• *Horn, J.E. van & Schaufeli, W.B. (1998).* Maslach Burnout Inventory: The Dutch Educators Survey (MBI-NL-ES) Psychometric evaluations. Manual (unpublished manuscript). *Utrecht University: Department of Social and Organizational Psychology*

I

MASLACH BURNOUT INVENTORY

The Dutch Educators Survey (MBI-NL-ES)

PSYCHOMETRIC EVALUATIONS

SUMMARY

The present study[1] examines the psychometric quality of the Dutch version of the Maslach Burnout Inventory for Educators, the MBI-NL-ES. Results are presented on the factorial validity, internal consistency and test-retest reliability, intercorrelations between subscales, discriminant, construct, and predictive validity. The reliability of the depersonalization scale had been improved by adding two items. Overall, it can be concluded that the MBI-NL-ES is a valid and reliable instrument for studying burnout among Dutch teachers. Moreover, normative burnout scores for gender, age, type of school, number of hours employed, and teaching experience were also assessed, allowing comparison between sub groups. Furthermore, reference data are available for both individual as well as group diagnostic purposes. That is, levels of individual and group scores can be compared to normative scores from teachers on sick leave and teachers who are working.

INTRODUCTION

Burnout is a concept used to characterize a reaction to long-term stress, which is specifically linked to the emotional strain of working frequently and intensively with other people. Particularly, it seems that professionals working in human services (e.g., nurses, physicians, social workers, and teachers) are vulnerable to burnout *(Maslach, 1982)*[2]. The most widely accepted conceptualization of burnout is found in the work of *Maslach*

[1] This chapter was written prior to the publication of the Dutch burnout manual in 2000 (*Schaufeli & Van Dierendonck, 2000*). The present research was based on a larger sample of teachers than used in the Dutch manual. In general, results obtained in the Dutch manual correspond with those presented in this chapter.

[2] Although burnout was exclusively studied among human service professionals, the burnout syndrome had also been recognized among employees other than human service employees. A general version of the MBI was developed that is applicable in a variety of work settings, regardless of whether these involve clients (*Schaufeli, Leiter, Maslach, & Jackson, 1996*). The rationale is that the structure of burnout is identical for all professions, however it manifests in a specific form among human service professionals (e.g., a depersonalized attitude toward others).

and Jackson (1986). They consider burnout as a symptom of emotional exhaustion, depersonalization and reduced personal accomplishment. Of these three dimensions, Emotional exhaustion comes closest to an orthodox reaction to stress *(Maslach & Schaufeli, 1993)*. *Emotional exhaustion* refers to a depletion of an individuals emotional resources and the feeling that the individual has nothing left to give to others psychologically. *Depersonalization* is described in terms of the development of indifferent and negative attitudes towards others. It is assumed that human service professionals distance themselves from the people they work with in order to cope with their feelings of emotional exhaustion. The third dimension of burnout involves a negative evaluation of *personal accomplishments* in working with other people. Individuals perceive themselves as being less effective in their job.

Maslach and Jackson (1986, 1996) based their self-report questionnaire, the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), on these three dimensions. Based on the MBI-HSS, a version was developed to measure teacher burnout (MBI-Educator Survey; *Maslach, Jackson, & Schwab, 1996*). Although some items have been slightly modified, the MBI-ES measures the same three dimensions, emotional exhaustion, depersonalization and personal accomplishment. Modifications concern the substitution of the term 'recipients' for 'students' (e.g., "I don't really care what happens to some students"), since in the teaching profession students are the teachers' recipients.

