This study examines burnout and engagement—the hypothesized opposite of burnout—in university students from Spain ($n = 623$), Portugal ($n = 727$), and the Netherlands ($n = 311$). Confirmatory factor analyses showed that the expected three-factor structures of the adapted versions of the Maslach Burnout Inventory (MBI) for students (including Exhaustion, Cynicism, and Reduced Efficacy) and the Utrecht Work Engagement Scale (UWES) for students (including Vigor, Dedication, and Absorption) fitted to the data of each sample. However, a rigorous test revealed that most factor loadings of the MBI were not invariant across all samples. Results with the UWES were slightly better, indicating invariance of factor loadings of Absorption in all samples and of Vigor in two of the three samples. Furthermore, as hypothesized, the burnout and engagement subscales were negatively correlated. Finally, irrespective of country, Efficacy and Vigor were positively related to academic performance, that is, the number of passed exams relative to the total number of exams in the previous term.

BURNOUT AND ENGAGEMENT IN UNIVERSITY STUDENTS
A Cross-National Study

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Three trends recently emerged in burnout research that all boil down to a broadening of the traditional concept and scope (Maslach, Schaufeli, & Leiter, 2001). First, the concept of burnout has been expanded toward all types of professions and occupational groups, whereas it was originally restricted to the human services domain (e.g., health care, education, and social work). In other words, the initial assumption that burnout exclusively occurs among employees who do people work of some kind appeared to be invalid. For instance, it has been shown that burnout is experienced by students as well (e.g., Balogun, Helgemoe, Pellegrini, & Hoeberlein, 1996; Gold & Michael, 1985). The fact that burnout was initially only found in the human services is largely due to an artifact that resulted from the almost universal use of the Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1981). Namely, this self-report questionnaire can only be used among those who work professionally with other people because it includes dimensions that are defined in terms of interactions with recipients. The publication of the MBI–General Survey (MBI-GS) (Schaufeli, Leiter, Maslach, & Jackson, 1996) made it possible to study burnout outside the human services because its dimen-

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sions are defined more generally and do not refer to working with recipients: (a) exhaustion is measured by items that refer to fatigue but do not make direct reference to other people as the source of those feelings; (b) cynicism reflects indifference or a distant attitude toward work in general, not necessarily with other people; and (c) professional efficacy has a broader focus compared to the parallel original MBI scale, encompassing social and nonsocial aspects of occupational accomplishments. Psychometric research with the MBI-GS using confirmatory factor analysis demonstrated that the three-factor structure is invariant across various occupations (e.g., Bakker, Demerouti, & Schaufeli, in press; Leiter & Schaufeli, 1996; Taris, Schreurs, & Schaufeli, 1999).

The first objective of the current study is to investigate the modified MBI-GS that has been adapted for use among students, from now on called the MBI–Student Survey (MBI-SS). In previous adaptations of the original MBI, *instructors* was substituted for *recipients* (e.g., Balogun et al., 1996; Gold & Michael, 1985), which is problematic because it might change the meaning of the particular items involved. However, because the MBI-GS is a more generic instrument that measures burnout without referring to other people, such inherent problems of rewording are avoided. Burnout among students refers to feeling exhausted because of study demands, having a cynical and detached attitude toward one's study, and feeling incompetent as a student. It is expected that the three-factor structure will be replicated in the MBI-SS.

The second recent development in burnout research is the shift toward its opposite: engagement. This is to be seen as part of a more general emerging trend toward a positive psychology that focuses on human strengths and optimal functioning rather than on weaknesses and malfunctioning (Seligman & Csikszentmihalyi, 2000). We define engagement as a positive, fulfilling, and work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, in press). Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior. Vigor is characterized by high levels of energy and mental resilience while working and by the willingness and ability to invest effort in one's work. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. The final dimension of engagement, absorption, is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one feels carried away by one's job. Being fully absorbed in one's work goes beyond merely feeling efficacious and comes close to what has been called flow, a state of optimal experience that is characterized by focused attention, a clear mind, mind and body unison, effortless concentration, complete control, loss of self-consciousness, distortion of time, and intrinsic enjoyment (Csikszentmihalyi, 1990). However, flow typically refers to rather particular, short-term peak experiences instead of a more pervasive and persistent state of mind, as is the case with engagement.

The second objective of our article is to investigate the newly developed engagement questionnaire for students that is based on the Utrecht Work Engagement Scale (UWES), recently introduced by Schaufeli et al. (in press). More particularly, the factorial validity and the internal consistencies of the three scales of the student version of the UWES (vigor, dedication, and absorption) are studied. It is expected that the three-factor structure of the UWES will be replicated for the UWES–Student (UWES-S). In addition, the relationship with burnout, as measured with the MBI-SS, will be examined. Because student burnout is considered to be an erosion of academic engagement, it is expected that all burnout and engagement scales are at least moderately negatively related (i.e., when efficacy is reversibly scored as reduced efficacy). That is, according to the rule of thumb proposed by Cohen and Holliday

(1982), correlations between burnout and engagement scales should exceed .40.[1] A relatively strong association is particularly expected between exhaustion and vigor as well as between cynicism and dedication because these scales are clearly antithetical.

