Validation of the Utrecht Work Engagement Scale (UWES) in the Czech Republic

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Abstract

One or two sentences providing a **basic introduction** to the field, comprehensible to a scientist in any discipline.

Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular study.

One sentence summarizing the main result (with the words “**here we show**” or their equivalent).

Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

One or two sentences to put the results into a more **general context**.

Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline.

*Keywords:* keywords

*Word count:* X

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# 1 Introduction

Based on theoretical reasons and previous empirical evidence ([Chan, Ho, Ip, & Wong, 2020](#ref-Chan_Ho_Ip_Wong_2020)) we expected significnat positive association between self-efficacy and UWES total score (Hypotheses x).

# 2 Methods

## 2.1 Participants

From the survey, we excluded participants being either without work (*n* = 187) or pensioners (*n* = 468) resulting in 784 participants. To increase data quality, we removed subjects finishing the survey in a short period of time i.e. < 15 minutes (*n* = 6). The survey typically lasted > 30 minutes. We also excluded respondents answering discrepantly to quality check items (*n* = 71). These items included information about weight, height and age. Tolerance in these control questions was set on 2 kilograms, 2 centimeters, and 2 years respectively. After removal of these subjects, the final number of participants was 707 (Age: *M* = 43.65, *SD* = 10.08, Females: 38.47%).

## 2.2 Measures

### 2.2.1 Utrecht Work Engagement Scale (UWES).

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## 2.3 Data analysis

Inspection of histograms and results of the Martia test of multivariate skewness and kurtouses indicated that normality assumption is violated in the UWES items. Moreover, examination of residual plots and results of Breusch-Pagan test ( = 7.21, *df* = 1, p = 0.007) suggested heteroscedasticity. Thus, methods not requiring parametric assumptions were used. The Little MCAR test provided an evidence that missing values are missing on random. Thus, as there was not a large number of missing values (*n* = 60), incomplete cases were deleted listwise. Factor structure of the instrument was investigated via Confirmatory Factor Analysis (CFA). Original 3 dimensional factor structure was tested along with two and one factor solution, frequently reported across studies see review of [Kulikowski](#ref-Kulikowski_2017) ([2017](#ref-Kulikowski_2017)). Item composition of tested factor solutions can be found in the study of [Willmer, Westerberg Jacobson, & Lindberg](#ref-Willmer_2019) ([2019](#ref-Willmer_2019)). Kaiser Meyer Olkin (KMO) measure together with Bartlett test of sphericity were applied to assess factorability of the UWES data. Five indices were used to inspect model fit: 1) Mean Square Error of Approximation (RMSEA); 2) Standardized Root Mean Square Residual (SRMR); 3) chi-square test; 4) Comparative Fit index (CFI) and 5) Tucker-Lewis index (TLI). In the first two indices, values below reflects an acceptable fit and below 0.05 a good fit ([Civelek, 2018](#ref-civelek2018essentials); [Hoe, 2008](#ref-hoe_issues_2008); [Hooper, Coughlan, & Mullen, 2008](#ref-hooper_structural_2008); [Vandenberg & Lance, 2000](#ref-vandenberg_review_2000)). In the last two indices, values above 0.95 suggest an acceptable fit ([Jackson, Gillaspy Jr, & Purc-Stephenson, 2009](#ref-jackson_reporting_2009)) and above 0.97 a good fit ([Schermelleh Engel, Moosbrugger, & Muller, 2003](#ref-schermelleh_engel_evaluating_2003)). Diagonally Weighted Least Squares estimator (DWLS) on polychoric correlation matrix was used to fit CFA models.  
Invariance of a measurement was explored in males and females. Configural, metric, scalar and strict invariance was assessed by CFA: if CFA was > 0.01, than difference exists between invariance models ([Putnick & Bornstein, 2016](#ref-Putnick_Bornstein_2016)). The scale reliability was measured by the McDonald’s and also by the Cronbach’s . Divergent validity was measured by association of the UWES with xxx and xxx. During divergent validity testing, UWES subscale score was regressed on xxxx and xxxx. Convergent validity was inspected by correlations with Neuroticism and with Extroversion. Zero order, Spearman rank correlation coeficient was used. Comparison between socio-demographic groups in the UWES total and subscale score, was conducted by Mann–Whitney U test and by Kruskal–Wallis test. For post-hoc testing, Games-Howell and Dunn test were utilized. Effect size was reported in Vargha and Delaney ([Vargha & Delan, 2000](#ref-vargha_critique_2000)). The interpretation of the is as follows: small effect (0.56 - 0.64), medium effect (0.64 - 0.71), large effect (> 0.71). All statistical calculations were conducted in R [Version 4.0.5; [R Core Team](#ref-R-base) ([2021](#ref-R-base))]. Primary packages used for analysis included: *lavaan* ([Rosseel, 2012](#ref-R-lavaan)), *papaja* ([Aust & Barth, 2020](#ref-R-papaja)) *psych* ([Revelle, 2021](#ref-R-psych)), *usf* ([Peters, 2021](#ref-R-ufs)).