The MBI-HSS and the MBI-ES were both translated into Dutch, resulting in two equivalents, namely the MBI-NL *(Schaufeli & Van Dierendonck, 1993)* and the MBI-NL-ES[3] *(Schaufeli, Daamen, & Van Mierlo, 1994)*, respectively. Results on the *factorial validity* of the MBI-NL *(Schaufeli & Van Dierendonck, 1993)* showed that item 12 from the personal accomplishment subscale ("I feel very energetic") was a somewhat weak and ambiguous item, loading on the emotional exhaustion factor as well. To a somewhat lesser degree the same applies to the emotional exhaustion item 16 ("Working with people puts too much strain on me") that also loads significantly on the personal accomplishment factor. Similar results have been obtained in other exploratory validity studies *(e.g., Koeske & Koeske, 1989; Byrne, 1993; Enzmann, Schaufeli, & Girault, 1995)*. It has been recommended by the latter authors that item 12 and 16 should be removed from the questionnaire. In agreement with these results, items 12 and 16 were also removed from the questionnaire in the MBI-NL-ES, resulting in a twenty item version subscaled in emotional exhaustion (EE, 8 items), Depersonalization (DP, 5 items) and personal accomplishment (PA, 7 items). *Schaufeli, et al. (1994)* studied the factorial validity of the MBI-NL-ES and they compared the fit of four plausible factor-analytic models. Results indicated that the original three-factor

[3] Initially, the MBI-NL-ES was referred to as the MBI-NL-Le or MBI-NL-Ed.

model fitted the data best. Similar results were found in factor analytic studies by, for instance, *Byrne (1994)* with the MBI-ES.

Second-order factor analyses were also conducted by *Schaufeli et al. (1994)* to assess the discriminant validity of the MBI-NL-ES subscales (emotional exhaustion, depersonalization, and personal accomplishment) using indicators of psychological strain (including depression and anxiety), and a variety of psychosomatic complaints (e.g., stomach and heart complaints). Two components emerged from these analyses: 1) a relatively strong and specific MBI burnout component and 2) a somewhat weaker general strain component that includes less specific mental and somatic complaints. Based on the results from these second-order factor analyses, two conclusions were drawn. First, burnout can be distinguished from self-reported psychological strain as well as from somatic complaints. However, it should be noted that emotional exhaustion is also related to these more general symptoms. This finding agrees with results obtained with the Dutch version of the MBI (MBI-NL) *(Schaufeli & Van Dierendonck, 1993)*. Second, burnout is characterized by a combination of stress-related symptoms (emotional exhaustion) and dysfunctional attitudes (depersonalization and reduced personal accomplishment).

Prior results concerning the validity of the MBI-NL-ES *(Schaufeli, et al., 1994)* were based on a relatively small sample of teachers. In this study, the analyses conducted by *Schaufeli et al. (1994)* are replicated (e.g., factorial and discriminant validity) and results of additional analyses are presented regarding the psychometric qualities of the revised version of the MBI-NL-ES, including norm tables for several demographic and work related factors.

Burnout, demographic, and work-related factors

It has been shown in studies among teachers that burnout is significantly related to particular demographic variables (gender and age) *(e.g., Greenglass, Burke & Ondrack, 1990; Friedman, 1991; Van Poppel & Kamphuis, 1992)* as well as to work-related factors (teaching experience, type of school, and the number of hours employed) *(e.g., Russell, Altmeier, & Van Velzen, 1987; Van Ginkel, 1987; Friedman, 1991)*. However, different results are obtained in North-American and Dutch studies on teacher burnout (for further details see Chapter 2). North-American data indicate that male teachers report higher scores on depersonalization, whereas female teachers report higher scores on emotional exhaustion *(Russell, et al., 1987; Greenglass, et al., 1990)*. Slightly different results are found among Dutch teachers, where feelings of emotional exhaustion are significantly higher in men *(Van Ginkel, 1987)*. Similar to North-America, males score higher on depersonalization than females.

Several studies report on the relevance of age in the study of burnout among teachers. However, in both Dutch and North-American studies it is suggested that experience in teaching, rather than age, is more strongly related to burnout. In North-America, researchers generally conclude that younger teachers are more vulnerable to burnout than older teachers *(Friedman, 1991)*. In contrast, findings from The Netherlands suggest that more experienced teachers, rather than less experienced teachers, run a greater risk of burning out *(Van Ginkel, 1987)*. The longer they work as a teacher, the more they become emotionally exhausted. This suggests a process of gradually wearing out. No valid explanations are given for these differences.