The third and final development in burnout research has been that burnout is now studied around the globe. Initially, burnout was predominantly investigated in North America, but during the past decade it has drawn the attention of researchers in many other countries. Usually, the MBI has simply been translated and its psychometric properties taken for granted, or the relevant psychometric information is only available in local languages. Relatively few exceptions exist that, by and large, show sufficient internal consistencies of the MBI scales and yield similar factorial validity and construct validity as compared to the original American MBI. This is, for instance, the case for teachers from Jordania (Abu-Hilal & Salameh, 1992), Greece (Kantas & Vassilaki, 1997), and Holland (Schaufeli, Daamen, & Van Mierlo, 1994) and for Chinese human services employees (Tang, 1998), Japanese health care professionals (Madusa, 1997), Dutch dentists (Gorter, Albrecht, Hoogstraten, & Eijkman, 1999), and Swedish social welfare employees (Söderfeldt, Söderfeldt, Warg, & Ohlson, 1996). Even fewer cross-national studies have been carried out that directly compare psychometric properties across samples of different countries, such as Germany, the Netherlands, and France (Enzmann, Schaufeli, & Girault, 1995); New Zealand, the United Kingdom, and Estonia (Green, Walkey, & Taylor, 1991); the Netherlands and Poland (Schaufeli & Janczur, 1994); and Finland, Sweden, and the Netherlands (Schutte, Toppinnen, Kalimo, & Schaufeli, 2000). Despite some minor deviations, these comparisons produce positive results: The original three-factor structure of the MBI usually appears to be invariant across samples from different countries.

The third objective of this article is to examine the MBI-SS and the UWES-S simultaneously in three different countries: Spain, Portugal, and the Netherlands. Most important, the invariance of the factor structure of both instruments is examined, as well as the scales' internal consistencies and intercorrelations. So far, no cross-national studies on student burnout have been carried out, whereas virtually all cross-cultural studies on distress among students compared Western and Asian students (e.g., Leong, Mallinckrodt, & Kralj, 1990; Tan, 1994; Watson & Sinha, 1999). Typically, it is found that compared to Asian students, distress levels in Western students are higher. To our knowledge, no cross-national studies have been carried out among European student samples, presumably because cultural differences within Europe are expected to be small. Yet despite relatively small cultural differences, the cross-national generalizability of the three burnout dimensions is not entirely beyond question. For instance, in a sample of Spanish information technology workers, instead of the original three-factor structure, a four-factor solution fitted better to the data in which the efficacy factor split into a self-confidence factor and a goal-attainment factor (Salanova & Schaufeli, 2000).

The final objective is to study the relationship of engagement and burnout with academic performance. As far as we know, no studies have been carried out on engagement and (academic) performance, but it seems plausible that vigorous and dedicated students who are energetic and immersed in their studies are successful as well. As for burnout, it seems that generally speaking, the relationship with performance is rather weak and inconsistent, particularly when objective performance indicators are used instead of self-reports or supervisor ratings (see Schaufeli & Enzmann, 1998, pp. 91-92). This also applies to the relationship between student burnout and academic performance. For instance, Nowack and Hanson (1983) found a weak negative relationship between burnout and other-rated performance in college students, and McCarthy, Pretty, and Catano (1990) found a significant but low

negative correlation between students' level of burnout and their grade point average. Contrarily, Balogun et al. (1996) found no relationship between burnout and cumulative grade point average. Recently, using a longitudinal design, Stewart, Lam, Betson, Wong, and Wong (1999) found that academic performance during medical school was negatively related to reported stress levels (i.e., anxiety and depression). In a study that used multiple performance indicators, Garden (1991) found a negative relationship between burnout and perceived performance of undergraduate students, whereas no relationship was found for actual performance. Probably, inadequate operationalizations of burnout have been responsible for these ambiguous results because questionable student versions of the MBI were used (see above).

HYPOTHESES

Hypothesis 1: The three-factor structure of the MBI-SS (i.e., exhaustion, cynicism, efficacy) fits to the data of each sample separately.
Hypothesis 2: The three-factor structure of the UWES-S (i.e., vigor, dedication, absorption) fits to the data of each sample separately.
Hypothesis 3: The factor structure of the MBI-SS is invariant across samples of the three countries.
Hypothesis 4: The factor structure of the UWES-S is invariant across samples of the three countries.
Hypothesis 5: All burnout and engagement scales are at least moderately negatively correlated.
Hypothesis 6: Academic success is positively related with engagement and negatively related with burnout.

METHOD

SAMPLES AND PROCEDURE

A questionnaire was administered to a total sample of 1,661 undergraduate students originating from three European universities in Castellón (Spain), Lisbon (Portugal), and Utrecht (the Netherlands), respectively. Of this total sample, 77% was female and 23% was male; the mean age was 23.1 years ($SD = 4.9$). Table 1 presents some additional sample characteristics.

In Portugal, the formal length of the university study program is 5 years, whereas in the Netherlands and Spain it is 4 years. Most students were enrolled in psychology: 41%, 52%, and 45% in Spain, Portugal, and the Netherlands, respectively. In addition, in Portugal students were enrolled in educational sciences (10%), social sciences (8%), and philology (30%), whereas in Spain they were enrolled in computer engineering (27%), tourism (16%), chemistry (10%), business administration (4%), and humanities (2%) and in the Netherlands in educational sciences (32%), general social sciences (17%), and anthropology or sociology (5%).