# 3 Results

## 3.1 Socio-demographic results

Results of the Kruskal-Wallis test followed by the Games-Howell and the Dunn test revealed that there are significant differences in socio-demographic groups in the UWES total and subscale scores: professional workers had significantly higher score in the UWES total and Vigor, Absorption and Dedication subscales as compared with workers. Similarly, chief workers reported higher UWES total score and also Dedication and Vigor subscale scores compared with workers (see Table 1). In terms of education, people with higher vocational school or university had significantly higher total and Absorption subscale score as compared with people with non graduation high school or lower education (Table 1). There were not other significant differences between socio-demographic groups and the UWES total and subscale scores.

Table 1:

*Socio-demographic results of the three samples*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variables | value | n(%) | UWES\_T | UWES\_D | UWES\_A | UWES\_V |
| Work\_position | Worker | 337 (48%) | Professional worker: x2(536)=3.45\*\*, A=0.42 | Professional worker: x2(532)=3.51\*\*, A=0.42 | Professional worker: x2(538)=4.02\*\*\*, A=0.41 | Chief worker: x2(156)=3.6\*\*, A=0.39 |
|  | Worker | 337 (48%) | Chief worker: x2(150)=3.85\*\*\*, A=0.38 | Chief worker: x2(144)=3.57\*\*, A=0.39 | Chief worker: x2(140)=3.57\*\*, A=0.38 |  |
|  | Professional worker | 227 (32%) |  |  |  |  |
|  | Chief worker | 84 (12%) |  |  |  |  |
| Education | Basic school | 22 (3%) |  |  |  |  |
|  | Non graduation high school or lower | 266 (38%) | Higher vocational school or University: x2(434)=2.89\*, A=0.35 |  | Higher vocational school or University: x2(426)=3.74\*\*, A=0.34 |  |
|  | High school | 200 (28%) |  |  |  |  |
|  | Higher vocational school or University | 219 (31%) |  |  |  |  |
| Family\_status | Not in relationship | 116 (16%) |  |  |  |  |
|  | In relationship | 140 (20%) |  |  |  |  |
|  | Married | 324 (46%) |  |  |  |  |
|  | Divorced | 116 (16%) |  |  |  |  |
|  | Widow/Widower | 11 (2%) |  |  |  |  |
| Gender | Male | 435 (62%) |  |  |  |  |
|  | Female | 272 (38%) |  |  |  |  |
| Religiosity | Yes, I am a member of church | 54 (8%) |  |  |  |  |
|  | Yes, but I am not a member of a church | 144 (20%) |  |  |  |  |
|  | No | 352 (50%) |  |  |  |  |
|  | No, I am convinced atheist | 127 (18%) |  |  |  |  |

Table 2:

