

THE KOREAN UTRECHT WORK ENGAGEMENT SCALE-STUDENT (UWES-S): A FACTOR VALIDATION STUDY

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In this article, the factorial validity of the Utrecht Work Engagement Scale (UWES) in a Korean student sample ($N = 475$) was tested and structural relationships between engagement and burnout explored. Due to the fact that psychosomatic complaints are seen as consequences in burnout development, the incremental influence of engagement beyond burnout was studied. Results show that the UWES-S 17 and nine-items short version are on one rather than on three-dimensional scales in Korea. The academic efficacy component of the Maslach Burnout Inventory-Student Survey (MBI-SS) is highly correlated to all of the engagement scales. Relations with regards to burnout reveal that engagement is not simply the inverse of burnout. Since results show that students experience less engagement and more burnout than employees, results concerning the former study group are of high interest.

Key words: Factorial validity; Engagement; Burnout; Psychosomatic complaints; Teacher training students.

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BURNOUT AND ENGAGEMENT¹

More than 40 years ago, Freudenberger (1974) first defined burnout as an unfavorable change of feelings and exhaustion among human services and health care professionals, for example, family practice residents (Rafferty, Lemkau, Purdy, & Rudisill, 1986), emergency nurses (Adriaenssens, De Gucht, & Maes, 2015), social workers (Travis, Lizano, & Mor Barak, 2015), neurosurgeons (McAbee et al., 2015), and teachers (Brunsting, Sreckovic, & Lane, 2014; Gavish & Friedman, 2010; Hakanen, Bakker, & Schaufeli, 2006). With time, other job domains (university academics; see Toker, 2011) and non-occupational contexts, such as parental burnout (Butler & Charles, 1999) have been included in the research. In recent years, studies have also identified burnout in students who were academically active (e.g., Chang, Lee, Byeon, & Lee, 2015; Jacobs & Dodd, 2003; Noh, Shin, & Lee, 2013; Shin, Puig, Lee, Lee, & Lee, 2011).

Based on the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981), burnout has been characterized as a three-dimensional syndrome of emotional exhaustion, cynicism or depersonalization against clients and (reduced) personal accomplishment or (reduced) professional efficacy. The Maslach Burnout Inventory-Student Survey (MBI-SS; Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002) is the modified version of the MBI-General Survey (MBI-GS; Schaufeli, Bakker, & Salanova 2006) consisting of the following three constructs: exhaustion, cynicism, and academic efficacy. Since 2002, its factorial structure has been validated across students of Dutch,

Spanish, Portuguese (Maroco & Tecedor, 2009; Schaufeli, Martínez, et al., 2002), Chinese (Hu & Schaufeli, 2009; Zhang, Gan, & Zhang, 2005), Korean (Shin et al., 2011), German (Gumz, Erices, Brähler, & Zenger, 2013), and Turkish nationality (Capri, Gunduz, & Gokcakan, 2011).

Apart from middle-school (e.g., Noh et al., 2013) and high-school students (e.g., Chang et al., 2015), university students have also gained interest (Cakir, 2015; Galbraith & Merrill, 2012; Hu & Schaufeli, 2009; Kadi, Beytekin, & Arslan, 2015; Robins, Roberts, & Sarris, 2015; Zhang, Gan, & Cham, 2007). These have, however, not yet been examined in Korea. A possible reason for this could be that schooling in Korea as well as in many other Asian countries is seen as an intensive and stressful experience for university exam preparation (Noh et al., 2013; Park, Lee, Choi, Jin, & Lee, 2010). Therefore, burnout research in Korea has been focused on school rather than university students. Although the danger of burnout is less expected in Korean or Chinese university students compared to school students, Hu and Schaufeli (2009) found no significant differences across Chinese high-school, university and nursing students. These results call for further investigation. Moreover, a previous European study (Schaufeli, Salanova, González-Romá, & Bakker, 2002) already showed that university students experience more burnout than people who are employed by large companies, so any results which concern the former study group are of high interest. Last but not least, Korean university graduates are currently struggling due to high rates of unemployment. Therefore, after a short adjustment period at university, they are forced to compete anew.

In short, burnout in Korean university students should not simply be ruled out or excluded from research. Additionally, with the growing demand for positive psychology (Seligman & Csikszentmihalyi, 2000) and based on the Job Demand-Resources (JD-R) model (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004; Seppälä et al., 2015), constructs such as *work engagement* are also likely to play an important role in research within the university context.

According to the Utrecht Work Engagement Scale (UWES), work engagement is seen as the conceptual opposite of burnout, but it is also an independent measure characterized by vigor, dedication, and absorption (Schaufeli & Bakker, 2003). Vigor represents the energetic level and mentally resilient facet of working, while dedication characterizes the significance of work in one's life. Absorption reflects a stable state of flow (Csikszentmihalyi, 1988), including a distorted sense of time (it passes more quickly) and full concentration at work.

The common grounds of engagement and burnout are two underlying bipolar dimensions: activation (continuum exhaustion to vigor) and identification (cynicism to dedication). Recent studies have discussed separate constructs for the former (e.g., Xanthopoulou, Bakker, Kantas, & Demerouti, 2012), whereas absorption (UWES) and professional efficacy (MBI) were considered to be distinct aspects. Measured together with burnout by the MBI-SS (Schaufeli, Salanova, et al., 2002; Zhang et al., 2007) or Maslach Burnout Inventory-General Survey (MBI-GS; Extremera, Sánchez-García, Ma, & Rey, 2012; Schaufeli et al., 2006), results of the confirmatory factor analysis (CFA) indicated an extended engagement factor including the MBI-scale efficacy, which is not part of the core of the burnout syndrome (Schaufeli, Salanova, et al., 2002; Zhang et al., 2007). Some researchers also hypothesized that efficacy correlates with the other engagement scales due to positive formulations and conceptual reasons (Schaufeli et al., 2006).

Like burnout, engagement has gained wide interest in studies concentrating on humanitarian work (e.g., Extremera et al., 2012; Hu et al., 2014; Nerstad, Richardsen, & Martinussen, 2010; Schaufeli & Bakker, 2004; Schaufeli et al., 2006; Schaufeli, Salanova, et al., 2002; Seppälä et al., 2015; Shimazu et al., 2008; Xanthopoulou et al., 2012; Zhang & Gan, 2005) and other job domains

(e.g., Airila et al., 2014; Alok, 2013; Extremera et al., 2012; Hu et al., 2014; Nerstad et al., 2010; Schaufeli & Bakker, 2004; Schaufeli, Salanova, et al., 2002; Seppälä et al., 2009; Shimazu et al., 2008; Storm & Rothmann, 2003; Xanthopoulou et al., 2012) but it has also been studied and validated in a university context (Schaufeli, Martínez, et al., 2002; Schaufeli, Salanova, et al., 2002; Wefald & Downey, 2009; Zhang et al., 2007). Nevertheless, only a handful of studies focuses on university students, although Schaufeli, Salanova, et al. (2002) have already observed that students experience less engagement (especially vigor) than employees, for a diverse range of jobs.