Some studies show a significant relation between burnout and type of school: burnout seems to be more prevalent among secondary than among elementary school teachers *(Russell, et al., 1987)*. *Gold and Grant (1993)* argued that secondary school teachers are more burned out because, compared with students from elementary schools, secondary school students are less interested and more difficult to motivate. In several studies *(e.g., Van Ginkel, 1987; Friedman, 1991)* it was found that full-time teachers report higher scores on emotional exhaustion than part-time teachers. Full-time teachers have less time to spend on other activities outside work, therefore it is not surprising that they have fewer opportunities to rest and replenish their energy resources.

It has repeatedly been demonstrated that tensions in the work relationships with students, colleagues, and the school are important causes of teacher stress *(Hart, 1987)*. In particular, tensions in the relationship with students are found to be caused by, for instance, disciplinary problems, students' demotivation and misbehavior *(Hodge, Jupp & Taylor, 1994; Boyle, Borg, Falzon & Baglioni, 1995)*. In the relationships with colleagues and the school, tensions are said to be evoked by, for instance, lack of appreciation and support *(Brown & Ralph, 1992; Smith & Bourke, 1992; Travers & Cooper, 1993)*.

As already indicated briefly, in the present study the MBI-NL-ES is (re)validated. A variety of analyses were conducted to provide information about the following psychometric properties of the MBI-NL-ES: factorial validity; internal consistency and the test-retest reliability; intercorrelations of subscales; subscales mean and standard deviations; discriminant validity; construct validity; predictive validity, and normative burnout scores for gender, age, type of school, number of hours employed, and teaching experience.

METHOD

Sample descriptions

Table 1 presents a description of demographic features of the total sample (N=3247). Data presented in this study are derived from six samples, A to F and an additional sample of teachers on sick leave. A short description of these studies is presented below.

Sample A. Several studies were conducted in different schools located in and around Utrecht, The Netherlands. The total sample consists of 659 teachers (response rate 73%) employed in one secondary school (N=74), four vocational schools (N=341), five elementary schools (N=103) and three special education schools (N=114).

Sample B consisted of a sample of 286 teachers from the northern and southern part of The Netherlands (response rate 45%) employed in two secondary schools (N = 80), thirty-one primary schools (N=152), and 4 special education schools (N=54).

Sample C. A longitudinal study was set out in the eastern part of The Netherlands among 545 teachers from four secondary schools. 274 teachers participated in the study (response rate 50%). In the follow-up 12 months later 214 teachers returned the questionnaire (response rate 33%) of which 136 teachers participated both in 1996 and 1997.

Sample D. Questionnaires were sent to 1000 teachers in the western part of The Netherlands. 270 teachers from secondary (N=92), vocational (N=103), and primary (N=75) schools participated in the study. The response rate was 27%.

Sample E. A questionnaire was sent to a randomly selected sample of 3000 teachers derived from the files of the National Insurance Board. 1125 teachers from secondary (N=249), vocational (N=220), primary (N=547), and special education (N=109) schools completed the questionnaire (response rate 38%). The follow-up was conducted 12 months later. From the 1308 returned questionnaires, 998 teachers had completed the questionnaire in both 1997 and 1998 (response rate 76%).

Sample F. Sample F is a composite sample of three independent studies conducted in 1995 and 1996. The sample consists of eight secondary (N=378) and five vocational schools (N=255) in various Dutch regions. Response percentages ranged from approximately 35% to 75%.