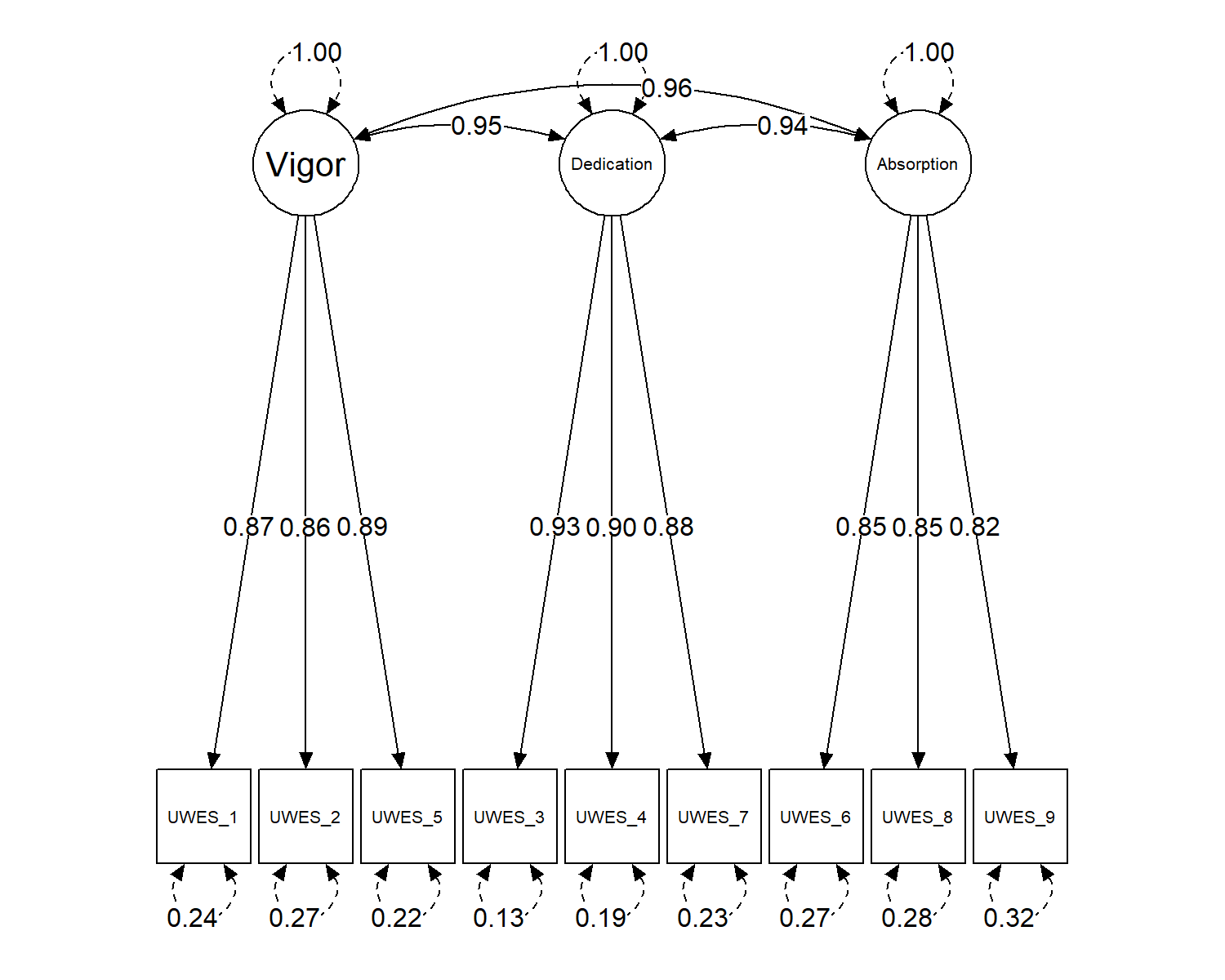
*Means and standard deviations of the UWES total and subscale scores*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variables | value | UWES\_T: M(SD) | UWES\_A: M(SD) | UWES\_D: M(SD) | UWES\_V: M(SD) |
| Work\_position | Worker | 37.76 (13.12) | 12.6 (4.54) | 12.67 (4.84) | 12.49 (4.44) |
|  | Professional worker | 41.28 (10.95) | 14.01 (3.76) | 14 (4.11) | 13.26 (3.81) |
|  | Chief worker | 43.08 (10.85) | 14.4 (4.04) | 14.55 (4.17) | 14.13 (3.53) |
| Education | Basic school | 33.68 (14.67) | 11.68 (5.23) | 11.05 (5.03) | 10.95 (4.85) |
|  | Non graduation high school or lower | 38.45 (13.16) | 12.77 (4.68) | 12.96 (4.81) | 12.72 (4.42) |
|  | High school | 39.59 (12.32) | 13.2 (4.3) | 13.39 (4.5) | 13 (4.21) |
|  | Higher vocational school or University | 41.73 (10.56) | 14.23 (3.47) | 14.06 (4.21) | 13.43 (3.62) |
| Family\_status | Not in relationship | 36.63 (12.07) | 12.23 (4.34) | 12.38 (4.46) | 12.02 (4.05) |
|  | In relationship | 40.25 (11.79) | 13.8 (4.11) | 13.62 (4.37) | 12.83 (4.1) |
|  | Married | 40.15 (11.98) | 13.54 (4.12) | 13.47 (4.53) | 13.14 (4.03) |
|  | Divorced | 40.29 (13.52) | 13.13 (4.64) | 13.69 (4.95) | 13.47 (4.52) |
|  | Widow/Widower | 45.5 (12.64) | 14.8 (4.87) | 15.2 (4.66) | 15.5 (3.69) |
| Gender | Male | 39.02 (11.83) | 13.11 (4.12) | 13.21 (4.38) | 12.7 (4.07) |
|  | Female | 40.8 (12.94) | 13.7 (4.51) | 13.66 (4.87) | 13.45 (4.25) |
| Religiosity | Yes, I am a member of church | 40.68 (11.1) | 13.56 (3.86) | 13.8 (4.44) | 13.32 (3.64) |
|  | Yes, but I am not a member of a church | 38.59 (12.71) | 13.09 (4.53) | 12.98 (4.65) | 12.52 (4.23) |
|  | No | 40.11 (12.2) | 13.43 (4.23) | 13.54 (4.5) | 13.14 (4.14) |
|  | No, I am convinced atheist | 39.27 (12.51) | 13.21 (4.32) | 13.18 (4.74) | 12.88 (4.29) |