INSTRUMENTS

Burnout was assessed with a modified version of the MBI-GS (Schaufeli et al., 1996) that was adapted for use in student samples (see the appendix). For instance, the item "I feel emotionally drained from my *work* [italics added]" was rephrased in "I feel emotionally drained from my *study* [italics added]." The MBI-SS consists of 16 items that constitute three scales (see the appendix): Exhaustion (EX; 5 items), Cynicism (CY; 5 items), and Efficacy (EF; 6 items). All items are scored on a 7-point frequency rating scale ranging from 0 (*never*) to 6

TABLE 1
Sample Characteristics

	Spain (n = *623)*	*Portugal* (n = *727)*	*Netherlands* (n = *311)*
Gender (%)			
Male	38	16	12
Female	62	84	88
Age			
M	21.6	24.7	22.6
SD	3.5	6.0	2.6
Study year (%)			
1st	8	0	9
2nd	13	37	46
3rd	11	20	33
4th	25	18	6
5th	27	25	5
More than 5	15	0	0

(*always*). High scores on EX and CY and low sores on EF are indicative for burnout (i.e., all EF items are reverse scored, which is denoted by rEF). As suggested by Schutte et al. (2000), one particular CY item ("When I'm in class or I'm studying I don't want to be bothered") was removed because it was shown to be ambivalent and thus unsound.[2] In the Dutch and Spanish samples, the adapted previously published Dutch (Schaufeli & Van Dierendonck, 2000) and Spanish (Gill-Monte & Pieró, 1999) translations were used, respectively. The Spanish version of the MBI-SS was translated into Portuguese by the third author and checked subsequently by a bilingual psychologist for semantic and syntactic equivalence of both versions.

Engagement was assessed with the 17-item UWES (Schaufeli et al., in press) that includes three subscales: Vigor (VI; 6 items), Dedication (DE; 5 items), and Absorption (AB; 6 items). Like with the MBI, items of the UWES that refer to *work* or *job* have been replaced by *studies* or *class*. Items of the resulting UWES-S are similarly scored to those of the MBI-SS. To avoid answering bias, burnout and engagement items were merged randomly. A Spanish and an English version of the UWES was available, as well as the original Dutch version (Demerouti, Bakker, De Jonge, Janssen, & Schaufeli, 2001). The Spanish version of the UWES-S was translated into Portuguese by the third author, and subsequently a bilingual psychologist checked both versions for semantic and syntactic equivalence. The final version of the UWES-S is shown in the appendix.

Academic performance was assessed by computing the ratio of the number of passed exams in the previous term relative to the total number of exams during that same period. The resulting ratio was multiplied by 100 so that the final index indicates the proportion of passed exams. For Spain, Portugal, and the Netherlands the mean proportions of passed exams were 67.2% (*SD* = 27.3), 93.6% (*SD* = 17.8), and 81.3 (*SD* = 21.8), respectively.

ANALYSES STRATEGY

Structural equation modeling (SEM) methods as implemented by AMOS (Arbuckle, 1997) were used to test two factorial models for the MBI-SS and the UWES-S, respectively. Before performing SEM, the frequency distributions of the MBI-SS and UWES-S were checked for normality and multivariate outliers were removed. First, the hypothesized three-

factor models of the MBI-SS and the UWES-S were tested in each sample separately. Next, again in each sample, possible misspecifications as suggested by the so-called modification indices (see below) were looked for and eventually a revised, respecified model was fitted to the data. Finally, multigroup analyses were used to assess the fit of the MBI-SS and UWES-S models simultaneously across pairs of samples. Following Byrne (2001, pp. 173-199) and based on the best-fitting baseline model for each group, a multigroup model was tested with no constraints imposed (Model 1). Next, Model 2 with all factor loadings constrained was tested across groups. Given that Model 1 fits significantly better to the data than Model 2, as indicated with the χ^2 difference test (Jöreskog & Sörbom, 1986), it was subsequently determined which factor loadings are not operating equivalently across groups. To do this, Model 3 was tested that specifies constrained factor loadings pertinent to just one factor of the instrument under study. Subsequently, the fit of Model 1 and Model 3 was compared. Given that Model 1 fits significantly better to the data compared to Model 3, the invariance of each item was tested individually by testing a model that constrained the factor loadings of this particular item across groups. This procedure was repeated cumulatively, that is, all those factor loadings that are found to be invariant were held cumulatively constrained equal across groups. The multigroup analyses were carried out to one pair of samples at a time, thus rendering a series of three analyses (i.e., Portugal vs. Spain, Portugal vs. the Netherlands, and Spain vs. the Netherlands).

Maximum likelihood estimation methods were used and the input for each analysis was the covariance matrix of the items. The goodness-of-fit of the models was evaluated using absolute and relative indices. The absolute goodness-of-fit indices calculated were the χ^2 goodness-of-fit statistic and the Root Mean Square Error of Approximation (RMSEA) (Browne & Cudeck, 1993). Values smaller than .08 for RMSEA are indicative of an acceptable fit, and values greater than 0.1 should lead to model rejection (Browne & Cudeck, 1993). Unfortunaly, the χ^2 goodness-of-fit statistic is sensitive to sample size, so that the probability of rejecting a hypothesized model increases as sample size increases. To overcome this problem, the computation of other relative goodness-of-fit indices is strongly recommended (Bentler, 1990). The relative goodness-of-fit indices computed in the current study are (a) the Comparative Fit Index (CFI), a population measure of model misspecification that is particularly recommended for model comparison purposes (Goffin, 1993); and (b) the Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973), which is a relative measure of covariation explained by the model that is specifically developed to assess factor models. For both relative fit indices, as a rule of thumb, values greater than .90 are considered as indicating a good fit (Hoyle, 1995).

RESULTS

A check on the normal distribution of the MBI-SS and SEI items revealed that only the kurtosis of one CY item in the Portuguese sample ("I have become less interested in my studies since my enrollment at the university") slightly exceeded the critical value. Furthermore, based on Mahalanobis Distance (see Stevens, 1996, pp. 107-120), eight multivariate outliers were removed.