However, the psychometric properties of the UWES have not yet been fully validated in several cultural contexts. Currently, neither a Korean translation nor a psychometric analysis is available. To close this gap, reliability and factorial validity of the Korean UWES-S 17 and nine-items short version (UWES-S 9) have been assessed in this study.

THE UWES DIMENSIONALITY

Concerning the factorial structure, there is empirical evidence for both a hypothesized three-factor model with vigor, dedication and absorption and an alternative one-factor model. Because of these disparate results, the question of dimensionality cannot be sufficiently answered solely on the present empirical study basis; on the one hand, many findings underline the three-factor engagement model for the UWES-17 (Hakanen, 2009; Nerstad et al., 2010; Seppälä et al., 2009), UWES-15 (Extremera et al., 2012; Xanthopoulou et al., 2012; Zhang & Gan, 2005); UWES-14 for university students (Schaufeli, Martínez, et al., 2002), and even for the UWES-9 (Balducci, Fraccaroli, & Schaufeli, 2010; Nerstad et al., 2010; Seppälä et al., 2009). On the other hand, the Japanese (Shimazu et al., 2008), South African (Storm & Rothmann, 2003), and Indian (Alok, 2013), confirmatory factor analyses showed that the one-factor is superior to the three-factor structure of the scales.

Concerning the Indian results, the UWES-9 only showed a good fit after freeing the interscale-error terms for five items, all of which were highly correlated (DE3-AB1, VI1-DE3, VI2-AB3, VI3-DE3, and VI3-AB2).² In Japan, however, the three-factor solution for the short UWES-9 and the UWES-17 versions failed to fit because of the produced covariance matrix of the three latent variables³ which was not positive definite. Nevertheless, the one-factor solution only showed an acceptable fit in the nine-item version without freeing any error-terms. Finally, researchers had to decide between the two structures as their fits were nearly the same (Schaufeli et al., 2006; Storm & Rothland, 2003; Wefald & Downey, 2009; Zhang & Gan, 2005). In some studies, only the freeing of the error terms (Alok, 2013; Balducci et al., 2010; Schaufeli, Martínez, et al., 2002; Shimazu et al., 2008) and the deletion of several items (Schaufeli, Martínez, et al., 2002; Storm & Rothmann, 2003) brought one of the models to an acceptable fit or, at least, provided a guide toward better structural decisions. Reaching equivalent results for the one- and three-factor structure, Hallberg and Schaufeli (2006) favored the one-dimensionality with respect to model parsimony. Finally, due to very high correlations between vigor and dedication, a two-factor structure was explored, but was shown to be inferior in terms of fit in comparison to the three-factor structure (Schaufeli, Salanova, et al., 2002). A common view is that because of fairly high correlations between the subscales (from about .65 to over .90 and .60 to .90 between latent variables) and very high internal consistencies of the nine-item version (varied between .85 and .92), researchers should use the nine-item score, particularly for practical pur-

poses, and hence avoid the problem of multicollinearity (Schaufeli et al., 2006). In conclusion, currently, there is more evidence for a three-factor structure model of the UWES.

PSYCHOSOMATIC COMPLAINTS IN THE UNIVERSITY CONTEXT

So far, concerning engagement, the variables that have been studied are academic performance (Schaufeli, Martínez, et al., 2002), perfectionism (Zhang et al., 2007), satisfaction with university (Wefald & Downey, 2009), grade point average (GPA; Wefald & Downey, 2009), and health complaints (Demerouti, Bakker, de Jonge, Janssen, & Schaufeli, 2001; Extremera et al., 2012; Schaufeli & Bakker, 2004). The latter relationship between engagement and health in terms of psychosomatic complaints has been focused on in this research. Recent studies have showed that, when compared to the general population, college students suffer more frequently from mental illness (Kreß, Sperth, Hofmann, & Holm-Hadulla, 2015; Stallmann, 2010). Altogether, depression, anxiety, and psychosomatic problems are worldwide major complaints of university students (Holm-Hadulla & Koutsoukou-Argyaki, 2015; Kreß et al., 2015; Mey & Yin, 2015; Rückert, 2015; Song et al., 2008; Tomoda, Mori, Kimura, Takahashi, & Kitamura, 2000; Wong, Cheung, Chan, Ma, & Tang, 2006).

When predicting stress levels, Extremera et al. (2012) found that not only dedication but also absorption accounted for a significant amount of variance beyond the influence of the burnout dimensions. Depending on the different subdimensions of engagement, the correlations with psychosomatic complaints range between $-.18$ (absorption) and $-.37$ (vigor) (Demerouti et al., 2001; Schaufeli & Bakker, 2004); and they are especially high for depressive symptoms ($-.39$ for dedication; Hakanen & Schaufeli, 2012). So far, the incremental contribution of the UWES on psychosomatic complaints beyond other constructs like burnout has rarely been measured, and has therefore been investigated in the present study.

THE AIMS OF THIS STUDY

The aims of the current study are fourfold: to evaluate the fit of the three-factor UWES-S model and to compare it with the one-factor model, to retest factorial validity of the MBI-SS beyond the studies of Lee et al. (2010) and Shin et al. (2011) among the new group of university students, to analyze the relationships between engagement (UWES-S) and burnout (MBI-SS), as well as to study the incremental variance of engagement on psychosomatic complaints beyond the influence of burnout. With respect to the above-cited factorial validity studies (e.g., Hakanen, 2009; Nerstad et al., 2010; Seppälä et al., 2009), Hypothesis 1 (H1) of this study expects a three-factor structure of the UWES-S (e.g., vigor, dedication, and absorption) to fit the data better than a one-factor model. Because recent research has showed evidence for the three-factor model (e.g., Maroco & Tecedero, 2009; Shin et al., 2011), Hypothesis 2 (H2) expects a three-factor structure of the MBI-SS (e.g., exhaustion, cynicism, and academic efficacy) to fit the data better than a one-factor model.

