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Article

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International Journal of Business Science & Applied Management (IJBSAM)

Provided in Cooperation with:

International Journal of Business Science & Applied Management (IJBSAM)

Suggested Citation: Xanthopoulou, Despoina; Bakker, Arnold B.; Kantas, Aristotelis; Demerouti, Evangelia (2012) : Measuring burnout and work engagement: Factor structure, invariance, and latent mean differences across Greece and the Netherlands, International Journal of Business Science & Applied Management (IJBSAM), ISSN 1753-0296, International Journal of Business Science & Applied Management, s.l., Vol. 7, Iss. 2, pp. 40-52

This Version is available at:

<https://hdl.handle.net/10419/190637>

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Measuring burnout and work engagement: Factor structure, invariance, and latent mean differences across Greece and the Netherlands

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Abstract

This study examines the factor structure and invariance of the instruments measuring burnout (Maslach Burnout Inventory - General Survey / MBI-GS) and work engagement (Utrecht Work Engagement Scale / UWES) in a sample of Dutch ($N = 162$) and Greek ($N = 206$) employees. Confirmatory factor analyses in both samples supported the superiority of the proposed three-factor structure of both the MBI-GS (exhaustion, cynicism, and reduced professional efficacy) and the UWES (vigor, dedication, and absorption). Alternative two-factor and one-factor models did not show a better fit to the data. In addition, results of multigroup analyses partly supported the invariance of the three-factor model of the MBI-GS, and fully supported the invariance of the three-factor model of the UWES across the two national samples. These results suggest that the MBI-GS and the UWES are not only valid instruments for testing burnout and engagement but also allow comparisons across countries.

Keywords: burnout, cross-national study, factor structure, invariance, latent mean differences, work engagement

1 INTRODUCTION

Organizational psychologists and managers are interested in burnout because it is a significant correlate of employee impaired health, and reduced performance (Bakker, Van Emmerik, & Van Riet, 2008; Shirom, 2003). Over the past decade, researchers have shifted the attention from employee malfunctioning to optimal functioning. This latter development reflects the trend towards a ‘positive psychology’ that focuses on human strengths rather than on weaknesses (Seligman & Csikszentmihalyi, 2000). Luthans (2002) underlined the need for positive organizational behavior research, defined as ‘the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today’s workplace’ (p. 59). In this context, researchers and managers became interested in understanding not only what makes employees burned out, but also what makes them energetic and enthusiastic about their work (Bakker, Schaufeli, Leiter, & Taris, 2008). This is because engaged employees enjoy better health, are more proactive and perform better (for a review see Bakker, Demerouti, & Xanthopoulou, 2012), while engagement relates positively to financial turnover (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009) and client loyalty (Salanova, Agut, & Peiró, 2005). Thus, valid instruments to estimate employee burnout and engagement are necessary both for researchers and managers.

Together with this positive trend, the need for cross-cultural studies in organizational psychology research has become more evident. However, there are methodological difficulties that cross-cultural researchers frequently encounter. One major problem occurs when cross-cultural comparisons are made between responses to questionnaires, which have not been validated psychometrically across cultures (Smith, Fisher, & Sale, 2001). Nevertheless, the need for valid psychometric measures is better understood than in the past. Several studies have compared levels of burnout and work engagement across different countries. However, apart from some exceptions (Mäkikangas, Hättinen, Kinnunen, & Pekkonen, 2011; Schaufeli & Bakker, 2010; Schaufeli, Salanova, González-Romá, & Bakker, 2002b; Schaufeli & Van Dierendonck, 1993), the instruments used were simply translated and their psychometric properties have been taken for granted. Furthermore, none of the previous studies estimated whether the relations between the underlying constructs and the specific items are invariant across the national groups (i.e. scalar invariance). This issue raises concerns about the validity of the instruments, when used for comparisons across different settings.

The central aim of the present study is to examine the factor structure and invariance of two instruments that are broadly used to measure burnout (Maslach Burnout Inventory-General Survey; MBI-GS; Schaufeli, Leiter, Maslach & Jackson, 1996) and work engagement (Utrecht Work Engagement Scale; UWES; Schaufeli et al., 2002b) across Greece and The Netherlands. This would allow valid estimations and comparisons of the levels of burnout and engagement among employees from both national groups. The advantage of this study as compared to previous work (for a review see, Schaufeli & Bakker, 2010; Schaufeli et al., 2002b) is that we do not only test the configural and metric invariance of these instruments across the two national samples, but also their scalar invariance. Only when scalar invariance is met, we are sure that we measure the same construct and thus, it is possible to compare means across samples with generalizable results (Vandenberg & Lance, 2000).

Even though Greece and The Netherlands share the same European background, working condition surveys systematically show that Dutch employees enjoy more favourable working conditions than Greek employees (Eurofound, 2007; 2012). Therefore, we expect that Greek and Dutch employees will exhibit different levels of burnout and work engagement. We compare employees from Greece and the Netherlands because the UWES (Schaufeli & Bakker, 2003) has been initially developed in the Dutch language, while most empirical evidence on the validity of the MBI-GS (Schaufeli et al., 1996) is based on Dutch employees. Thus, it makes sense to compare the Greek versions of these instruments with the original and/or validated ones.