To test Hypotheses 1 and 2, the three-factor models of the MBI-SS and the SEI were fitted to the data of each sample separately (see Table 2).

Table 2 shows that the estimated three-factor MBI-SS model fits reasonably well to the data of all three samples. That is, values of CFI and RMSEA satisfy their respective criteria

TABLE 2
The Fit of the Three-Factor Models of the MBI-SS and the UWES-S in the Spanish (n = 621), Portuguese (n = 723), and Dutch (n = 309) Samples

Model	χ^2	df	*TLI*	*CFI*	*RMSEA*
MBI-SS					
Spain	357.48	87	.88	.90	.07
Revised	209.48	81	.94	.95	.05
Portugal	405.80	87	.88	.90	.07
Revised	280.00	82	.92	.94	.06
Netherlands	184.05	87	.92	.93	.06
Revised	127.14	83	.96	.97	.04
UWES-S					
Spain					
17 items	505.80	116	.89	.90	.07
14 items	263.68	74	.93	.94	.06
Revised	187.73	72	.96	.97	.05
Portugal					
17 items	616.41	116	.87	.89	.08
14 items	453.05	74	.90	.92	.07
Revised	286.82	71	.94	.95	.06
Netherlands					
17 items	473.03	116	.73	.77	.10
14 items	237.80	74	.84	.87	.08
Revised	163.45	68	.90	.93	.07

NOTE: MBI-SS = Maslach Burnout Inventory–Student Survey, UWES-S = Utrecht Work Engagement Student scale, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, and RMSEA = Root Mean Square Error of Approximation. After 8 multivariate outliers have been removed.

of > .90 and < .08 in all three samples. Moreover, in the Dutch sample TLI meets its criterion of .90, whereas this value is approached in both other samples. Inspection of the modification indices revealed that in the Spanish, Dutch, and Portuguese samples, three, four, and one item(s) might have been misspecified, respectively. That is, modification indices suggested that these items might load on a different factor. However, only in the Portuguese sample, a respecified model that takes into account this misspecification fitted slightly better to the data compared to the original model (χ^2 = 363.53, df = 87, p < .001, TLI = .90, CFI = .92, RMSEA = .06).[3] After allowing six, five, and four error variances of single items within particular subscales to correlate in the Spanish, Portuguese, and Dutch samples, respectively—which was based on information obtained from the modification indices—the fit of the three-factor models improved in all three samples.[4] As can be seen from Table 2, the respecified models now meet the criteria for good fit in all three samples. The correlated error variances of the Dutch and Spanish samples largely overlap, that is, all four error terms that were allowed to correlate in the Dutch sample also correlate in the Spanish sample. Of the five correlated errors in the Portuguese sample, only one was similar with the Spanish and Dutch samples (i.e., CY3-CY4). Table 3 shows the correlations between the latent factors of the respecified MBI-SS models in each sample, as well as the internal consistencies (Cronbach's α) of the MBI-SS scales.

Except for the correlations with EX in the Dutch sample, all other correlations between subscales are of similar magnitude across samples. Moreover, except for EF that shows α

TABLE 3
Intercorrelations and Internal Consistencies (Cronbach's α on the diagonal) of the MBI-SS Scales and the UWES-S Scales (latent variables)

	MBI-SS								
	Spain (n = *621*)			*Portugal* (n = *723*)			*Netherlands* (n = *309*)		
	EX	*CY*	*EF*	*EX*	*CY*	*EF*	*EX*	*CY*	*EF*
EX	.74			.79			.80		
CY	.64***	.79		.59***	.82		.39***	.86	
rEF	.30***	.51***	.76	.26**	.44***	.69	.14**	.46***	.67
	UWES-S								
	Spain (n = *621*)			*Portugal* (n = *723*)			*Netherlands* (n = *309*)		
	VI	*DE*	*AB*	*VI*	*DE*	*AB*	*VI*	*DE*	*AB*
VI	.79			.79			.65		
DE	.79***	.85		.73***	.86		.93***	.77	
AB	.94***	.84***	.65	.87***	.71***	.73	.91***	.83***	.67

NOTE: MBI-SS = Maslach Burnout Inventory–Student Survey, UWES-S = Utrecht Work Engagement Student scale, EX = Exhaustion, CY = Cynicism, EF = Efficacy, rEF = reduced Efficacy, VI = Vigor, DE = Dedication, and AB = Absorption.
**$p < .01$. ***$p < .001$.

values slightly lower than the criterion of .70 (Nunnaly & Bernstein, 1994) in the Portuguese and Dutch samples, all other internal consistencies are sufficient.

In conclusion, Hypothesis 1 is confirmed: The three-factor structure (i.e., exhaustion, cynicism, and efficacy) of the MBI-SS fits to the data of each sample separately, albeit after some correlations between error-terms were allowed. However, these correlations largely pertained to similar pairs of items across at least two samples.