As previously shown, studies (e.g., Xanthopoulou et al., 2012) have hypothesized that the engagement constructs would be partly opposites of the burnout facets (dimension involvement with dedication and cynicism; in some studies dimension activation with energy and exhaustion), with Hypothesis 3 (H3) it was expected that a two-factor model with the core of burnout (exhaustion and cynicism) and an extended engagement factor (vigor, dedication, absorption plus aca-

demic efficacy, M3) would fit better to the data than either i) a one factor model (M1) or ii) an alternative two-factor model (three-dimensional original burnout measure) and engagement scales (M2). Referring to the results of Schaufeli and Bakker (2004), Demerouti et al. (2001), and Extremera et al. (2012), Hypothesis 4 (H4) expects substantial incremental variance of engagement on psychosomatic complaints.

METHOD

Participants and Procedure

The data was collected in 2011 in a Korean university (University of Gwangju) from classes of teacher training students from all semesters. All participants were asked to fill out a standardized survey which comprises UWES-S, MBI-SS, psychosomatic complaints from the German-language Health Behavior Questionnaire (FEG; Dlugosch & Krieger, 1995), and socio-demographic variables. These were filled out during class time under the supervision of the author. The completion time comprised approximately 13 minutes, thus avoiding the danger of systematic drop out. The samples are opportunity samples but reached entire classes.

In the questionnaire study, 475 Korean teacher training students (of whom 72.3% were female) participated. After statistical item analysis, eight cases were removed from the samples. A data check of these cases showed that the participants answered the items inconsistently.

When the survey was conducted, most of the students were in fifth and sixth semester (41.2%). Nobody was higher than eighth semester; however, those who did not answer (5.5%) could potentially fall into this category. The mean age of the students was 21.9 years ($SD = 1.9$) and students' age ranged between 19 and 36 years.

Measures

Work engagement was assessed with the full (UWES-S 17) and also the short version (UWES-S 9) of the UWES-S 17. The UWES-S 17 survey was translated from English into Korean by three native speaking Koreans, working independently: one of them worked as a translator, and the other two were master degree students in psychology. Next, semantic differences in translation were discussed, together with the back-translation. The agreed questionnaire was checked by a native speaking Korean professor, who was also fluent in English.

The UWES-S 17 includes the scales vigor (VI; six items), dedication (DE; five items), and absorption (AB; six items). In this study, the UWES-S 17 showed a Cronbach's alpha of .73 (dedication), .77 (absorption), and .81 (vigor), where the UWES-S 9 showed a Cronbach's alpha of .83. Like every existing version of UWES, all items were scored on a 7-point rating scale, ranging from 0 (*never*) to 6 (*always*). For descriptive statistics of the UWES-S 17 and 9, see Table 1.

Burnout was measured via a translation of the Korean MBI-SS survey. The MBI-SS (Schaufeli, Martínez, et al., 2002) includes 15 items divided into three subscales: exhaustion, cynicism, and academic efficacy.⁴ Reliability coefficients for the three subscales were .78 for exhaustion, .84 for cynicism, and .78 for academic efficacy.



TABLE 1
Means, standard deviations, internal consistencies (Cronbach's alpha), and intercorrelations

	UWES-S-17 (UWES-S-9)			Women		Men		Intercorrelations					
	<i>M</i>	<i>SD</i>	alpha	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	VI	DE	AB	EX	CY	AE
VI	21.47 (10.28)	5.34 (2.88)	.81 (.68)	17.23	4.45	18.70	4.70		.75	.78	-.19	-.33	.78
DE	19.44 (12.31)	4.71 (3.17)	.73 (.69)	19.26	4.62	19.94	4.93			.73	-.08	-.40	.72
AB	19.68 (8.97)	5.58 (2.79)	.77 (.57)	19.35	7.79	20.35	5.72				-.12	-.31	.72
EX	16.96	5.03	.77	17.30	4.80	16.36	5.59					.51	-.14
CY	11.41	4.66	.84	11.43	4.39	11.51	5.34						-.38
AE	24.45	5.49	.78	23.91	5.53	25.83	5.26						
UWES-S 17	60.59	14.20		59.68	14.04	62.88	14.42						
UWES-S 9	31.56	7.48	.83	31.19	7.38	32.57	7.62						
PC	13.17	5.25	.83	11.44	5.17	13.86	5.12	.00	.08	.09	.37	.09	.02

Note. VI = vigor; DE = dedication; AB = absorption; EX = exhaustion; CY = cynicism; AE = academic efficacy; PC = psychosomatic complaints.

The MBI-SS was administered to retest its factorial structure and to measure the relationships between burnout, work engagement and psychosomatic complaints. The MBI-SS items were scored like in the original version, that is, on the same 7-point scale ranging from 0 (*never*) to 6 (*always*).⁵

Psychosomatic complaints were measured by means of the five-item short scale “physical complaints” of the General Health Behavior Questionnaire (FEG; Dlugosch & Krieger, 1995), extended with one item to account for depressive and anxiety symptoms (Gusy, 2008). The survey contains six items: heart-circulation problems; stomach-bowel problems; shoulder, back, and neck pain; diminishing general health; tension (e.g., insomnia); psychological problems such as panic, feeling afraid, or having depressive mood swings. The items were scored on a 5-point scale, ranging from *never or hardly ever* (0) to *nearly every day/always* (4); the Cronbach’s alpha for the whole disorder scale was .83.

Analyses

Most of the descriptive analyses were performed with SPSS. The AMOS software (Byrne, 2001) was used for all further structural analyses by using a maximum likelihood estimator. First, confirmatory factor analyses were conducted to test the factor structure of the Korean UWES-S 17, UWES-S 9 and MBI-SS versions, with three models for the UWES-S and two models for the MBI-SS (see Tables 2, 3, and 4). Secondly, structural relations between the MBI-SS and UWES-S were tested with three models (see Table 5). These were based on the results of previous studies (e.g., Schaufeli, Martínez, et al., 2002).

The fit of the models was evaluated by different statistics. To measure the overall fit of the model, the root mean error of approximation (RMSEA) was used, which requires the use of parsimonious models. Secondly, for the incremental fit measures, normed fit index (NFI), non-normed fit index (NNFI), and comparative fit index (CFI) were reported. Thirdly, the χ^2 difference test in addition to the Akaike information criterion (AIC; Akaike, 1974) were used as measures, which favor parsimonious models.

As a rule of thumb, the RMSEA has to reach values up to .08 (for a good fit .06; Jöreskog & Sörbom, 1996). Also the cut off for NFI, NNFI, and CFI has to be higher than .95 for good models and for acceptable models higher than .90. To study the relation between the UWES-S, MBI-SS, and psychosomatic complains, the ordinary least square regression method was used.