2 LITERATURE REVIEW AND HYPOTHESES

2.1 Burnout and Engagement

Over the course of their careers, many employees experience a great deal of job strain that may include exhaustion, disengagement and health complaints, as a result of a demanding and emotionally charged work environment (Schaufeli & Greenglass, 2001). These experiences may lead to poor performance, high levels of absenteeism, and personnel turnover. For more than two decades, clinical observations have been made and empirical research has been conducted on this phenomenon, which has been labelled “burnout”. Burnout is defined as a syndrome of exhaustion, cynicism towards work and reduced professional efficacy, occurring among individuals in relation to their work (Maslach, Jackson & Leiter, 1996). According to Schaufeli et al. (1996), exhaustion -the central component of burnout- refers to energy depletion and is characterized by mental, emotional and physical tiredness. Cynicism refers to the development of negative attitudes towards one’s job or the recipients of one’s work – an extreme and therefore dysfunctional kind of detachment and loss of concern. Finally, lack of professional efficacy is the tendency to evaluate one’s work negatively. Such an evaluation is often accompanied by feelings of insufficiency, self-doubt and poor self-esteem (Maslach, 1993).

Instead of looking exclusively at the negative side of employee well-being, burnout research also focuses on the positive side. Maslach and Leiter (1997; 2008) rephrased burnout as an erosion of engagement with the job. Accordingly, engagement is characterized by energy, involvement and efficacy - the direct opposites of the three burnout dimensions. Schaufeli and Bakker (2001) have taken a different approach to the concept of work engagement, according to which engagement is defined and operationalized in its own right. They defined work engagement as a positive, affective-motivational state of fulfilment in employees that is characterized by vigor, dedication and absorption. Vigor refers to high levels of energy and resilience, the willingness to invest effort in one's job, the ability to not be easily fatigued and to be persistent in the face of difficulties. Dedication refers to a strong involvement in one's work, accompanied by feelings of enthusiasm and significance and by a sense of pride and inspiration. Finally, absorption refers to a pleasant state of total immersion in one's work, which is characterized by time passing quickly and being unable to detach oneself from the job (Schaufeli & Bakker, 2010; Schaufeli, Martínez, Marques-Pinto, Salanova, & Bakker, 2002a).

2.2 The Measurement of Burnout and Engagement

Originally, burnout was conceived as a three-dimensional syndrome of emotional exhaustion, depersonalisation and reduced personal accomplishment that occurs in individuals who do people work (i.e., education, social services or health care), and was measured with the Maslach Burnout Inventory-Human Services Survey (MBI-HSS; Maslach & Jackson, 1981). However, research has shown that burnout is not restricted to individuals who work with people but the syndrome can also be found outside the context of human services (Bakker, Demerouti & Schaufeli, 2002; Leiter & Schaufeli, 1996). Therefore, the concept of burnout and its measurement were broadened to include all employees, irrespective of their occupation. As a result, the original version of the MBI was adapted for use outside the human services and transformed into the MBI-GS (Schaufeli et al., 1996).

The three dimensions of the MBI-GS (Schaufeli et al., 1996) parallel those of the original MBI, in the sense that they are more generic and do not refer to individuals as the object of one's work. For example, exhaustion is measured by items that do not include other people as the source of the fatigue (e.g. "I feel tired when I get up in the morning and I have to face another day on the job"). The same applies for cynicism and (reduced) professional efficacy. In particular, the items that measure cynicism reflect a distance towards work in general and not only regarding working with other people (e.g. "I doubt the significance of my work"). Finally, the items that measure professional efficacy focus both on social and non-social occupational accomplishments (e.g. "I have accomplished many worthwhile things in this job").

Psychometric research with the MBI-GS has shown that the three-factor structure is invariant across occupations (Bakker et al., 2002; Leiter & Schaufeli, 1996; Mäkikangas et al., 2011; Taris, Schreurs, & Schaufeli, 1999), and across samples from Finland, Norway, and The Netherlands (Schutte, Toppinnen, Kalimo, & Schaufeli, 2000). Only one study examined the psychometric properties of the Greek version of the MBI-GS (Demerouti, Bakker, Vardakou & Kantas, 2003). Results of this study provided evidence for the three-factor structure of the MBI-GS across various occupations in Greece. However, analyses showed that there are problems with some items, mostly of the cynicism scale. Therefore, the first objective of the present study is to re-examine the factorial validity of the MBI-GS across a sample of Greek and Dutch employees. The following hypothesis is formulated:

Hypothesis 1: The three-factor structure of the MBI-GS (exhaustion, cynicism, and reduced professional efficacy) will be the same in Greece and the Netherlands.

As mentioned earlier, research on work engagement was actually developed through the research on burnout (Maslach et al., 2001; Maslach & Leiter, 1997, 2008). First, Maslach and Leiter (1997) conceptualized engagement as the opposite pole of burnout and assumed that engagement is characterized by energy, involvement and efficacy, which are the exact opposites of the three burnout dimensions: exhaustion, cynicism, and reduced professional efficacy. Engaged employees are strongly connected to their work tasks and believe that they are effective in dealing with their job demands. Based on this approach, engagement is measured by the opposite pattern of scores on the three MBI-GS dimensions (Maslach et al., 2001). This means that low scores on exhaustion and cynicism, and high scores on professional efficacy are indicative of engagement.