In contrast to the MBI-SS, the hypothesized three-factor model of the UWES-S did not fit well to the data of either of the three samples. Only in the Spanish sample, values of CFI and RMSEA satisfied their corresponding criteria (see Table 2). However, after removing three items that showed nonsignificant or relatively poor (i.e., < .40) factor loadings, the fit of the resulting 14-item UWES-S improved markedly.[5] As can be seen from Table 2, the three-factor model with 14 items fits well to the data of the Spanish and the Portuguese samples. However, in the Dutch sample only the value of RMSEA approaches its criterion. Modification indices in the Portuguese and Spanish samples suggested that two items in each sample load on the wrong factor. However, a test of alternative models in both samples that acknowledged these wrong factor loadings did not produce positive results; quite to the contrary, the fit decreased. Finally, based on the modification indices in the Spanish, Portuguese, and Dutch samples, two, three, and six pairs of errors were allowed to correlate, respectively.[6] As can be seen from Table 2, this improved the fit in all samples. Two pairs of errors were allowed to correlate in all three samples (DE1-DE4, and AB1-AB2). Table 3 shows that the correlations between the latent factors of the 14-item UWES-S (revised version) are (very) high, ranging from .71 to .94. Therefore, the fit of an alternative model that assumes that all UWES-S items load on one single factor was fitted to the data of the three samples separately. However, compared to the three-factor model, the fit of this alternative model was inferior in

all three cases: Portuguese sample (χ^2 = 1,018.72, df = 77, p < .001, TLI = .75, CFI = .79, RMSEA = .13), Spanish sample (χ^2 = 509.63, df = 77, p < .001, TLI = .85, CFI = .87, RMSEA = .10), and Dutch sample (χ^2 = 279.56, df = 77, p < .001, TLI = .81, CFI = .84, RMSEA = .09). As Table 3 shows, most α values of the UWES-S scales meet the criterion of .70, except VI in the Dutch sample and AB in the Spanish and Dutch samples—in these three cases, α values are slightly lower.

In conclusion, Hypothesis 2 is confirmed: The three-factor structure of the UWES-S (i.e., vigor, dedication, and absorption) fits to the data of each sample separately, albeit after eliminating three unsound items and allowing some errors to correlate, two of which were identical across samples.

In the next step, Hypothesis 3 was tested, which assumes that the factorial structure of the MBI-SS is invariant across the samples from the three countries.

As outlined above, first the best-fitting model was freely fitted to the data of each pair of countries (i.e., the revised model that included all correlated error terms of either of both countries). As can be seen from Table 4, the fit of the freely estimated MBI-SS model deteriorated significantly in all three cases when it was compared with the fit of a model that constrained the factor loadings and error covariances to be equal across both samples ($\Delta\chi^2$ = 98.02, df = 18, p < .001; $\Delta\chi^2$ = 114.32, df = 22, p < .001; and $\Delta\chi^2$ = 52.34, df = 21, p < .001 for the Spanish-Dutch, Portuguese-Spanish, and Portuguese-Dutch comparisons, respectively). Hence, in neither case, the factor loadings of the three-factor model of the MBI were invariant across both samples. So, next the cumulative procedure of constraining successive items was applied. In the case of the Spanish-Dutch comparison, this led to a final model in which factor loadings of five out of six EF items and one EX item as well as two correlated EF error terms proved to be invariant across both samples.[7] Across the Portuguese and Spanish samples, three EF items and two correlated EF error terms were invariant, as well as four EX items and two correlated EX error terms.[8] Finally, the Portuguese-Dutch comparison revealed that the loadings of all CY items and all but one (EF4) EF items were invariant, as well as one pair of correlated EF error terms (EF3-EF6) and one pair of correlated CY error terms (CY3-CY4). Furthermore, three EX factor loadings and two correlated EX error terms appeared to be invariant.[9] Taken together, these country comparisons revealed that (a) factor invariance was most frequently observed regarding the Portuguese and Dutch samples (i.e., 13 items), followed by the Portuguese and Spanish samples (i.e., 7 items) and the Spanish and Dutch samples (i.e., 5 items); and (b) items of the EF scale seem to be most invariant across samples, followed by EX items and CY items. Hence, Hypothesis 3 has to be rejected: The MBI-SS is not invariant across samples. Instead, different patterns of invariance were found between countries with EF items showing the most consistent pattern of invariance of factor loadings.

Testing Hypothesis 4 assumes that factorial invariance of the UWES-S across all three samples took place along the same lines as the testing of Hypothesis 3. Again (see Table 5), it appeared that the fit of the freely estimated model deteriorated significantly in all three cases when it was compared with the fit of a model that constrained the factor loadings and error covariances of the UWES-S to be equal across sample pairs ($\Delta\chi^2$ = 55.28, df = 17, p < .001; $\Delta\chi^2$ = 27.81, df = 14, p < .001; and $\Delta\chi^2$ = 70.91, df = 18, p < .001 for the Spanish-Dutch, Portuguese-Spanish, and Portuguese-Dutch comparisons, respectively). Hence, in neither case, the factor loadings of the three-factor model of the UWES-S were invariant across both samples. So, again, the cumulative procedure of constraining successive items was applied. In the case of the Spanish-Dutch comparison as well as the Spanish-Portuguese comparison, this led to a final model in which all factor loadings and all assumed covariances between

TABLE 4
The Fit of the Three-Factor Models of the MBI-SS Across the Spanish (n = 621), Portuguese (n = 723), and Dutch (n = 309) Samples

Model	χ^2	df	*TLI*	*CFI*	*RMSEA*
Spain-Netherlands					
MBI-SS					
Free	335.09	162	.95	.96	.03
Constrained	433.11	180	.95	.94	.04
Invariant	342.35	169	.95	.96	.03
Portugal-Spain					
MBI-SS					
Free	473.23	154	.93	.95	.04
Constrained	587.55	176	.92	.93	.04
Invariant	487.96	164	.93	.94	.04
Portugal-Netherlands					
MBI-SS					
Free	405.05	158	.93	.95	.04
Constrained	457.39	179	.93	.94	.04
Invariant	421.69	172	.93	.95	.04

NOTE: MBI-SS = Maslach Burnout Inventory–Student Survey, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, and RMSEA = Root Mean Square Error of Approximation. After 8 multivariate outliers have been removed.