Sample of teachers on sick leave

In addition to the pooled sample consisting of sample A to F, a separate sample of teachers on sick leave has been included in the current study. About 700 questionnaires were sent to 10 Occupational Health and Safety Services throughout The Netherlands with the request to send them to teachers who were on sick leave for mental reasons. Burnout is not an officially recognized diagnosis, but the vast majority of mental health claims involves what is known as an 'exogenous reaction', which roughly equals burnout (*Kers & Van der Zouwe, 1994*). The questionnaire was completed by 147 teachers.

Measurements

Burnout. Burnout is measured with the MBI-NL-ES and consists of three subscales: emotional exhaustion, depersonalization, and personal accomplishment. The MBI-NL-ES differs from the MBI-ES in two ways. First, the scoring dimension in the MBI-NL-ES ranges on a 7-point Likert scale from 0 to 6 instead of 1 to 7. Second, in the MBI-NL-ES two frequency dimensions were simultaneously applied to the questionnaire (see Appendix). The so called *fixed* anchor is similar to that of the MBI-ES: 'never' - 'few times a year or less' - 'few times a month or less' - 'few times a month' - 'once a week' - 'few times a week' - 'every day'. The so called *variable* anchor ranges from 'never' - 'seldom' - 'now and then' - 'regular' - 'often' - 'very often' - 'always'. This additional scoring dimension was applied because its scoring dimension semantically corresponds better with some items (e.g., "I have become more callous toward people since I took this job").

Depersonalization has been identified as the least reliable subscale (*Enzmann, et al., 1995*). To strengthen the validity of the depersonalization scale and to increase its internal consistency, it has been recommended to add a couple of items about the behavioral aspect of depersonalization (*Enzmann, et al., 1995*). Following this suggestion, two items were added to the depersonalization scale: "In my work people bother me with personal problems that I don't want to be bothered with", and "I try to keep away from the personal problems of my students". The extended depersonalization scale (DP_{ext}) was included in studies C, D, and E. Items of the MBI-NL-ES are included in the appendix.

In the American study, scores on the MBI subscales emotional exhaustion, depersonalization, and personal accomplishment are based on the summation of item scores in each subscale. In the MBI-NL-ES the sum score of each subscale is divided by the number of items in that subscale. In the norm tables these mean scale scores are used instead of sum scores, since their

TABLE 1

DEMOGRAPHIC CHARACTERISTICS

	TOTAL SAMPLE (N=3295)		SECONDARY TEACHERS (N=1094)		VOCATIONAL TEACHERS (N=972)		PRIMARY TEACHERS (N=877)		SPECIAL TEACHERS (N=277)		TEACHERS ON SICK LEAVE (N=147)		
	N	%	N	%	N	%	N	%	N	%	N	%	
GENDER													**GENDER**
Men	1736	52.7	720	66.9	595	62.0	262	30.0	107	38.6	70	48.6	Men
Women	1523	46.3	356	33.1	364	38.0	610	70.0	170	61.4	77	52.4	Women
Total	3259	100.0	1076	100.0	959	100.0	872	100.0	277	100.0	147	100.0	Total
AGE													**AGE**
Mean	44	_	45	_	44	_	42	_	41	_	47	_	Mean
SD	8.07	_	8.01	_	7.52	_	8.35	_	7.90	_	8.46	_	SD
AGE GROUPS													**AGE GROUPS**
≤ 39	997	30.5	267	24.7	264	27.4	333	38.2	124	44.3	24	16.4	≤ 39
40-44	706	21.6	222	20.5	202	22.0	195	22.3	63	22.7	23	15.8	40-44
45-49	764	23.4	253	23.4	255	26.0	187	21.4	49	18.2	33	22.6	45-49
≥ 50	804	24.5	340	31.4	243	24.6	158	18.1	41	14.8	66	45.2	≥ 50
Total	3271	100.0	1082	100.0	964	100.0	873	100.0	277	100.0	147	100.0	Total
WORK EXPERIENCE (YRS.)													**WORK EXPERIENCE (YRS.)**
Mean	17	_	17	_	17	_	18	_	16	_	21	_	Mean
SD	8.70	_	9.16	_	8.59	_	8.32	_	8.17	_	8.83	_	SD
CATEGORIES													**CATEGORIES**
≤ 9	683	21.7	248	23.0	235	5.1	153	17.6	38	19.9	55	37.4	≤ 9
10-19	1166	37.1	386	35.7	324	34.6	346	39.9	85	44.5	49	33.3	10-19
≥ 20	1300	41.2	446	41.3	377	40.3	370	42.5	68	35.6	43	29.3	≥ 20 17
Total	3148	100.0	1080	100.0	936	100.0	867	100.0	191	100.0	147	100.0	Total
HOURS EMPLOYED													**HOURS EMPLOYED**
Mean	28	_	27	_	26	_	31	_	32	_	32	_	Mean
SD	9.52	_	9.31	_	9.00	_	9.44	_	9.00	_	8.22	_	SD
EMPLOYMENT													**EMPLOYMENT**
Full time	1393	46.9	528	49.3	409	52.1	352	41.3	75	40.1	65	45.1	Full time
Part time	1574	53.1	544	50.7	376	47.9	500	58.7	112	59.9	79	54.9	Part time
Total	2967	100.0	1072	100.0	785	100.0	852	100.0	187	100.0	144	100.0	Total