Schaufeli and Bakker (2001; Schaufeli et al., 2002a; 2002b) followed a different approach in defining work engagement. They argued that Maslach and Leiter's (1997) approach precludes an investigation of the relationship between burnout and engagement, since both concepts are considered to be the opposite poles of a continuum that is assessed with one instrument (the MBI-GS). Engagement cannot be measured by the opposite profile of the MBI-GS, because, even though in conceptual terms it is the positive antithesis of burnout, the structure and the measurement of both concepts are different. Importantly, burnout and engagement do not share the same antecedents and are explained by different psychological mechanisms (Schaufeli & Bakker, 2010). Burnout is mainly determined by the demanding aspects of the job (e.g. workload, physical demands), while

work engagement is mainly determined by the availability of resources in the work environment (e.g. autonomy or support; for a meta-analysis, see Halbesleben, 2010). This argumentation explains why engagement cannot be measured with the opposite scores of burnout, and should be measured on its own right. Thus, Schaufeli and Bakker (2001; 2010) proposed that burnout and engagement should be conceived as two distinct concepts that should be measured independently with different instruments. In this context, the Utrecht Work Engagement Scale (UWES) has been developed that measures the three underlying dimensions of engagement (i.e. vigor, dedication, and absorption).

In a recent study by Demerouti, Mostert, and Bakker (2010), where the MBI-GS and the UWES were examined, results showed that the cynicism dimension of burnout and the dedication dimension of engagement can be considered as the opposite ends of the same attitude dimension called “identification” (see also González-Romá, Schaufeli, Bakker, & Lloret, 2006). However, the same cannot be said for the exhaustion and vigor dimensions that do not seem to represent the different ends of the “energy” continuum, despite being highly related. These conclusions were further supported by the results that exhaustion associated mainly to work pressure (i.e. a typical job demand), while vigor to job autonomy (i.e. a typical job resource). All in all, empirical evidence suggests that burnout (as measured with the MBI-GS) and engagement (as measured with the UWES) seem to be related but independent constructs, which further supports the use of the UWES for the measurement of work engagement.

The UWES initially included fifteen items (a later version includes seventeen items, while a shorter version includes only nine items; Schaufeli, Bakker, & Salanova, 2006), which are assumed to assess the three underlying dimensions of engagement: vigor, dedication and absorption. Results based on Dutch (Schaufeli & Bakker, 2004; Schaufeli et al., 2002a) and Spanish samples of employees and university students (Schaufeli et al., 2002b) showed that the fit of the hypothesized three-factor model to the data was superior to alternative models (see also Schaufeli & Bakker, 2010). Schaufeli et al. (2006) supported the three-factor structure of the UWES across different countries (e.g. Australia, Canada, Belgium, South Africa, France, and Finland) and across occupations. Also, Nerstad, Richardsen, and Martinussen, (2010) supported the three-factor structure across occupational groups in Norway. In the present study, we follow Schaufeli et al.’s (2002a; 2002b) approach on engagement, and we use the original fifteen-item UWES. The second objective of our study is to test the factorial validity of the UWES across Greece and The Netherlands. This is interesting because there is no evidence so far on the validity of the scale in a Greek sample. On the basis of previous findings (Schaufeli et al., 2002a), we formulate the following hypothesis:

Hypothesis 2: The three-factor structure of the UWES (vigor, dedication, and absorption) will be the same in Greece and the Netherlands.

2.3. A Cross-national Comparison of Burnout and Engagement

The present study also concerns comparisons between Greek and Dutch employees regarding their levels of burnout and engagement. The interesting point in comparing Greece and The Netherlands is that both countries are very different in terms of their work characteristics and the opportunities provided. The most recent European survey on working conditions shows that the work environment of Greek employees is significantly more demanding and less resourceful than that of Dutch employees (Eurofound, 2012). More specifically, Greek employees work longer hours than Dutch, they are at a higher level of risk exposure, they perceive lower levels of autonomy at work, lower task rotation, and they receive significantly less training. Interestingly, profit-sharing schemes (where employees receive part of the profits generated by the company they work for) is a common practice in the Netherlands, but almost negligible in Greece. Also, Greek employees are among the first in Europe to report that their work affects their health in a negative way. These differences are important because theoretical models explaining burnout and engagement suggest that demanding work environments (i.e. characterized by high workload, high risks, and cognitive demands) are responsible for employee burnout, while resourceful work environments (i.e. characterized by high levels of autonomy, support, employee-friendly practices) relate to employee engagement (Demerouti, Bakker, Schaufeli, & Nachreiner, 2001).

Furthermore, the level of unemployment has been historically significantly higher in Greece than in The Netherlands (Eurofound, 2007; 2012). This suggests that problems regarding job insecurity are more prevalent in Greece. Demerouti et al. (2003) used the Dutch norm scores to classify the Greek respondents of their study in low, medium, high and very high levels on the three MBI-GS dimensions and they found that one third to half of the Greek participants was experiencing high or very high levels of burnout. Finally, Dutch were found to be amongst the most engaged employees in Europe (Taipale, Selander, Anttila, & Nätti, 2011), while studies outside the domain of occupational health psychology have shown that Dutch individuals are happier than Greeks (Veenhoven, 2000). These results suggest that Greek employees are more likely to be burned out and less likely to be engaged than Dutch employees:

Hypothesis 3: Greek employees will report higher levels of burnout and lower levels of work engagement than Dutch employees.