error terms did not significantly differ between samples, except the factor loading of DE3 in the Spanish-Dutch comparison and of DE1 in the Spanish-Portuguese comparison. Finally, the Portuguese-Dutch comparison showed that factor loadings of three items (VI1, DE2, and DE5) and three error covariances (DE1-DE5, DE2-DE4, and AB1-AB4) were invariant across both samples. Taken together, the three pairwise country comparisons revealed that (a) factor invariance was almost complete across Spanish and Dutch samples as well as across Spanish and Portuguese samples, with only one deviant factor loading, whereas across the Dutch and Portuguese samples three items showed different factor loadings; and (b) the AB scale was invariant in all three country comparisons, whereas the VI scale was invariant across the Spanish and Dutch samples as well as across the Spanish and Portuguese samples. Hence, Hypothesis 4 has to be partly rejected: The UWES-S is only invariant across samples as far as the AB subscale is concerned, whereas the VI subscale proved to be invariant in two of the three countries.

Table 6 provides information about Hypothesis 5 that assumes that all burnout and engagement scales are at least moderately (i.e., > .40) negatively correlated. Indeed, except for AB and EX, and DE and EX in the Dutch sample, all remaining 25 correlations between MBI-SS and UWES-S scales are significantly and negatively correlated. Correlations are highest between rEF and the three engagement scales (r_{mean} = –.60; range: –.40 to –.69), followed by CY (r_{mean} = –.44; range: –.21 to –.67), and EX (r_{mean} = –.17; range: .03 to .30), respectively. According to Cohen and Holliday (1982), the mean correlations of the engagement scales with rEF and CY have to be qualified as modest, whereas the correlation with EX is very low. Correlations of VI, DE, and AB with the three burnout scales are r_{mean} = –.44 (range: –.20 to –.69), r_{mean} = –.47 (range: –.08 to –.67), and r_{mean} = –.30 (range: .03 to –.65), respectively. Again, following Cohen and Holliday, both former mean correlations have to be qualified as modest, whereas the latter mean correlation can be considered low. Hence, Hypothesis 5, which posits that burnout and engagement scales are at least modestly

TABLE 5
The Fit of the Three-Factor Models of the UWES-S Across the Spanish (*n* = 621), Portuguese (*n* = 723), and Dutch (*n* = 309) Samples (Multigroup Method)

Model	χ^2	df	*TLI*	*CFI*	*RMSEA*
Spain-Netherlands					
UWES-S					
Free	334.68	136	.94	.96	.04
Constrained	389.96	153	.94	.95	.04
Invariant	355.01	149	.95	.96	.04
Portugal-Spain					
UWES-S					
Free	473.88	142	.95	.96	.04
Constrained	501.69	156	.95	.96	.04
Invariant	493.24	155	.95	.96	.04
Portugal-Netherlands					
UWES-S					
Free	413.04	134	.93	.95	.04
Constrained	483.95	152	.93	.94	.04
Invariant	432.50	146	.94	.95	.04

NOTE: UWES-S = Utrecht Work Engagement Student scale, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, and RMSEA = Root Mean Square Error of Approximation. After 8 multivariate outliers have been removed.

TABLE 6
Correlations Between Maslach Burnout Inventory–Student Survey (MBI-SS) and Utrecht Work Engagement Student (UWES-S) Scales

	Spain (n = *621)*			*Portugal* (n = *723)*			*Netherlands* (n = *309)*		
	VI	*DE*	*AB*	*VI*	*DE*	*AB*	*VI*	*DE*	*AB*
EX	–.23***	–.17***	–.12*	–.30***	–.27***	–.10*	–.20***	–.08	.03
CY	–.38***	–.61***	–.32***	–.41***	–.67***	–.25***	–.43***	–.61***	–.30***
rEF	–.69***	–.67***	–.56***	–.63***	–.59***	–.48***	–.65***	–.60***	–.50***

NOTE: VI = Vigor, DE = Dedication, AB = Absorption, EX = Exhaustion, CY = Cynicism, and rEF = reduced Efficacy.
*$p < .05$. ***$p < .001$.

negatively correlated, is only partly confirmed; rEF is indeed modestly negatively correlated with all engagement scales in every sample, whereas CY is modestly negatively correlated with DE in every sample as well. Furthermore, CY is correlated modestly negatively to VI in the Spanish and Dutch samples.

Finally, Hypothesis 6 is tested, which posits that academic performance is positively related with engagement and negatively related with burnout. Table 7 presents an overview of the correlations of academic success with the MBI-SS and the UWES-S scales in each of the samples.

As can be seen from Table 7 and in accordance with Hypothesis 6, all three burnout scales are indeed negatively correlated with academic performance, whereas all three engagement scales are positively correlated with academic performance. However, only 61% of the correlations are significant, and with two notable exceptions (EF[r] in the Spanish and Dutch

TABLE 7
Correlations of Burnout and Engagement Scales With Academic Success

	Academic Success		
	Spain (n = *621)*	*Portugal* (n = *723)*	*Netherlands* (n = *309)*
MBI-SS EX	–.12**	–.01	–.08
MBI-SS CY	–.19***	–.03	–.01
MBI-SS rEF	–.34***	–.12*	–.33***
UWES-S VI	.23***	.10*	.21***
UWES-S DE	.17***	.02	.07
UWES-S AB	.16***	.09*	.08

NOTE: MBI-SS = Maslach Burnout Inventory–Student Survey, UWES-S = Utrecht Work Engagement Student scale, EX = Exhaustion, CY = Cynicism, rEF = reduced Efficacy, VI = Vigor, DE = Dedication, and AB = Absorption.
*$p < .05$. **$p < .01$. ***$p < .001$.

samples) the correlations are rather low. Particularly in the Portuguese sample correlations are low, which might be caused by the fact that—compared to both other samples—performance is far from being normally distributed (skewness = 3.44, kurtosis = 12.53). Reduced EF and VI are systematically correlated with academic performance in all three samples, explaining between 1% and 12% of the variance. In other words, the more efficacious and the more vigorous students feel, the better their academic performance (and vice versa).

