 幸せだと感じる。(I feel happy when I am studying intensively.)
4. 勉強をしていると, つい夢中になってしまう。(I can get carried away by my studies.)