*Note.* SD = standard deviation, M = mean, UWES\_T = Utrecht Work Engagement Scale - Total score, UWES\_A = Utrecht Work Engagement Scale - Absorption subscale, UWES\_D = Utrecht Work Engagement Scale - Dedication subscale, UWES\_V = Utrecht Work Engagement Scale - Vigor subscale

## 3.2 Confirmatory Factor Analysis

Bartlett test ( (36) = 5,565.42, p < .001) as well as KMO (0.96) revealed that UWES data are sufficiently correlated for confirmatory factor analysis. In the first step, original-three factor model was fitted. Results indicated a good fit of three dimensional solution (see Figure 1, Table 2). Modification indices did not suggested high change in in case of releasing constrains between UWES items. Factor loadings () in the three factor solution were high as were correlations between the three factros (see Figure 1). Correlation between residuals in manifest variables was low: *r* = 0.05. In the second step, two factor model was tested: results suggested that two-dimensional model yields lower model fit as compared to the original-three factor model (see Table 2). This was supported by the significant chi square difference test with Satorra Bentler correction: (2) = 81.12; p < .001. Factor loadings of the two factor solution were high ranging from: 0.82 to 0.92. Finally, fit of unidimensional solution was assessed: overall, this model had worst goodness of fit indices values and factor loadings ( = 0.80 - 0.92) as compared with two and three factor model (see Table 2). The Chi square difference test suggested lower fit of unidimensional solution as compared with the three factor solution: (3) = 132.99; p < .001. In the last step, hierarchical model of the UWES was assessed: after model was fitted, CFA parameters yielded no change compared with the original-three factor model suggesting that original factor model would be more parsimonious solution. Taken together, this results supports superiority the original-three factor model over two and one factor solution in terms of fit with the data.