Because some burnout and engagement scales are (very) highly interrelated (see Tables 3 and 6), multicollinearity may be expected when regressing academic performance on these scales. Therefore, alternatively, partial correlations were computed between academic performance and each of the six scales individually, controlling for country by means of dummy variables. The results are all in the expected direction so that Hypothesis 6 is confirmed. That is, academic performance is negatively related to EX ($r_{(part)} = –.08$, $p < .01$) and CY ($r_{(part)} = –.09$, $p < .001$) and positively related to EF ($r_{(part)} = 28$, $p < .001$), VI ($r_{(part)} = .19$, $p < .001$), DE ($r_{(part)} = .09$, $p < .001$), and AB ($r_{(part)} = .14$, $p < .001$). Hence, compared to poor performing students, those who perform better feel less exhausted and less cynical, experience more efficacy and vigor, and report being more dedicated and absorbed (and vice versa). However, except for efficacy and vigor, which explain 8% and 4% of the variance in performance, respectively, relations are relatively weak.

DISCUSSION

The current study examined the psychometric structure of a burnout measure (MBI-SS) and an engagement measure (UWES-S) in university student samples from three different European countries using confirmatory factor analysis. In addition, we studied the relationship between burnout and engagement on one hand and academic performance on the other hand. Six hypotheses were tested, of which the results can be summarized as follows: Hypotheses 1 and 2, which assume that the MBI-SS and the UWES-S have a three-factor structure, were supported by the data. That is, the hypothesized three-factor models of the MBI-SS and the UWES-S fitted to the data of each sample, albeit after removing three unsound engagement items and allowing some error terms to correlate. Although freeing correlations between residuals has the danger of chance capitalization (MacCallum,

Roznowski, & Necowitz, 1992), we nevertheless did so because in the next step the invariance of these estimated correlations was tested across samples. In other words, cross-validation in independent samples was considered to counteract chance capitalization. Besides, we only allowed error terms to correlate between items belonging to the same scale (i.e., content domain). In sum, the hypothesized original three-factor structures of the MBI-SS and the UWES-S show an acceptable fit in each individual sample, and this fit may be further improved by allowing error terms of some items within scales to correlate.

Hypotheses 3 and 4 assume that invariance of the hypothesized three-factor model across samples for the MBI-SS and the UWES-S, respectively, is—strictly speaking—not supported by the data. Compared to both other MBI-SS scales, factor loadings of EF items seem to be most frequently invariant across samples. The fact that we failed to demonstrate complete factorial invariance of the MBI-SS in student samples from different European countries stands in contrast to the positive results obtained with the other versions of the MBI (Enzmann et al., 1995; Schaufeli & Janczur, 1994; Schutte et al., 2000). Apart from the fact that the MBI-SS includes slightly different items and that the current study used a specific (nonoccupational) sample, we also used a far more rigorous method to test for factorial invariance. Instead, previous studies simply relied on assessing the fit of a (constrained) model that was tested across samples from different nations. As is exemplified by Tables 4 and 5, this procedure would have yielded positive results in the current study as well because the (free and constrained) multigroup models fitted quite well to our data.

The results concerning the invariance of the UWES-S were slightly more encouraging. Depending on the binational comparison, between one and three items were not invariant across both countries involved. The AB scale was invariant across all three country comparisons, whereas the VI scale was invariant across the Spanish and Dutch samples as well as across the Spanish and Portuguese samples. Hence, it can be concluded that the UWES-S is partly invariant across samples.

Hypothesis 5, which stated that the burnout and engagement scales are modestly negatively related (i.e., > –.40), was partly confirmed: only 2 out of 27 correlations were nonsignificant and/or in the wrong direction. The only positive (but nonsignificant) correlation between EX and AB in the Dutch sample is possibly due to the low internal consistency of the latter scale. Although typically correlations between MBI-SS and UWES-S scales are lower than .40, EF is correlated more strongly with all engagement scales in every sample. This agrees with Schaufeli et al. (in press), who found that instead of loading on a second-order burnout factor, EF loaded on a second-order engagement factor that included vigor, dedication, and absorption. Also, the relatively high correlation of EF with engagement is in accordance with Maslach and Leiter (1997), who argued that efficacy constitutes a part of the engagement construct itself. In addition, and as expected in the current study, CY is modestly negatively correlated with DE in every sample. This finding confirms that CY and DE are—at least to some extent—each other's opposites. However, EX is only (very) weakly negatively related to its supposed opposite engagement variable, VI. Obviously, in contrast to the fact that students who feel most dedicated to their study usually show the least cynicism, students who feel vigorous do not necessarily feel low in exhaustion. The latter two experiences seem to be more independent than the former two.

Compared to previous studies that used the MBI-GS or the UWES in Dutch (Demerouti et al., 2001; Schutte et al., 2000; Taris et al., 1999) and Spanish samples (Gill-Monte & Pieró, 1999), α values of EF, EX, and AB are relatively low in the current sample. This suggests that

rather than translation problems, sampling bias and/or the fact that both questionnaires were adapted for use among students might be responsible for the somewhat lower internal consistencies. Although some α values do not meet the arbitrary criterion of .70, as recommended by Nunnaly and Bernstein (1994), they are well above .60, which previously served as a rule of thumb (Nunnaly & Bernstein, 1994).