3 METHOD

3.1 Samples and Procedure

Sample 1 concerned a heterogeneous group of 206 Greek employees (101 men, 49%; 105 women, 51%) from a large public enterprise (49%; health care employees, administration and technical staff) and from private profit organizations (i.e. two banks, a department store, a sports union and a travel agency; 51%), where employees were mainly working in customer-service jobs (e.g., sales). The majority of participants (43.2%) were between thirty and forty years of age and held a bachelor degree (44.7%). Their mean organizational tenure was 7.8 years ($SD = 5.7$), and the response rate was 74%.

Sample 2 included 162 Dutch employees (79 men, 49%; 83 women, 51%). The sample was also heterogeneous since the questionnaire was administered to both public servants (33%; teachers and nurses), and employees working in the private sector [therapists (28%), managers (23%), technicians (4%) and administrators (5%)]. The remaining of the participants (7%) did not report their occupation. The mean age of participants was 44 years ($SD = 8.7$). The majority of the participants (53%) held a bachelor degree. Their mean organizational tenure was 10.9 years ($SD = 8.3$), and the response rate was 79%.

In both countries, researchers informed the managers or CEOs of the organizations that were approached about the purposes of the study. After receiving their consent, employees from these organizations were invited to participate in a study about 'work-related well-being'. Participants of both samples were approached directly by the researchers and were asked to fill in a questionnaire about their work life. All contacts between researchers and participants were face-to-face. In all cases, employees were reassured that participation was anonymous and that data would be treated confidentially.

3.2 Measures

Burnout was measured with the Dutch (Schutte et al., 2000) and Greek (Demerouti et al., 2003) version of the MBI-GS (Schaufeli et al., 1996). The MBI-GS includes 16 items that assess the three dimensions of burnout. *Exhaustion* is measured with five items, such as: "I feel emotionally drained from my work". *Cynicism* is also assessed with five items, including: "I have become less enthusiastic about my work". Finally, *professional efficacy* is assessed with six items, for example: "I can effectively solve the problems that arise in my work". All items are scored on a seven-point scale, ranging from (0) "never" to (6) "every day". High scores on exhaustion and cynicism and a low score on professional efficacy indicate burnout. Previous studies that tested the factorial validity of the MBI-GS (Demerouti et al., 2003; Schutte et al., 2000) have shown that all items load significantly on the intended factors, save one exception. One item (item 4; "I just want to do my job and not be bothered") of the cynicism sub-scale proved to be ambivalent, and did not load significantly on the cynicism factor. For that reason, as suggested by Schutte et al. (2000), we excluded this item from the following analyses.

Work Engagement was assessed with the Dutch (Schaufeli & Bakker, 2003) and Greek 15-item version of the UWES. The UWES was translated in Greek from the Dutch original and was checked for accuracy with the method of back-translation. The UWES items reflect three underlying dimensions, which were measured with five items each: *Vigor* (e.g. "At my work, I feel bursting with energy"), *Dedication* (e.g. "am enthusiastic about my job") and *Absorption* (e.g. "I get carried away when I am working"). All items are scored on a seven-point scale, ranging from (0) "never" to (6) "every day". High scores on all three dimensions indicate work engagement.

3.3 Strategy of Analysis

In order to test Hypotheses 1 and 2, competing models were examined with confirmatory factor analyses (CFAs; Vandenberg & Lance, 2000), using the AMOS 19.0 software package. The three burnout dimensions were represented as latent variables that were operationalized by five items (indicators) for exhaustion, four items for cynicism, and six items for professional efficacy. We followed the same procedure but in a separate analysis for the three engagement dimensions. These dimensions were also represented as latent variables and were operationalized by five items for each of the dimensions: vigor, dedication and absorption. In the proposed model, exhaustion is expected to correlate positively with cynicism and negatively with professional efficacy. Cynicism is also expected to correlate negatively with professional efficacy. Regarding work engagement, positive correlations between all three latent variables were expected.

To test Hypothesis 1, we conducted CFAs and we compared -for each national sample separately- the proposed three-factor model of burnout (MBI-GS), where the underlying items loaded on the proposed factors, with the following four alternative models: a) three alternative two-factor models (where, in each case, one of the three factors consists of a combination of two burnout dimensions); and b) a one-factor model (where all

items are hypothesized to load on a single burnout latent factor). The same procedure was followed for testing Hypothesis 2, where the proposed three-factor model (vigor, dedication, and absorption) of work engagement (UWES) was compared with four alternative models for both national samples separately.

In addition, we conducted multigroup CFAs to test the measurement and structural invariance of each scale across the two national samples (Vandenberg & Lance, 2000). Accordingly, we compared four nested models for both scales: 1) to test for configural invariance (i.e. the same number of factors best represents the data for both groups), we tested a multigroup model in which the only invariance constrain was that the exact same parameters were tested for both national groups, while all these parameters were freely estimated (Model 1); 2) to test for metric invariance (i.e. all participants, irrespective of their group membership, respond to the items of the scale in the same way), we tested a model where factor loadings were also constrained to be equal across the national groups (Model 2); 3) to test for scalar invariance (i.e. participants who have the same score on the latent construct would obtain the same score on the observed variable irrespective of their group membership), we imposed additional constraints to Model 2 by setting the item intercepts to be the same across groups as well (Model 3); and 4) to test for structural invariance (i.e. all latent variables have the same scores and relationships across groups), we tested a model (Model 4) where, next to equal factor loadings and item intercepts, all factor variances and covariances were set to be equal across groups.