*Figure* *1.*  SEM plot of the UWES three factor solution with factor loadings and item residuals.

Table 3:

*Fit statistic of the models tested in CFA*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Tested model | x2 | df | p-value | CFI | TLI | RMSEA | SRMR |
| Hierarchical factor model | 75.373 | 24 | p < .001 | 0.999 | 0.999 | 0.058 90% CI (0.043-0.072) | 0.021 |
| One factor model | 124.37 | 27 | p < .001 | 0.999 | 0.998 | 0.075 90% CI (0.062-0.088) | 0.026 |
| Two factor model | 105.906 | 26 | p < .001 | 0.999 | 0.999 | 0.069 90% CI (0.056-0.083) | 0.024 |
| Three factor model | 75.373 | 24 | p < .001 | 0.999 | 0.999 | 0.058 90% CI (0.043-0.072) | 0.021 |

*Note.* x2 = chi-square, df = degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker-Lewis index, RMSEA = Root Mean Square Error of Approximation , CI = Confidence Interval, SRMR = Standardized Root Mean Square Residual

## 3.3 Item statistic and reliability

Internal consistency of the UWES total score was excellent: Cronbach’s = 0.96 95% CI[0.96 - 0.96] and McDonald’s = 0.96 95% CI[0.96 - 0.96]. When assessing the internal consistency of the UWES subcales, the highest values yielded dedication subscale: Cronbach’s = 0.93 95% CI[0.92 - 0.94] and McDonald’s = 0.93 95% CI[0.92 - 0.94] followed by the vigor subscale: Cronbach’s = 0.90 95% CI[0.89 - 0.91] and McDonald’s = 0.90 95% CI[0.89 - 0.91]. The lowest internal consistency was observed in the absorption factor: Cronbach’s = 0.88 95% CI[0.86 - 0.89] and McDonald’s = 0.88 95% CI[0.86 - 0.89]. The table 3 illustrates statistic of UWES items. In general, correlations between UWES items and item-total correlations were high. The lowest item-total correlation had item 9.

Table 4:

*Item statistic and Polychoric correlations between the UWES items*

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UWES\_1 | UWES\_2 | UWES\_3 | UWES\_4 | UWES\_5 | UWES\_6 | UWES\_7 | UWES\_8 | UWES\_9 | ITC | Skewness | kurtosis | M(SD) |
| 1 |  |  |  |  |  |  |  |  | 0.84 | -0.35 | -0.28 | 4.31 (1.48) |
| 0.79\*\*\* | 1 |  |  |  |  |  |  |  | 0.81 | -0.43 | -0.34 | 4.56 (1.49) |
| 0.75\*\*\* | 0.73\*\*\* | 1 |  |  |  |  |  |  | 0.89 | -0.3 | -0.56 | 4.43 (1.59) |
| 0.73\*\*\* | 0.73\*\*\* | 0.84\*\*\* | 1 |  |  |  |  |  | 0.85 | -0.28 | -0.87 | 4.23 (1.71) |
| 0.75\*\*\* | 0.71\*\*\* | 0.82\*\*\* | 0.76\*\*\* | 1 |  |  |  |  | 0.84 | -0.22 | -0.75 | 4.11 (1.65) |
| 0.75\*\*\* | 0.72\*\*\* | 0.74\*\*\* | 0.7\*\*\* | 0.71\*\*\* | 1 |  |  |  | 0.81 | -0.6 | -0.22 | 4.76 (1.54) |
| 0.7\*\*\* | 0.69\*\*\* | 0.82\*\*\* | 0.78\*\*\* | 0.77\*\*\* | 0.7\*\*\* | 1 |  |  | 0.83 | -0.43 | -0.6 | 4.72 (1.66) |
| 0.71\*\*\* | 0.71\*\*\* | 0.73\*\*\* | 0.72\*\*\* | 0.68\*\*\* | 0.73\*\*\* | 0.69\*\*\* | 1 |  | 0.82 | -0.55 | -0.44 | 4.6 (1.63) |
| 0.66\*\*\* | 0.65\*\*\* | 0.72\*\*\* | 0.73\*\*\* | 0.68\*\*\* | 0.67\*\*\* | 0.7\*\*\* | 0.72\*\*\* | 1 | 0.78 | -0.14 | -0.82 | 3.96 (1.66) |