Note: due to missing data, the total number of respondents may vary slightly for different variables.

interpretation is more straightforward (ranging from 0 to 6) and because a direct comparison between subscales is then possible. Demographic variables and work related factors are taken into account in describing the distribution of burnout scores.

Health indicators. Various health indicators were used to establish the discriminant validity of the three burnout dimensions. Job satisfaction. Teacher's satisfaction with work was measured using four items from the questionnaire 'Stress at School' *(Schaufeli, Hoonakker, & Van Horn, 1996)*. Each item referred to the extent to which teachers were satisfied with their students, colleagues, the school and teaching in general, respectively. Response categories varied on a 5-point scale ranging from 'very dissatisfied' (1) to 'very satisfied' (5). The reliability coefficient was $\alpha = .68$[4].

Mood. Originally, the scale was developed by *Warr (1990a; 1990b)* and consists of 12 mood-items such as tensed, uneasy, optimistic, and cheerful. Teachers were asked to indicate, on a 5-point scale ranging from 'never' (1) to 'always' (5), how often their job had made them feel, for instance, optimistic during the past month. Concerning the presupposed bipolar dimension of these mood-items in a positive and negative affect, the present study follows the one-factor solution, resulting from a study by *Taris, Schaufeli, Schreurs, & Caljé (2000)* in a teacher sample. Reliability coefficient was $\alpha = .92$.

Mental and somatic health complaints were measured using the Dutch adaptation of the work stress questionnaire developed by *Caplan, Cobb, French, Van Harrison, and Pinneau (1975)*; The 'Vragenlijst Organisatie Stress-Doetinchem' (VOS-D) *(Bergers, Marcelissen & De Wolff, 1986)*. The VOS-D is one of the most widely used self-report questionnaires in The Netherlands to assess stress-reactions (e.g., psychological strain, somatic complaints) *(Kompier & Marcelissen, 1990)*. Normative data are available from a large representative sample of Dutch employees (N = 2800). The subscale 'mental health complaints' consists of 10 items referring to anxiety (e.g., feeling nervous, uneasy), depression (e.g., feeling sad, dejected), and irritation (e.g., feeling angry, annoyed). The reliability coefficient was $\alpha = .87$. The subscale 'somatic health complaints' consists of 14 items referring to a variety of psycho-somatic complaints such as sweating palms, upset stomach, trouble sleeping, and a faster than usual heart beat. The reliability coefficient was $\alpha = .86$. Items of both scales had to be answered on a 4-point scale ranging from 'almost never' (1) to 'very often' (4).

[4] Internal consistency coefficients reported in the current study are based on data at Time 1.