We used the following indices in order to assess model fit to the data: the chi-square (χ^2) statistic and the related degrees of freedom (*df*), the goodness-of-fit index (GFI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR). In general a χ^2/df less than 3.0 and GFI and CFI values above .90 indicate an acceptable fit (with >.95 being ideal; Brown, 2006). Further, RMSEA and SRMR values up to .08 indicate a reasonable fit, while values up to .05 indicate an excellent fit to the data (Hu & Bentler, 1999). In order to compare nested models, we applied the chi-square difference test, while in the multigroup analyses we used the CFI-difference (Δ CFI) index. Accordingly, a decrease in the CFI value equal or higher than .01 indicates a significant decrement in model fit and lack of invariance across groups (Cheung & Rensvold, 2002).

To test Hypothesis 3, we estimated latent mean differences. We chose “Dutch” to serve as the reference group, and “Greek” to serve as the comparison group. We set the means of the latent factors to be fixed to zero in the reference group, and to vary freely in the comparison group. Comparisons of latent means were based on the critical ratio (CR) index ($CR > \pm 1.96$ indicates statistical differences in means). A positive CR value suggests that the comparison group has higher latent mean values than the reference group. It is important to note that (full or partial) scalar invariance is a prerequisite first step in order to test for latent mean differences (Vandenberg & Lance, 2000).

4 RESULTS

4.1 Descriptive Statistics

All scales of both instruments in both samples showed acceptable reliabilities (see Table 1). In the Dutch sample, intercorrelations between the burnout dimensions and between the engagement dimensions were significant and in the expected direction. Also, correlations between the burnout and engagement dimensions were significant and in the expected direction. As for the Greek sample, correlations between the three engagement dimensions were highly significant, but regarding the burnout dimensions, only exhaustion and cynicism were correlated. Furthermore, the three engagement scales were moderately correlated with cynicism and professional efficacy, but not with exhaustion. Likewise, the work engagement scales were stronger interrelated than the burnout scales, in both national samples.

Table 1: Means, Comparisons of Means, Standard Deviations, Correlations (for Greek Employees below the Diagonal) and Internal Consistencies (Cronbach’s alphas) of the Burnout (EX, CY, PE) and Engagement (VI, DE, AB) Scales in the Greek (N =206) and Dutch (N = 162) sample.

	Greek			Dutch			MANOVA results
	<i>M</i>	<i>SD</i>	<i>α</i>	<i>M</i>	<i>SD</i>	<i>α</i>	<i>F</i>
EX	3.20	1.47	.88	2.30	1.36	.92	36.71***
CY	2.99	1.43	.84	1.90	1.24	.78	59.50***
PE	4.81	1.06	.85	4.22	0.89	.80	32.99***
VI	4.07	1.22	.85	3.86	1.08	.85	2.96
DE	3.84	1.47	.91	4.07	1.24	.92	2.62
AB	4.01	1.32	.86	3.69	1.06	.81	6.15*
Correlations							
	EX	CY	PE	VI	DE	AB	
EX		.70**	-.37**	-.58**	-.58**	-.32**	
CY	.50**		-.52**	-.63**	-.71**	-.51**	
PE	.09	-.13		.65**	.70**	.53*	
VI	-.00	-.18*	.59**		.81**	.80**	
DE	.00	-.28**	.60**	.80**		.76**	
AB	.03	-.14*	.55**	.87**	.76**		

Note. EX = Exhaustion; CY = Cynicism; PE = Professional Efficacy; VI = Vigor; DE = Dedication, AB = Absorption ; * $p < .05$; ** $p < .01$; *** $p < .001$.

4.2 Factor Structure and Invariance of Burnout across Greece and the Netherlands

Hypothesis 1 assumed the invariance of the three-factor structure of the MBI-GS (exhaustion, cynicism, and professional efficacy) across Greece and the Netherlands. To test this hypothesis, we first conducted CFAs for each national sample separately, and we compared the proposed three-factor model with four alternative models, as described in the Method section. As shown on Table 2, the proposed three-factor model of burnout had an acceptable fit to the data of both national samples. Also, chi-square difference tests showed that the three-factor structure fitted better to the data of the Greek and Dutch samples than the alternative two and one-factor models (see Table 2).

Table 2: Fit of Alternative Factor Models of the MBI-GS for the Greek (N = 206) and Dutch (N = 162) Samples separately: Results of Confirmatory Factor Analyses.

Model	χ^2	<i>df</i>	χ^2/df	<i>GFI</i>	<i>CFI</i>	<i>RMSEA</i>	<i>SRMR</i>	Comparison	$\Delta\chi^2$	<i>df</i>
Greece										
I. 3-factor proposed	208.31	87	2.39	.88	.92	.08	.06	-		
II. 2-factor (EX, CY+PE)	647.58	89	7.28	.63	.63	.18	.19	I - II	439.27*	2
III. 2-factor (CY, EX+PE)	659.78	89	7.41	.62	.62	.18	.19	I - III	451.47*	2
IV. 2-factor (PE, EX+CY)	448.47	89	5.04	.75	.76	.14	.11	I - IV	240.16*	2
V. 1- factor	892.96	90	9.92	.54	.46	.21	.20	I - V	684.65*	3
The Netherlands										
I. 3-factor proposed	147.61	87	1.70	.89	.95	.07	.06	-		
II. 2-factor (EX, CY+PE)	248.33	89	2.79	.79	.87	.11	.09	I - II	100.72*	2
III. 2-factor (CY, EX+PE)	355.08	89	3.99	.71	.79	.14	.13	I - III	207.47*	2
IV. 2-factor (PE, EX+CY)	236.96	89	2.66	.82	.88	.10	.08	I - IV	89.35*	2
V. 1- factor	410.28	90	4.56	.67	.75	.15	.13	I - V	262.67*	3

Note. *df* = degrees of freedom; *GFI* = goodness-of-fit Index; *CFI* = comparative fit index; *RMSEA* = root mean square error of approximation; *SRMR* = standardized root mean square residual; * $p < .001$.