*Note.* \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001, M = Mean, SD = Standard Deviation, ITC = Item-total correlation corrected for scale reliability and item overlap

Correlation analysis indicated that there is significant positive association between all UWES subscale and total score and extroversion. The highest correlation was found in the Vigor subscale. In addition, there was significant negative correlation between all UWES subscales and total score with neuroticism. The highest association was also found in the Vigor subscale (see Table 5).

Table 5:

*Correaltion matrix of the UWES, personality characteristics and socio-demographic indicators*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | M(SD) |
| 1. UWES | - |  |  |  |  |  |  |  |  | 39.69 (12.27) |
| 2. UWES\_V | .94\*\*\* | - |  |  |  |  |  |  |  | 12.98 (4.15) |
| 3. UWES\_D | .95\*\*\* | .85\*\*\* | - |  |  |  |  |  |  | 13.38 (4.57) |
| 4. UWES\_A | .93\*\*\* | .82\*\*\* | .83\*\*\* | - |  |  |  |  |  | 13.33 (4.28) |
| 5. BFI\_E | .19\*\*\* | .23\*\*\* | .18\*\*\* | .13\*\*\* | - |  |  |  |  | 24.20 (5.21) |
| 6. BFI\_N | -.19\*\*\* | -.23\*\*\* | -.18\*\*\* | -.12\*\* | -.27\*\*\* | - |  |  |  | 23.02 (5.70) |
| 7. Age | .03 | .06 | .01 | .02 | -.01 | -.10\*\* | - |  |  | 43.65 (10.08) |
| 8. Gender | .07 | .08 | .05 | .07 | .06 | .20\*\*\* | .08\* | - |  | 1.38 (0.49) |
| 9. DSES | .13 | .09 | .17\* | .11 | .09 | -.06 | -.02 | .10 | - | 2.39 (1.10) |
| 10. GSES | .28\*\*\* | .30\*\*\* | .26\*\*\* | .25\*\*\* | .31\*\*\* | -.44\*\*\* | .08\* | -.09\* | .13 | 28.43 (4.95) |

*Note.* \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001; SD = standard deviation, M = mean, UWES = Utrecht Work Engagement Scale, BFI\_N = Big Five Inventory - Neuroticism subscale, BFI\_E = Big Five Inventory - Extraversion subscale, UWES\_A = Utrecht Work Engagement Scale - Absorption subscale, UWES\_D = Utrecht Work Engagement Scale - Dedication subscale, UWES\_V = Utrecht Work Engagement Scale - Vigor subscale. Spearman rank correlations were used

## 3.4 Invariance testing and factor loadings

Results of the measurement equivalence indicated that across tested invariance models (configure, metric, scalar and strict) of the CFI was < 0.01. This finding strongly suggest that UWES assess working engagement equivalently in males and females (See Table 6).

Table 6:

*Measurement eqivalence of the UWES between genders*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Model | x2 | df | p-value | CFI | TLI | RMSEA | SRMR |
| Overall model | 75.373 | 24 | p < .001 | 0.999 | 0.999 | 0.058 (0.043-0.072) | 0.021 |
| Male model | 49.247 | 24 | p = 0.002 | 0.999 | 0.999 | 0.051 (0.03-0.071) | 0.023 |
| Female model | 52.908 | 24 | p = 0.001 | 0.999 | 0.999 | 0.071 (0.045-0.097) | 0.026 |
| Configural  model | 102.155 | 48 | p < .001 | 0.999 | 0.999 | 0.059 (0.043-0.075) | 0.024 |
| Metric  model | 120.691 | 54 | p < .001 | 0.999 | 0.999 | 0.062 (0.047-0.077) | 0.026 |
| Scalar  model | 129.585 | 96 | p = 0.013 | 1 | 1 | 0.033 (0.016-0.047) | 0.024 |
| Strict  model | 129.585 | 96 | p = 0.013 | 1 | 1 | 0.033 (0.016-0.047) | 0.024 |