TABLE 2
The fit of the UWES-S 17 models

	χ^2	<i>df</i>	RMSEA	NFI	NNFI	CFI	AIC
One-factor model (M1)	366.44	119	.07/.066	.89	.91	.92	434.44
One-factor model improved (M1-i)	341.48	118	.06	.90	.92	.93	445.48
Two-factor model (M2)	358.53	117	.07	.89	.91	.92	464.53
Three-factor model (M3)	355.43	116	.07	.89	.91	.92	463.43

Note. RMSEA = root mean square error of approximation; NFI = normed fit index; NNFI = non-normed fit index; CFI = comparative fit index; AIC = Akaike information criterion.

TABLE 3
The fit of the UWES-S 9 models

	χ^2	<i>df</i>	RMSEA	NFI	NNFI	CFI	AIC
One-factor model (M1)	99.68	27	.08	.92	.92	.94	135.68
One-factor model improved (M1-i)	78.02	26	.07	.94	.94	.96	116.02
Two-factor model (M2)	90.19	26	.07	.93	.93	.95	128.19
Two-factor model improved (M2-i)	59.12	25	.05	.95	.96	.97	99.12
Three-factor model (M3)	The following covariance matrix was not positive definite						

Note. RMSEA = root mean square error of approximation; NFI = normed fit index; NNFI = non-normed fit index; CFI = comparative fit index; AIC = Akaike information criterion.

TABLE 4
The fit of the MBI-SS models

	χ^2	<i>df</i>	RMSEA	NFI	NNFI	CFI	AIC
One-factor model (M1)	1102.19	90	.15	.58	.53	.60	1192.19
Three-factor model (M3)	602.57	88	.11	.77	.76	.80	696.58
Three-factor model improved (M3-i) a4-a5, c1-c3	262.69	85	.06	.90	.91	.93	362.69
Three-factor model improved (M3-i) with e2-e4	236.22	84	.06	.91	.93	.94	328.22

Note. RMSEA = root mean square error of approximation; NFI = normed fit index; NNFI = non-normed fit index; CFI = comparative fit index; AIC = Akaike information criterion.

TABLE 5
The fit of the second-order burnout and engagement models

	χ^2	<i>df</i>	RMSEA	NFI	NNFI	CFI	AIC
M1	1565.22	455	.072	.78	.82	.84	1775.22
M2	1514.07	454	.070	.79	.83	.84	1727.54
M3	1401.07	454	.066	.80	.85	.86	1613.07

Note. RMSEA = root mean square error of approximation; NFI = normed fit index; NNFI = non-normed fit index; CFI = comparative fit index; AIC = Akaike information criterion.

RESULTS

To examine the adequacy of the structural equation modeling (SEM), normality and multivariate outliers were checked. Most items of both instruments showed small to moderate skewness (MBI-SS: $-.15$ - 1.03 ; UWES-S 17: $-.15$ - 1.1 ; UWES-S 9: $-.15$ - 1.1) and kurtosis (MBI-SS: $-.856$ - 1.55 ; UWES-S 17: $-.78$ - 1.58 ; UWES-S 9: $-.76$ - 1.58). In a second step, based on the Maha-

lanobis distance, seven multivariate outliers were excluded. A data check of these cases showed that these participants answered inconsistently.

Factor Validity of the Korean UWES-S

Results of the Korean UWES-S 17 showed that all models (one-, two-, and three-factor) have nearly the same fit statistics (see Table 2), while the $\Delta\chi^2$ -tests for M3-M1, as well as M2-M1 showed to be significant — M2-M1: $\Delta\chi^2(2) = 7.91, p < .05$; M3-M1: $\Delta\chi^2(3) = 11, p < .05$; M3-M2: $\Delta\chi^2(1) = 3.1, p > .05$. After freeing one error term (DE1-DE4), slightly superior results for the one-factor model could be reached (see Table 2). On the other hand, for model parsimony and correlations between the three latent factors, $r(\text{DE.AB}) = .98, r(\text{VI.AB}) = .97, r(\text{VI.DE}) = .94$, as well as intercorrelations between the observed variables, $r > .73$ for the observed variables; $r(\text{DE.AB}) = .73, r(\text{VI.AB}) = .78, r(\text{VI.DE}) = .75$, the one-factor structure could be supported. On the other hand, regarding the results and content validity-focused arguments, the three-factor structure cannot be rejected. Therefore, the next logical step should be to perform theoretically and empirically driven studies within the consequences and antecedences of the UWES-S. If several constructs show varying construct and discriminant validity in the nomological network of VI, AB, and DE, the two- or three-factor structure should be supported (Alok, 2013).

As in the Japanese sample for the short UWES-9 and the UWES-17 versions (Shimazu et al., 2008), results for the UWES-S 9 showed that the covariance matrix of the three latent variables VI, AB, and DE was not positive definite. One reason for the model's misspecification could be the high intercorrelation between the three factors. The one-factor solution for the UWES-S 9 was acceptable, RMSEA = .08; CFI = .94, and ameliorated significantly, RMSEA = .07; CFI = .96; $\Delta\chi^2(1) = 21.66, p < .001$, after freeing the same error term as mentioned above (DE1-DE4) (see Table 3). To the best of my knowledge, this error term had always been freed in samples consisting of university students.

Due to results of Schaufeli, Salanova, et al. (2002) who reported high correlations, especially for the AB and VI scales, an alternative two-factor model (absorption and vigor; dedication) was tested. Without freeing any error terms, the fit was slightly superior, RMSEA = .07; CFI = .95; to the one-factor solution: $\Delta\chi^2(1) = 9.5, p < .05$. The MI-statistic indicated high correlations between AE5 and VE5. In this case, an intercorrelated error term was allowed, which led to the best model fit, RMSEA = .05; CFI = .97.

Although the two-factor model showed the best model fit, it is not possible to support it due to several reasons: first, the results were only found in the UWES-S 9 version and not in the long version. Second, even though only one study assessed the best model fit for the two-factor model, it did not confirm this model (Wefald & Downey, 2009). Finally, the results could only be reached when allowing two items from different scales to intercorrelate. On the basis of these findings, the one-factor model can be empirically supported.

Factor Validity of the Korean MBI-SS

The MBI-SS results showed clear evidence for the three-factor model, $\Delta\chi^2(2) = 499.62, p < .001$ (see Table 4). Because of the high correlations, three error terms: AE4-AE5; CY1-CY3

and EX2-EX4 had to be freed. This led to a closer fit, $\Delta\chi^2(4) = 366.35, p < .001$. The last term is the same as in a study with university students from Spain (Schaufeli, Martínez, et al., 2002).