Next, we applied multigroup CFAs to test the invariance across the two national samples. Table 3 shows that the model with no constraints (Model 1) fit well to the data, supporting configural invariance across the two national groups. Next, the model where factor loadings were set to be equal across groups (Model 2) also fit well to the data, while the ΔCFI test showed that the additional constraints that were imposed on this model did not alter model fit. The next step was to test scalar invariance by setting the item intercepts to be equal across groups (Model 3). Analyses did not support scalar invariance since the model in which item intercepts were also set to be equal across groups did not fit well to the data and it caused a meaningful drop in fit ($\Delta CFI = .07$). Given that full scalar invariance was rejected, we tested whether partial invariance could be supported. In the case of partial invariance, only a set of parameters is constrained to be invariant across groups, while the rest is set to be estimated freely. Modifications indices showed that item 1 from the exhaustion scale, items 1, 2 and 5 from the cynicism scale, and item 6 from the professional efficacy scale lacked invariance. When the intercepts of these items were freely estimated, partial invariance was still not supported, since Model 4 was found to be

different from Model 2 ($\Delta CFI = .03$). Finally, structural invariance was also not supported (Model 5), since the model where factor variances and covariances were set to me equal across groups did not fit well to the data. All in all, these results partly support Hypothesis 1.

Table 3: Test of Invariance of the proposed Burnout (MBI-GS) and Work Engagement (UWES) Structures across Greece and The Netherlands: Multigroup Confirmatory Factor Analysis (N = 368).

Model	χ^2	df	χ^2/df	CFI	RMSEA	SRMR	Comparison	ΔCFI
MBI-GS								
1. No constraints	355.91	174	2.05	.93	.05	.06	-	
2. Equal factor loadings	406.15	186	2.18	.92	.06	.07	1 - 2	.01
3. Equal Intercepts	604.34	201	3.00	.85	.07	.08	2 - 3	.07
4. Partial Scalar Invariance	487.65	196	2.49	.89	.06	.07	2 - 4	.03
5. Equal factor variances / covariances	563.03	202	2.78	.87	.08	.15	4 - 5	.02
UWES								
1. No constraints	553.29	174	3.18	.90	.08	.05	-	
2. Equal factor loadings	567.35	186	3.05	.90	.08	.05	1 - 2	.00
3. Equal Intercepts	672.14	201	3.12	.88	.09	.05	2 - 3	.02
4. Partial Scalar Invariance	598.39	198	3.02	.90	.07	.05	2 - 4	.00
5. Equal factor variances / covariances	626.70	204	3.07	.89	.08	.06	4 - 5	.01

Note. *df* = Degrees of Freedom; *GFI* = Goodness-of-Fit Index; *CFI* = comparative fit index; *RMSEA* = Root Mean Square Error of Approximation; *SRMR* = standardized root square residual.

4.3 Factor Structure and Invariance of Work Engagement in Greece and the Netherlands

To test Hypothesis 2, we followed the same procedure as for Hypothesis 1. Table 4 shows that the proposed three-factor structure of work engagement fit reasonably well to the data of both samples. Note that particularly the GFI and RMSEA are sensitive to sample size, and that the values for these indices should be interpreted with some caution. Importantly, and in line with Hypothesis 2, chi-square difference tests showed that the proposed three-factor structure of work engagement fit significantly better to the data than all alternative models tested in both samples (see Table 4).

Table 4: Fit of Alternative Factor Models of the UWES for the Greek (N = 206) and Dutch (N = 162) Samples separately: Results of Confirmatory Factor Analyses.

Model	χ^2	df	χ^2/df	GFI	CFI	RMSEA	SRMR	Comparison	$\Delta \chi^2$	df
Greece										
I. 3-factor proposed	298.79	87	3.43	.83	.91	.11	.05	-	-	-
II. 2-factor (VI, DE+AB)	313.07	89	3.52	.82	.90	.11	.05	I - II	14.28*	2
III. 2-factor (DE, VI+AB)	316.18	89	3.55	.83	.90	.11	.05	I - III	17.39*	2
IV. 2-factor (AB, VI+DE)	331.44	89	3.72	.80	.89	.12	.05	I - IV	32.65*	2
V. 1- factor	334.12	90	3.71	.80	.89	.12	.05	I - V	35.33*	3
The Netherlands										
I. 3-factor proposed	254.49	87	2.93	.82	.90	.11	.06	-	-	-
II. 2-factor (VI, DE+AB)	278.12	89	3.12	.80	.89	.12	.07	I - II	23.63*	2
III. 2-factor (DE, VI+AB)	263.99	89	2.97	.81	.90	.11	.06	I - III	9.5*	2
IV. 2-factor (AB, VI+DE)	288.66	89	3.24	.80	.88	.12	.06	I - IV	34.17*	2
V. 1- factor	300.32	90	3.34	.79	.88	.12	.06	I - V	45.83*	3

Note. *df* = degrees of freedom; *GFI* = goodness-of-fit Index; *CFI* = comparative fit index; *RMSEA* = root mean square error of approximation; *SRMR* = standardized root mean square residual; * $p < .001$.