Finally, Hypothesis 6, which predicted that academic performance (i.e., the ratio of passed exams in the previous term relative to the total number of exams) is negatively related to burnout and positively related to engagement, was supported. It appeared that—irrespective of country—particularly students who feel efficacious and vigorous are more likely to perform well compared to those who feel less efficacious and vigorous. This result agrees with two studies among students that found that self-efficacy (Newby & Schlebusch, 1997) and task-oriented coping (Edwards & Trimble, 1992)—which are both conceptually related to our measure of efficacy—are positively related to academic performance. Of course, because our research is cross-sectional, it cannot be ruled out that good performance precedes feelings of efficacy and vigor. Only longitudinal research may give an answer on the causal direction of the relationships involved. However, in accordance with Hypothesis 6, it can be inferred that academic performance is negatively related to burnout and positively related to engagement.

The current study has mainly assessed the internal psychometric features of two instruments and only briefly touched on their content validity in relation to academic performance. A logical next step would be to investigate the relationship of the engagement scales with other job- or study-related variables in a similar fashion as has been done with burnout (Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). It is an intriguing question whether the antecedents and consequences of engagement are similar—across countries and despite cultural differences—to those that have been identified for burnout (except, of course, that the direction of the relationship is reversed) or that the engagement dimensions have unique antecedents and consequences. The current study has shown that the UWES-S and the MBI-SS may basically be used for such a purpose. On the other hand, our findings also point to the fact that both instruments, but particularly the MBI-SS, do not pass a rigorous test of factorial invariance. That is, the three-factor structure of the MBI-SS and the UWES-S fits well to the data of samples from various European countries, but their factor loadings differ from one country to another despite the fairly similar university context.

APPENDIX

MASLACH BURNOUT INVENTORY–STUDENT SURVEY

Exhaustion

1. I feel emotionally drained by my studies.
2. I feel used up at the end of a day at university.
3. I feel tired when I get up in the morning and I have to face another day at the university.
4. Studying or attending a class is really a strain for me.
5. I feel burned out from my studies.

Cynicism

1. I have become less interested in my studies since my enrollment at the university.
2. I have become less enthusiastic about my studies.
3. I have become more cynical about the potential usefulness of my studies.
4. I doubt the significance of my studies.

Professional Efficacy

1. I can effectively solve the problems that arise in my studies.
2. I believe that I make an effective contribution to the classes that I attend.
3. In my opinion, I am a good student.
4. I feel stimulated when I achieve my study goals.
5. I have learned many interesting things during the course of my studies.
6. During class I feel confident that I am effective in getting things done.

UTRECHT WORK ENGAGEMENT SCALE FOR STUDENTS (UWES-S)

Vigor

1. When I'm studying, I feel mentally strong.
2. I can continue for a very long time when I am studying.
3. When I study, I feel like I am bursting with energy.
4. When studying I feel strong and vigorous.
5. When I get up in the morning, I feel like going to class.

Dedication

1. I find my studies to be full of meaning and purpose.
2. My studies inspire me.
3. I am enthusiastic about my studies.
4. I am proud of my studies.
5. I find my studies challenging.

Absorption

1. Time flies when I'm studying.
2. When I am studying, I forget everything else around me.
3. I feel happy when I am studying intensively.
4. I can get carried away by my studies.

NOTES

1. Correlations between .70 and .89 are considered *high*, whereas correlations exceeding .90 may be labeled *very high* (Cohen & Holliday, 1982).

2. Indeed, also in the current study the elimination of this particular item resulted in a substantial increase in values of Cronbach's α for Cynicism (CY) from .65 to .79, from .67 to .82, and from .70 to .86 in the Spanish, Portuguese, and Dutch samples, respectively.

3. Instead of positively loading on Efficacy (EF), it was suggested by the modification indices that EF5 loads negatively on CY.

4. The error terms of Exhaustion (EX), CY, and EF were as follows. In the Spanish sample: EX2-EX3, EX2-EX4, EX1-EX5, CY3-CY4, EF2-EF6, and EF3-EF5; in the Portuguese sample: EX3-EX5, CY1-CY2, CY3-CY4, EF1-EF5, and EF4-EF6; and in the Dutch sample: EX2-EX3, CY3-CY4, EF2-EF6, and EF3-EF5.

5. "As far as my studies are concerned I always persevere, even when things do not go well" (Vigor [VI]); "It is difficult to detach myself from my studies" (Absorption [AB]); and "I am immersed in my studies" (AB).

6. The error terms of Dedication (DE), AB, and VI were as follows. In the Spanish sample: DE1-DE4, AB1-AB4; in the Portuguese sample: VI1-VI3, DE1-DE4, and AB1-AB4; and in the Dutch sample: VI3-VI4, DE3-DE4, DE1-DE2, DE1-DE4, AB1-AB4, and AB3-AB4.

7. Items EX4, EF1, EF2, EF3, EF5, and EF6, as well as the error terms of EF3-EF5 and EF2 and EF6.

8. Items EX1, EX3, EX4, EX4, EF4, EF5, and EF6, as well as the error terms of EX2-EX3, EX3-EX5, EF3-EF5, and EF4-EF6.

9. Items EX3, EX4, and EX5, and the error terms of EX2-EX3 and EX3-EX5.

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