*Note.* x2 = chi-square, df = degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker-Lewis index, RMSEA = Root Mean Square Error of Approximation , CI = Confidence Interval, SRMR = Standardized Root Mean Square Residual

## 3.5 Convergent and divergent validity

# 4 First regression analysis

Results of the regression analysis revealed that work engagement is significantly related with chronic diseases. Specifically, higher work engagement was significantly related with lower probability of developing skin diseases or eczema (in crude effect) pain of unclear origin (both crude and adjusted effect see Table 6).

Table 7:

*Logistic regression table depicting associations between the UWES and chronic diseases*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Skin diseases eczema | Pain of unclear origin | Hypertension | Diabetes | Arthritis |
| Crude effect | 0.98\* (0.95, 1.00) | 0.93\*\* (0.89, 0.97) | 1.01 (0.99, 1.03) | 1.00 (0.98, 1.03) | 0.97 (0.95, 1.01) |
| Adjusted effect | 0.98 (0.96, 1.00) | 0.94\*\* (0.90, 0.98) | 1.01 (0.99, 1.03) | 1.01 (0.98, 1.03) | 0.98 (0.95, 1.01) |
|  | Depression/Anxiety | Migraine | Cancer | Thyroid disease | Astma |
| Crude effect | 0.99 (0.96, 1.02) | 1.00 (0.97, 1.03) | 1.00 (0.95, 1.07) | 1.01 (0.99, 1.04) | 0.98 (0.96, 1.00) |
| Adjusted effect | 1.00 (0.97, 1.02) | 1.00 (0.97, 1.04) | 1.00 (0.94, 1.07) | 1.02 (1.00, 1.05) | 0.98 (0.96, 1.01) |
|  | Gastric or duodenal ulcers | Chronic lung disease | Skin diseases eczema | Allergy | Pain in the small pelvis |
| Crude effect | 1.01 (0.95, 1.10) | 0.97 (0.92, 1.02) | 0.98\* (0.95, 1.00) | 0.99 (0.97, 1.01) | 1.00 (0.96, 1.05) |
| Adjusted effect | 1.01 (0.94, 1.10) | 0.97 (0.93, 1.02) | 0.98 (0.96, 1.00) | 0.99 (0.97, 1.01) | 1.01 (0.97, 1.05) |
|  | Ischemic heart disease | Obesity | Stroke | Back pain |  |
| Crude effect | 1.00 (0.93, 1.08) | 0.99 (0.97, 1.01) | 0.95 (0.87, 1.04) | 0.99 (0.97, 1.00) |  |
| Adjusted effect | 0.99 (0.92, 1.07) | 0.99 (0.97, 1.01) | 0.95 (0.86, 1.04) | 0.99 (0.98, 1.01) |  |

*Note.* \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001, results are reported in odds ratios

# 5 Second regression analysis

Results of logistic regression suggested that there is no relationship between work engagement and the smoking, alcohol drinking, drug abuse, coffee drinking or using computer or television for recreation. The most closer to significance threshold was smoking.

Table 8:

*Logistic regression table depicting associations between the UWES and health related behaviours*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Smoked | Drunk alcohol | Used illegal drugs | Drunk coffee | Used television or computer for recreation |  |
| Crude effect | 1.00 (0.99, 1.02) | 1.00 (0.98, 1.01) | 0.97 (0.92, 1.02) | 1.01 (0.99, 1.02) | 1.01 (0.99, 1.03) |  |
| Adjusted effect | 1.01 (1.00, 1.03) | 1.00 (0.98, 1.01) | 0.98 (0.93, 1.04) | 1.01 (1.00, 1.03) | 1.01 (0.99, 1.03) |  |

*Note.* \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001, results are reported in odds ratios

# 6 Discussion

# 7 References

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