Next, we estimated the invariance of the three-factor structure of the UWES by means of multigroup CFAs. Table 3 shows that the model with no constraints (Model 1) fit very well to the data, suggesting that the proposed three-factor structure of the UWES is invariant across countries. Metric invariance was also supported, since setting the factor loadings to be equal across samples did not change the fit of the model ($\Delta CFI = .00$;

Model 2). Full scalar invariance was not supported (Model 3), because adding constraints to the intercepts across groups caused a significant decrease in the model fit ($\Delta\text{CFI} = .02$). Examination of the modification indices showed that item 4 of the vigor scale, item 3 of the dedication scale, and item 5 of the absorption scale lacked invariance. Thus, we tested a partial invariance model (Model 4), where the intercepts of these items were allowed to vary freely across groups. Results supported partial scalar invariance since the fit of the latter model and the fit of the metric model did not vary significantly ($\Delta\text{CFI} = .00$). Finally, results also supported structural invariance (Model 5). Overall, results concerning the factor structure and the invariance of UWES across Greece and the Netherlands fully support Hypothesis 2.

4.4 Differences in Burnout and Work Engagement between the Greek and Dutch samples

To test Hypothesis 3, we examined latent mean differences. Partial or full scalar invariance is a prerequisite for testing differences between the means in the two national samples. Given that both full and partial scalar invariance was not supported for the MBI-GS, latent mean differences could not be tested. As concerns the UWES, for which partial scalar invariance was supported, analyses showed that the mean scores of Greek and Dutch employees did not vary for any of the three dimensions of work engagement (for vigor: $\text{CR} = 1.03$, *ns*; for dedication: $\text{CR} = 1.15$, *ns*; and for absorption: $\text{CR} = .16$, *ns*). These analyses reject Hypothesis 3. We further tested potential differences between Greek and Dutch employee in the burnout and work engagement scores by applying the less robust multivariate analyses of variance (MANOVA). As shown in Table 1 and consistent with Hypothesis 3, Greek employees scored significantly higher than the Dutch on the exhaustion [$F(1, 368) = 36.71$; $p < .001$] and cynicism [$F(1, 368) = 59.50$; $p < .001$] dimensions of burnout. However, unexpectedly, Greek employees also scored significantly higher than Dutch employees on the professional efficacy dimension of burnout [$F(1, 368) = 32.98$; $p < .001$], and the absorption dimension of engagement [$F(1, 368) = 6.15$; $p < .05$]. Thus, the MANOVA results partly support Hypothesis 3.

5 DISCUSSION

The present study examined the factor structure and invariance of the most frequently used instruments to assess burnout (MBI-GS; Schaufeli et al., 1996) and work engagement (UWES; Schaufeli & Bakker, 2010; Schaufeli et al., 2002a; b) among heterogeneous samples of Greek and Dutch employees. In addition, we compared employee levels of burnout and engagement in Greece and the Netherlands by estimating latent mean differences. The innovative part of our study is that –to our knowledge- this is the first attempt to investigate the factor structure of the Greek version of the UWES. Furthermore, despite the fact that there is a significant number of studies focusing on the psychometric properties of the MBI-GS and the UWES (for a review see, Schaufeli & Bakker, 2010), we are not aware of any other study investigating full invariance (including scalar invariance) across national or occupational groups.

5.1 Measuring Burnout

Hypothesis 1 stated that the three-factor structure of the MBI-GS (exhaustion, cynicism, and reduced professional efficacy) would be invariant across Greece and the Netherlands. As expected and in line with previous studies (e.g., Mäkikangas et al., 2011) the results of CFAs showed that the proposed three-factor model of burnout fit well to the data in both national samples. Moreover, the three-factor model fit better to the data than alternative two- and one-factor models, in which items of two or all three dimensions were collapsed. Furthermore, the results of multigroup CFAs supported configural and metric invariance. Support for configural invariance suggests that the three underlying factors (i.e. exhaustion, cynicism, and professional efficacy) best represent the burnout concept both in Greece and in the Netherlands, while support for metric invariance reveals that Greek and Dutch employees respond to the items of the MBI-GS in the same way. However, the results did not support scalar invariance suggesting that the strength of the relationship between the constructs and the specific scale items varies across the two groups. Also, failure to provide evidence for structural invariance indicated that –to a certain degree- the strength of the relationship between the latent variables may be different across groups (Tsaousis & Kazi, 2013).

Despite the fact that scalar and structural invariance were not supported, our results suggest that the MBI-GS can be used in both Greece and The Netherlands, since responses to this burnout instrument do not seem to be strongly influenced by specific characteristics of the employees working in these countries. The results show that the phrasing of the items is adequate for cross-cultural comparisons, which is consistent with previous findings in a Greek sample of employees (Demerouti et al., 2003), and findings among samples from Finland, Norway, The Netherlands (Schutte et al., 2000), and Spain (Schaufeli et al., 2002a).