Relationships between Engagement and Burnout

Because of limited possibilities in the model testing concerning not-nested models, and for conceptual reasons (the three-factor UWES-S 17 model had nearly the same fit as the one-factor model), the UWES-S structure was analyzed in concert with the second-order model with three first-order factors. As expected, the fit of the hypothesized model M3 was superior to that of the other models (Table 5), namely the one-factor M1 and the alternative two-factor model M2; however, with a relation to burnout, academic efficacy has a higher impact on the engagement factor. This is also a typical result observed in previous studies, which can now be validated for the first time on a student sample.

Relationship to Psychosomatic Complaints

Analyses were carried out to explore to what incremental extent the engagement dimensions accounted for psychosomatic symptoms beyond the influence of the burnout dimensions. Results of hierarchical regressions (Table 6) revealed that only exhaustion (MBI-SS) was significantly related to psychosomatic symptoms. Only absorption and the UWES-S 9 as a whole scale accounted for a small but significant amount of additional variance in the prediction.

TABLE 6
Hierarchical multiple regression model: Prediction of psychosomatic complaints

		UWES-S-17 (UWES-S-9)		
		β	R^2	ΔR^2
Step 1			.15	.15
	EX	.43***		
	CY	-.11*		
	AE	.03		
Step 2			.16	.01
	EX	.42***		
	CY	-.09		
	AE	-.07		
	VI	-.09		
	DE	-.08		
	AB	.15*		

Note. EX = exhaustion; CY = cynicism; AE = academic efficacy;
VI = vigor; DE = dedication; AB = absorption.
*** $p < .001$. * $p < .05$.

Additional Psychometric Analysis and Its Relationship to Psychosomatic Complaints

Both significant and small differences ($d < .36$) in gender were only found for vigor and academic efficacy (Table 1). Male students scored higher than women. Relationship with age indicates that older students discover tendentially higher levels of vigor (VI), absorption (AB) as well as exhaustion (EX) and cynicism (CY) ($.1 < r < .2$).

Instead, the present results reveal approximately medium-size differences ($d = .47$) for psychosomatic complaints between male and female students (on the entire scale and in detail for stomach problems, shoulder and neck complaints, as well as the general state of well-being). Older students reported lower levels ($.1 < r < .2$) of stomach problems as well as shoulder pain.

In comparison to the norm from the test manual, Korean students showed significantly lower scores on vigor (large effect), dedication (small effect), and absorption (medium effect). Despite this, neither specific norm scores for students nor values were identified in Schaufeli, Martínez, et al.'s (2002) study including university students.

DISCUSSION

This study assessed, for the first time, work engagement in Korea. A major aim was to analyze the structure of engagement in a Korean sample. Contrary to what was expected, no affirmation could be found for the three-factor model (H1). Although results proved to be similar in the model fit when testing for the UWES-S 17, the UWES-S 9 showed clear evidence toward the one-factor model. This is in line with the results from other Asian and African investigations. However, further analysis and theoretical debates on engagement still need to consider the differences between Europe and Asian/African countries, especially due to cultural reasons. Apart from this, it is also technically difficult to identify three factors from only nine variables, especially when these factors tend to have high intercorrelations. As a consequence of the relation between the factor-specific and the general variance, inappropriate factor solutions are to be expected. Thus, the question of dimensionality of the UWES should clearly be better addressed with the 17- instead of nine-item version. However, even with this version, the exceptionally high level of intercorrelations between the three UWES factors which were found in previous studies cited above implies that the three postulated factors by Schaufeli, Salanova, et al. (2002) are conceptually indistinguishable. It is thus not surprising that the current research literature on this topic does not reveal any incremental use of the three-factor model. In contrast, the results from the MBI-SS factorial testing clearly support the attended three-factor structure (H2). However, the hypothesized structure of engagement and burnout, that is, that a two-factor model with the core of burnout and an extended engagement factor (plus efficacy) fits the data best, can be confirmed (H3). Nevertheless, future studies need to explore these results in detail, as recommended by Schaufeli et al. (2006).

Furthermore, antecedents and consequences of the subdimensions of work engagement/academic engagement (VI, DE, AB) should follow to intensively answer whether there is any empirical evidence for a three-factor model (see Extremera et al., 2012 for life satisfaction and perceived stress). The present study also supplies a small contribution to this question: psychosomatic complaints have nearly the same nonsignificant correlation pattern with VI, DE, and AB (Table

1). Based on these results, there is little empirical evidence for a three factor solution. Note that all the relationships are correlative and should be restudied in other samples. For causal argumentation future investigation should focus on longitudinal data.

The incremental variance of engagement on psychosomatic complaints beyond the influence of burnout with respect to the dimension exhaustion, is hardly worth mentioning (H4). Only AB contributes a small significant incremental part, but its practical relevance is questionable. This indicates, that i) in line with previous findings (e.g., Schaufeli, Martínez, et al., 2002) the exhaustion (burnout) and vigor (engagement) dimensions are not bipolar constructs of the same dimension (different correlation and regression results for exhaustion and vigor), ii) burnout and engagement have different antecedents and consequences, iii) psychosomatic complaints have no direct association with engagement.

As Schaufeli and Bakker (2004) predicted in the job demand-resources (JD-R) model integration, when studying work engagement, one should concentrate on motivational influence variables in the work environment. For university students, these variables could comprise interpersonal resources such as support from other students (social support) or supervisory feedback (organizational context) from professors. In addition, personal resources, which are moderator and mediator variables such as work values (e.g., Super, 1970), study motives (e.g., König & Rothland, 2012; Watt & Richardson, 2008), and personality traits (e.g., Langelaan, Bakker, van Doornen, & Schaufeli, 2006) could be included in engagement studies. If these variables are studied together with burnout related demand variables such as subjective work load (Jacobs & Dodd, 2003; Schaufeli & Bakker, 2004), they can provide us with a clearer picture of the network of engagement at university.

Regarding the high pressure during schooling time, it would be interesting to compare levels of engagement and burnout at different moments across Korean schooling and therefore assess the stability of engagement (Seppälä et al., 2015; Ouweneel, Schaufeli, & Le Blanc, 2013) and its sustainment. Quantitative as well as qualitative studies which investigate precise transitions (elementary school-secondary school; high school-university) should be included in future cross-cultural research. These results could then be used for specific and tailored preventive activities concerning engagement as well as burnout in a university context. For such purposes, longitudinal studies with different time points are necessary.