Organizational commitment. Six items were drawn from the original 15 item Organization Commitment Questionnaire (OCQ) *(Mowday, Steers, & Porter, 1979)*, each of which had to be answered on a 5-point scale ranging from 'totally disagree' (1) to 'totally agree' (5). The reliability coefficient was $\alpha = .89$.

Psychosomatic well-being was assessed using one scale. The ***psychosomatic health complaints*** scale consists of 23 items from the Inventory of Subjective Health (VOEG) *(Dirken, 1969)*. The scale measures a variety of psychosomatic health complaints such as headaches, cardiovascular problems, and stomachaches. Response categories were dichotomous, 'yes' (1) and 'no' (2). The Central Bureau of Statistics in The Netherlands uses the VOEG units to measure the general health state. For reasons of comparability with their data, this total score will be maintained in the current study. The reliability coefficient was $\alpha = .83$.

Cognitive weariness was assessed using one scale. The ***cognitive weariness*** scale, a self-constructed scale, consists of 7 items. The scale refers to loss of concentration at work (e.g., "I have trouble concentrating on my work."). Each statement was rated on a 7-point scale ranging from 'a few times a year' (0) to 'every day' (6). The reliability coefficient was $\alpha = .92$.

Work stressors.
Five scales of the 'School Health Survey' *(Schoolgezondheidsonderzoek, Centraal Orgaan Bedrijfsgezondheidszorg, CO BGZ 1994)* were used to measure the experienced workload indicated by time pressure, teaching in general, and the work relationships with students, colleagues, and the school. Teachers had to indicate on a 6-point scale ranging from 'not applicable' (0) to ' very much' (5) to what extent they experienced work overload. The subscale 'time pressure' consists of 7 items (e.g., too much to do in too little time). The reliability coefficient was $\alpha = .87$. The subscale 'teaching in general' consists of 10 items (e.g., poor teaching material). The reliability coefficient was $\alpha = .83$. The subscale 'students' consists of 13 items (e.g., students' misbehavior, unmotivated students). The reliability coefficient was $\alpha = .93$. The subscale 'colleagues' consists of 10 items (e.g., incompetence of colleagues). The reliability coefficient was $\alpha = .91$. The subscale 'school' consists of 7 items (e.g., an unsupportive school principal). The reliability coefficient was $\alpha = .93$.

Analyses

To examine the relationship between demographic (gender and age) and work related factors (type of school, teaching experience, and number of hours employed) and burnout, multivariate analyses of covariance (MANCOVA's) were conducted. Subgroups have been created in relation to age and teaching experience. Four more or less equally divided subgroups were distinguished for age: 1) 39 years or younger, 2) 40-44 years, 3) 45-49 years, 4) 50 and over. Teaching experience was categorized in three subgroups: 1) 9 years of experience or less, 2) 9-19 years, 3) 20 years or more. As for gender, male teachers were rated 0 and female teachers 1. With regard to type of school, secondary teachers were rated 1, vocational teachers 2, primary teachers 3, and special education teachers 4. As for the number of hours employed, full-time teachers were rated 0 and part-time teachers 1. Descriptive statistics for these demographic and work related factors are presented in Table 3.

RESULTS

A variety of analyses were conducted to provide information about the following psychometric properties of the MBI-NL-ES: factorial validity; internal consistency and the test-retest reliability; intercorrelations of subscales; subscales mean and standard deviations; discriminant validity; construct validity; predictive validity, and normative burnout scores for gender, age, type of school, number of hours employed, and teaching experience. Results of the MANCOVA's are also presented in each norm table.