5.2 Measuring Work Engagement

Hypothesis 2 stated that the three-factor structure of the UWES (vigor, dedication and absorption) would be invariant across Greece and The Netherlands. The results of CFAs confirmed that the proposed three-factor

structure of the UWES fitted reasonably well to the data of both national samples, and performed better than alternative two- and one-factor models. However, it is interesting to note that although formal chi-square difference tests revealed that the three-factor model was superior to alternative two-factor models, the fit indices suggested that particularly the model collapsing the vigor and absorption items into one dimension fitted also fairly well to the data. These findings are in line with the previous studies that have been conducted in The Netherlands and Spain (Schaufeli et al., 2002a, 2002b), as well as the multinational study of Schaufeli et al. (2006) who showed that the one-factor model of the UWES fitted reasonably well to the data –just like the proposed three-factor model. However, in the latter study the shorter, 9-item version of the UWES was used. Nevertheless, Schaufeli et al. proposed that for practical purposes the total score of the UWES can be used as the sole indicator of work engagement.

Importantly, the findings of the present study provided strong support for the invariance of the UWES across Greece and the Netherlands since we found evidence for configural, metric, partial scalar, and structural invariance. These findings suggest that the UWES is a very good instrument not only to measure engagement in Greece and the Netherlands, but to also make comparisons across the two countries since Greek and Dutch employees: a) recognize the same structure in engagement; b) respond to the items of the scale in a similar way; 3) show similar relationships between the latent constructs and the items; and 4) show similar relationship among the latent variables. Another reason why these results are of particular importance is that none of the previous studies on the factorial invariance of the UWES across nations or occupations has tested for and supported scalar invariance (see Schaufeli & Bakker, 2010). Thus, this study adds to the literature by showing for the first time that the UWES is an accurate tool if one is interested in comparing work engagement means across groups.

5.3 Mean Differences

Hypothesis 3 stated that Greeks would be more burned out and less engaged than Dutch employees. To test this hypothesis we examined latent mean differences for the UWES scale, since scalar invariance was supported only for this scale (Vandenberg & Lance, 2000). The results of these analyses revealed that Greek and Dutch employees did not differ significantly in their mean levels of vigor, dedication, and absorption. The less elaborate results of the MANOVA suggested that Greek employees showed higher scores on exhaustion and cynicism (the core dimensions of burnout), which is in line with previous findings (Demerouti et al., 2003). However, contrary to expectations, Greeks also appeared to be more efficacious and more absorbed in their work than Dutch. However, the findings of the MANOVAs should be dealt with caution since these were not supported by the latent mean differences analyses (Tsaousis & Kazi, 2013).

5.4 Limitations of the Present Study and Suggestion for Future Research

The present study has certain limitations. First, although both samples are heterogeneous and cover a wide range of different occupations, it is well conceivable that the Greek sample included slightly different occupations than the Dutch. Future studies should try to recruit samples that are more comparable in terms of occupations to enable more rigorous tests of the factor structure of burnout and engagement. Also, we have restricted in comparing only two countries, while the study of at least three different national contexts could allow more extensive cross-national comparisons. Another limitation of the study is its cross-sectional nature. Thus, we cannot support structural invariance over time. Longitudinal studies are necessary to validate the findings of the current study (for an example, see Mäkikangas et al., 2011). Finally, the present study restricted itself to testing the factor structure of burnout and engagement, as well as comparing burnout and engagement levels across Greece and The Netherlands, while it did not investigate similarities or differences as concerns the psychological processes explaining employee well-being across countries.

5.5 Practical Implications

Burnout and engagement are considered to be significant indicators of employee well-being because they relate to important outcomes for organizations (see Bakker et al., 2008; 2012; Halbesleben, 2010). Managers are particularly interested in burnout because it relates to reduced employee performance (Bakker et al., 2008), as well as in engagement that has been found to relate to financial profit (Xanthopoulou et al., 2009) and client loyalty (Salanova et al., 2005). Therefore, practitioners are interested in reducing employee burnout and increasing engagement. However, in order to do so, they first need to have valid instruments to measure these states. The findings of this study contribute to organizational practice by showing that the MBI-GS (Schaufeli et al., 1996) and the UWES (Schaufeli & Bakker, 2010) are valid instruments that can provide robust estimations of employee levels of burnout and work engagement, respectively. Importantly, the results of this study suggest that particularly the UWES may provide not only accurate estimations of engagement but also accurate mean comparisons across different sub-samples. Despite focusing only on two countries, the fact that we have examined heterogeneous occupational samples allows a certain degree of generalizability since our findings

suggest that, irrespective of their occupation and their cultural background, employees perceive the scale items in a similar way.

5.6 General Conclusion

The present study showed that the instruments that are broadly used to measure burnout (MBI-GS; Schaufeli et al., 1996) and work engagement (UWES; Schaufeli & Bakker, 2010) are generally invariant across Greece and the Netherlands, and thus comparisons between these two countries are meaningful, when these instruments are used. Future cross-cultural comparative studies on the levels of burnout and engagement, with carefully selected samples and longitudinal designs, will give us the opportunity to better explain positive and negative aspects of employee well-being. For that, it would be important to test the causality of the differences among countries by keeping the organizational context stable. Finally, an interesting project would be to test differences among different countries at three levels of analyses: the cultural, the organizational, and the individual level. Such a multilevel framework would allow a test of cross-level interactions and an investigation of how these different levels determine individual employee burnout and engagement.

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