In the present study, one limitation was the use of a cross-sectional approach, including only one Korean group of university teacher training students. Future studies should seek to investigate whether these data actually represent the population of Korean teacher training students from different Korean regions and universities. This is an important question, since the ranking for the University of Gwangju is only average compared to other universities, and attracts students with lower GPA. This could influence directly and indirectly the results for engagement, burnout and psychosomatic complaints (floor-ceiling-effects) as well as their relationships (results of multiple regression analysis). Moreover, other subjects should be included for further comparisons and generalizability.

Subsequently, future studies should integrate factor-invariance testing and reconstruct the present research with more samples. If these samples are either obtained from different countries (Schaufeli, Martínez, et al., 2002) or target a West-Eastern comparison, they should clearly highlight limitations and specificity of the assessed population samples as well as any country-specific factors (Hu et al., 2014). Additionally, later studies on work engagement should always report

univariate statistics, especially when focusing on structural equation modeling. The present means and standard deviations of work engagement (Table 6) cannot be compared, as prior results have not been published (Schaufeli, Martínez, et al., 2002). Comparisons are also difficult to draw from the MBI-SS results: burnout experiences cannot easily be compared across the cited studies, due to a) different end poles of scaling for MBI-SS (*never-always* vs. *never-daily*), b) 5- (Shin et al., 2011) versus 7-point scaling, and c) no absolute reporting of scale levels (David, 2010; Schaufeli, Martínez, et al., 2002). It is possible that nation-specific cut-off points may be necessary for any further cross-cultural comparisons, as recommended by Schaufeli and Van Dierendonck (1995).

In summary, four postulations from the present study can be made: first, until different antecedents and consequences can be found for the engagement subscales, the UWES-S 9 should be used as a scale to measure a unidimensional construct in Korea. Secondly, further variables should be studied in the network of engagement. Thirdly, specific norm scores should be established for students. And finally, due to lower engagement levels as compared to the overall population, students should be regarded as an important group for preventive strategies.

NOTES

1. This study is dedicated to Olga Rothmann, librarian at the University of Mannheim, Germany, who died in 2013, and her friendship with Professor Byung-Hye Kong, Chosun University, Gwangju.
2. In this paper the common abbreviations are used for UWES-S: vigor (VI), dedication (DE), absorption (AB), and for MBI-SS: exhaustion (EX), cynicism (CY), academic efficacy (AE). The item numbers of the particular constructs are also mentioned.
3. "A latent random (or nonrandom) variable is a random (or nonrandom) variable for which there is no sample realization for at least some observations in a given sample." "From the perspective of the sample realization definition all variables are latent until sample values of them are available. Of course, for many of the variables in the psychological and social sciences we do not have the option of directly observing such variables, so it will be latent for all cases in all samples. Our only option is to indirectly observe it through the sample values of an observed variable" (Bollen, 2002, p. 612).
4. At the time the study was conducted, a translation from Lee et al. (2010) existed but this version was not public.
5. Lee et al. (2010) and Shin et al. (2011) scored the intensity instead of the frequency and used only a 5-point scoring scale, ranging from *strongly disagree* to *strongly agree* of exhaustion (EX), cynicism (CY) and academic efficacy (AE).

REFERENCES

- Adriaenssens, J., De Gucht, V., & Maes, S. (2015). Determinants and prevalence of burnout in emergency nurses: A systematic review of 25 years of research. *International Journal of Nursing Studies*, 52, 649-661. doi:10.1016/j.ijnurstu.2014.11.004
- Airila, A., Hakonen, J. J., Schaufeli, W. B., Luukkainen, R., Punakallio, A., & Lusa, S. (2014). Are job and personal resources associated with work ability 10 years later? The mediating role of work engagement. *Work & Stress*, 28, 87-105. doi:10.1080/02678373.2013.872208
- Alok, K. (2013). Work engagement in India: A factorial validation study of UWES-9 Scale. *Management and Labour Studies*, 38, 53-62.
- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, 19, 716-723.

- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22, 309-328. doi:10.1108/02683940710733115
- Balducci, C., Fraccaroli, F., & Schaufeli, W. B. (2010). Psychometric properties of the Italian version of the Utrecht Work Engagement Scale (UWES-9): A cross-cultural analysis. *European Journal of Psychological Assessment*, 26, 143-149.
- Bollen, K. A. (2002). Latent variables in psychology and social sciences. *Annual Review of Psychology*, 53, 605-634. doi:10.1146/annurev.psych.53.100901.135239
- Brunsting, N. S., Sreckovic, M. A., & Lane, K. L. (2014). Special education teacher burnout: A synthesis of research from 1973 to 2013. *Education and Treatment of Children*, 37, 681-711.
- Butler, S., & Charles, M. (1999). The past, the present, but never the future: Thematic representations of fostering disruption. *Child and Family Social Work*, 4, 9-19.
- Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications and programming*. Mahwah, NJ: Lawrence Erlbaum.
- Cakir, S. G. (2015). The effects of teacher immediacy and student burnout on empowerment and resistance among Turkish pre-service teachers. *Learning and Individual Differences*, 40, 170-175. doi:10.1016/j.lindif.2015.05.002
- Capri, B., Gunduz, B., & Gokcakan, Z. (2011). Maslach Tükenmişlik Envanteri-Öğrenci Formu (MTE-ÖF)'nun Türkçe'ye uyarlanması: Geçerlik ve güvenilirlik çalışması [Turkish adaptation of Maslach Burnout Inventory-Student Scale (MBI-SS)]. *Çukurova Üniversitesi Eğitim Fakültesi Dergisi*, 40, 134-147.
- Chang, E., Lee, A., Byeon, E., & Lee, S. M. (2015). Role of motivation in the relation between perfectionism and academic burnout in Korean students. *Personality and Individual Differences*, 82, 221-226. doi:10.1016/j.paid.2015.03.027
- Csikszentmihalyi, M. (1988). The flow experience and its significance for human psychology. In M. Csikszentmihalyi & I. Csikszentmihalyi (Eds.), *Optimal experience: Psychological studies of flow in consciousness* (pp. 15-35). Cambridge, UK: Cambridge University Press.
- David, A. P. (2010). Examining the relationship of personality and burnout in college students: The role of academic Motivation. *Educational Measurement and Evaluation Review*, 1, 90-104.
- Demerouti, E., Bakker, A. B., de Jonge, J., Janssen, P. P. M., & Schaufeli, W. B. (2001). Burnout and engagement at work as a function of demands and control. *Scandinavian Journal of Work, Environment & Health*, 27, 279-286. doi:10.5271/sjweh.615
- Dlugosch, G. E., & Krieger, W. (1995). *Fragebogen zur Erfassung des Gesundheitsverhaltens FEG* [Questionnaire for assessing health behavior]. Frankfurt, Germany: Swets Test Gesellschaft.
- Extremera, N., Sánchez-García, D., Ma, A., & Rey, L. (2012). Examining the psychometric properties of the Utrecht Work Engagement Scale in two Spanish multi-occupational samples. *International Journal of Selection and Assessment*, 20, 105-110. doi:10.1111/j.1468-2389.2012.00583.x
- Freudenberger, H. J. (1974). Staff burn-out. *Journal of Social Issues*, 30, 159-165.
- Galbraith, C. S., & Merrill, G. B. (2012). Academic and work-related burnout: A longitudinal study of working undergraduate university business students. *Journal of College Student Development*, 53, 453-463.
- Gavish, B., & Friedman, I. A. (2010). Novice teachers' experience of teaching: A dynamic aspect of burnout. *Social Psychology of Education*, 13, 141-167. doi:10.1007/s11218-009-9108-0
- Gumz, A., Erices, R., Brähler, E., & Zenger, M. (2013). Faktorstruktur und Gütekriterien der deutschen Übersetzung des Maslach-Burnout-Inventars für Studierende von Schaufeli et al. (MBI-SS) [Factorial structure and psychometric criteria of the German translation of the Maslach Burnout Inventory-Student Version by Schaufeli et al. (MBI-SS)]. *Psychotherapie Psychosomatik Medizinische Psychologie*, 63, 77-84.
- Gusy, B. (2008). *Gesundheit und Gesundheitsverhalten bei Erstsemestern* [Health and health behavior of first year students] (Doctoral dissertation). Retrieved from Technische Universität Berlin, Germany, website <http://www.opus4.kobv.de/opus4-tuberlin/frontdoor/index/index/docId/1754>.
- Hakanen, J. (2009). *Työn imun arviointimenetelmä – työ imu – menetelmän (Utrecht Work Engagement Scale) käyttäminen validointi ja viitetiedot Suomessa*. [Assessing Work Engagement with the Finnish version of the UWES: The use, validation and norm scores]. Helsinki, Finland: Finnish Institute of Occupational Health. Retrieved from http://www.ttl.fi/fi/verkkokirjat/tyon_imun_arviointimenetelmä/Documents/Työn_imun_arv_men.pdf

- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology, 43*, 495-513. doi:10.1016/j.jsp.2005.11.001
- Hallberg, U. E., & Schaufeli, W. B. (2006). "Same same" but different? Can work engagement be discriminated from job involvement and organizational commitment? *European Psychologist, 11*, 119-127.
- Holm-Hadulla, R. M., & Koutsoukou-Argyriaki, A. (2015). Mental health of students in a globalized world: Prevalence of complaints and disorders, methods and effectivity of counseling, structure of mental health services of students. *Mental Health & Prevention, 3*, 1-4. doi:10.1016/j.mhp.2015.04.003
- Hu, Q., & Schaufeli, W. B. (2009). The factorial validity of the Maslach Burnout Inventory-Student Survey in China. *Psychological Reports, 105*, 394-408. doi:10.2466/PRO.105.2.394-408
- Hu, Q., Schaufeli, W. B., Hessen, D. J., Salanova, M., Taris, T. W., Hakanen, J., & Shimazu, A. (2014). East is East and West is West and never the twain shall meet: Work engagement and workaholism across Eastern and Western cultures. *Journal of Behavioral and Social Sciences, 1*, 6-24.
- Jacobs, S. R., & Dodd, D. K. (2003). Student burnout as a function of personality, social support, and workload. *Journal of College Student Development, 44*, 291-303.
- Jöreskog, K. G., & Sörbom, D. (1996). *LISREL 8. User's reference guide*. Chicago, IL: Scientific Software International.
- Kadi, A., Beytekin, O., & Arslan, H. (2015). A research on the burnout and the teaching profession attitudes of teacher candidates. *Journal of Education and Training Studies, 3*, 107-113.
- König, J., & Rothland, M. (2012). Motivations for choosing teaching as a career: Effects on general pedagogical knowledge during initial teacher education. *Asia-Pacific Journal of Teacher Education, 40*, 289-315.
- Kreß, V., Sperth, M., Hofmann, F. H., & Holm-Hadulla, R. M. (2015). Psychological complaints of students: A comparison of field samples with clients of a counseling service at a typical German University. *Mental Health & Prevention, 3*, 41-47. doi:10.1016/j.mhp.2015.04.002
- Langelaan, S., Bakker, A. B., van Doornen, L. J. P., & Schaufeli, W. B. (2006). Burnout and work engagement: Do individual differences make a difference? *Personality and Individual Differences, 40*, 521-532. doi:10.1016/j.paid.2005.07.009
- Lee, J., Puig, A., Kim, Y.-B., Shin, H., Lee, J. H., & Lee, S. M. (2010). Academic burnout profiles in Korean adolescents. *Stress and Health, 26*, 404-416. doi:10.1002/smi.1312
- Maroco, J., & Tecedreiro, M. (2009). Inventário de Burnout de Maslach para estudantes Portugueses [Maslach Burnout Inventory Student Survey: Portuguese version]. *Psicologia, Saúde and Doenças, 10*, 227-235.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour, 2*, 99-113. doi:10.1002/job.4030020205
- McAbee, J. H., Ragel, B. T., McCartney, S., Jones, G. M., Michael, L. M., DeGuyper, M., ... Klimo, P., Jr. (2015). Factors associated with career satisfaction and burnout among US neurosurgeons: Results of a nationwide survey. *Journal of Neurosurgery, 123*, 161-173. doi:10.3171/2014.12.JNS141348
- Mey, S. C., & Yin, C. J. (2015). Mental health and wellbeing of the undergraduate students in a research university: A Malaysian experience. *Social Indicator Research, 122*, 539-551. doi:10.1007/s11205-014-0704-9
- Nerstad, C. G. L., Richardsen, A. M., & Martinussen, M. (2010). Factorial validity of the Utrecht Work Engagement Scale (UWES) across occupational groups in Norway. *Scandinavian Journal of Psychology, 51*, 326-333. doi:10.1111/j.1467-9450.2009.00770.x
- Noh, H., Shin, H., & Lee, S. M. (2013). Developmental process of academic burnout among Korean middle school students. *Learning and Individual Differences, 28*, 82-89. doi:10.1016/j.lindif.2013.09.014
- Ouweneel, E., Schaufeli, W. B., & Le Blanc, P. M. (2013). Believe, and you will achieve: Changes over time in self-efficacy, engagement, and performance. *Applied Psychology: Health and Well-Being, 5*, 225-247. doi:10.1111/aphw.12008
- Park, I. K., Lee, S. M., Choi, B. Y., Jin, Y., & Lee, J. (2010). Relationship between the Big Five personality factors and academic burnout. *Korean Journal of Social and Personality Psychology, 24*, 81-93.
- Rafferty, J. P., Lemkau, J. P., Purdy, R. R., & Rudisill, J. R. (1986). Validation of the Maslach Burnout Inventory for family practice physicians. *Journal of Clinical Psychology, 42*, 488-492.
- Robins, T. G., Roberts, R. M., & Sarris, A. (2015). Burnout and engagement in health profession students: The relationships between study demands, study resources and personal resources. *The Australasian Journal of Organisational Psychology, 8*, 1-13. doi:10.1017/orp.2014.7

- Rückert, H. W. (2015). Students' mental health and psychological counselling in Europe. *Mental Health and Prevention, 3*, 34-40. doi:10.1016/j.mhp.2015.04.006
- Schaufeli, W. B., & Bakker, A. B. (2003). *Test manual of the Utrecht Work Engagement Scale*. Unpublished manuscript, Utrecht University, The Netherlands. Available at http://www.beanmanaged.com/doc/pdf/arnoldbakker/articles/articles_arnold_bakker_87.pdf
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior, 25*, 293-315. doi:10.1002/job.248
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*, 701-716. doi:10.1177/0013164405282471
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Psychology, 33*, 464-481. doi:10.1177/0022022102033005003
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*, 71-92. doi:10.1023/A:1015630930326
- Schaufeli, W. B., & Van Dierendonck, D. (1995). A cautionary note about the cross-national and clinical validity of cut-off points for the Maslach Burnout Inventory. *Psychological Reports, 76*, 1083-1090. doi:10.2466/pr0.1995.76.3c.1083
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*, 5-14.
- Seppälä, P., Hakanen, J., Mauno, S., Perhoniemi, R., Tolvanen, A., & Schaufeli, W. B. (2015). Stability and change model of job resources and work engagement: A seven-year three-wave follow-up study. *European Journal of Work and Organizational Psychology, 24*, 360-375. doi:10.1080/1359432X.2014.910510
- Seppälä, P., Mauno, S., Feldt, T., Hakanen, J., Kinnunen, U., Tolvanen, A., & Schaufeli, W. B. (2009). The construct validity of the Utrecht Work Engagement Scale: Multisample and longitudinal evidence. *Journal of Happiness Studies, 10*, 459-481. doi:10.1007/s10902-008-9100-y
- Shimazu, A., Schaufeli, W. B., Kosugi, S., Suzuki, A., Nashiwa, H., Kato, A., ... Kitaoka-Higashiguchi, K. (2008). Work engagement in Japan: Validation of the Japanese version of Utrecht Work Engagement Scale. *Applied Psychology: An International Review, 57*, 510-523. doi:10.1111/j.1464-0597.2008.00333.x
- Shin, H., Puig, A., Lee, J., Lee, J. H., & Lee, S. M. (2011). Cultural validation of the Maslach Burnout Inventory for Korean students. *Asia Pacific Education Review, 12*, 633-639.
- Song, Y., Huang, Y., Liu, D., Kwan, J. S., Zhang, F., Sham, P. C., ... Tang, S. W. (2008). Depression in college: Depressive symptoms and personality factors in Beijing and Hong Kong college freshmen. *Comprehensive Psychiatry, 49*, 496-502. doi:10.1016/j.comppsy.2008.02.005
- Stallman, H. M. (2010). Psychological distress in university students: A comparison with general population data. *Australian Psychologist, 45*, 249-257. doi:10.1080/00050067.2010.482109
- Storm, K., & Rothmann, I. (2003). A psychometric analysis of the Utrecht Work Engagement Scale in the South African police service. *South African Journal of Industrial Psychology, 29*, 62-70. doi:10.4102/sajip.v29i4.129
- Super, D. E. (1970). *Work Values Inventory*. Boston, MA: Houghton-Mifflin.
- Toker, B. (2011). Burnout among university academicians: An empirical study on the universities of Turkey. *Doğus Üniversitesi Dergisi, 12*, 114-127.
- Tomoda, A., Mori, K., Kimura, M., Takahashi, T., & Kitamura, T. (2000). One-year prevalence and incidence of depression among first-year university students in Japan: A preliminary study. *Psychiatry and Clinical Neurosciences, 54*, 583-588. doi:10.1046/j.1440-1819.2000.00757.x
- Travis, D. J., Lizano, E. L., & Mor Barak, M. E. (2015). "I'm So Stressed!": A longitudinal model of stress, burnout and engagement among social workers in child welfare settings. *The British Journal of Social Work*. Advance online publication. doi:10.1093/bjsw/bct205
- Watt, H. M. G., & Richardson, P. W. (2008). Motivations, perceptions, and aspirations concerning teaching as a career for different types of beginning teachers. *Learning and Instruction, 18*, 408-428. doi:10.1016/j.learninstruc.2008.06.002
- Wefald, A. J., & Downey, R. G. (2009). Construct dimensionality of engagement and its relation with satisfaction. *The Journal of Psychology, 143*, 91-112. doi:10.3200/JRLP.143.1.91-112

- Wong, J. G., Cheung, E., Chan, K. K., Ma, K. K., & Tang, S. W. (2006). Web-based survey of depression, anxiety and stress in first-year tertiary education students in Hong Kong. *Australian and New Zealand Journal of Psychiatry, 40*, 777-782. doi:10.1080/j.1440-1614.2006.01883.x
- Xanthopoulou, D., Bakker, A. B., Kantas, A., & Demerouti, E. (2012). Measuring burnout and work: Factor structure, invariance and latent mean differences across Greece and the Netherlands. *International Journal of Business Science and Applied Management, 7*, 40-52.
- Zhang, Y., & Gan, Y. (2005). The Chinese version of the Utrecht Work Engagement Scale: An examination of reliability and validity. *Chinese Journal of Clinical Psychology, 13*, 268-270.
- Zhang, Y., Gan, Y., & Cham, H. (2007). Perfectionism, academic burnout and engagement among Chinese college students: A structural equation modeling analysis. *Personality and Individual Differences, 43*, 1529-1540. doi:10.1016/j.paid.2007.04.010
- Zhang, Y., Gan, Y., & Zhang, Y. (2005). The reliability and validity of MBI-SS and academic characteristics affecting burnout. *Chinese Journal of Clinical Psychology, 13*, 283-385.