Factorial validity

Using the EQS Structural Equations Program (*Bentler & Weeks, 1980*) confirmatory factor analyses were performed to test the factor structure of the MBI-NL-ES (including two additional DP-items). Table 4 presents the results of the comparison of the same four factor-analytic models that were tested by *Schaufeli, et al. (1994)*. Because the $\chi 2$ goodness-of-fit index strongly depends on sample size it has been recommended to report the nonnormed fit index (NNFI) (*Bentler & Bonett, 1980*). These indices do not provide information about the absolute fit of a particular model, rather they assess the relative fit to another (nested) factorial model of a particular sample. Moreover, these indices can be used to compare the fit of a particular model with that of a similar model in other samples of different sizes.

TABLE 2

CONFIRMATORY FACTOR-ANALYTIC MODELS (N=1629)

MODEL	df	χ^2	NNFI	GFI	AGFI	RMSR
Null (M_0)	231	16922.32*	_	.32	.25	.550
1-Factor (M_1)	209	6743.76*	.57	.63	.55	.209
2-Factor oblique (M_2)	208	3521.89*	.78	.80	.76	.148
3-Factor orthogonal (M_3)	209	2826.33*	.83	.86	.82	.292
3-Factor oblique (M_4)	206	2135.33*	.87	.89	.86	.102

* p=.001

The so-called null model (M_0) is a baseline model of maximum independence between items (i.e., a model without a factor structure). The M_0 model corresponds to the hypothesis that there are just as many uncorrelated factors as there are items. The factorial models of the MBI-NL-ES with which M_0 is compared are less restrictive. The following four models are tested in the present study:

- M_1: A 1-factor model that assumes that all MBI-NL-ES items load on one single factor.
- M_2: A 2-factor oblique model, including a combined DP and EE factor (the so called "core of burnout" (*Green, Walkey, & Taylor, 1991*) and a separate PA factor in which the two factors are allowed to be correlated.
- M_3: A 3-factor orthogonal model used by *Maslach and Jackson (1996)*, which assumes that the MBI-NL-ES items load on three uncorrelated factors (i.e., EE, DP, and PA).
- M_4: A 3-factor oblique model in which the three factors of M_3 are allowed to be correlated.

As can be seen from Table 2, the best relative fit of the four models is found for the 3-factor oblique model (M_4). More specifically, each model improves significantly upon each preceding model, p =.001. This confirms prior results on the factorial validity of the MBI-NL-ES (*Schaufeli et al., 1994*). A comparison between the 3-factor orthogonal model (M3) and the 3-factor oblique model (M4) results in a significant improvement of the latter ($\Delta\chi^2$ with 3 DF = 691.00, p < .001).

The M4-model was also tested in different subsamples: gender, age, type of school, teaching experience and employment. As can be seen from Table 3 compared to the other models M1, M2, and M3, the values of the fit indices of M4 are higher in the various subsamples.

TABLE 3

3-FACTOR OBLIQUE MODEL (M4; df = 206) FOR THE SUBSAMPLES GENDER, AGE, TYPE OF SCHOOL, TEACHING EXPERIENCE AND EMPLOYMENT

GENDER	N	χ^2	NNFI	GFI	AGFI	RMSR
Male teachers	847	1416.10*	.86	.86	.82	.12
Female teachers	851	1150.42*	.88	.88	.86	.11
AGE						
≤ 39 yrs.	138	367.54*	.85	.81	.77	.13
40 – 44 yrs.	136	407.13*	.80	.78	.73	.17
45 – 49 yrs.	123	387.40*	.87	.77	.72	.15
≥ 50 yrs.	142	424.13*	.84	.79	.74	.17
TYPE OF SCHOOL						
Secondary school	592	1053.72*	.85	.85	.81	.13
Vocational school	355	714.20*	.84	.84	.80	.13
Primary school	620	854.32*	.88	.89	.86	.10
Special education	118	332.21*	.90	.80	.76	.14
TEACHING EXPERIENCE						
≤ 9 yrs.	125	345.76*	.85	.81	.76	.13
10 – 19 yrs.	193	442.32*	.85	.82	.78	.15
≥ 20 yrs.	225	564.67*	.84	.81	.77	.16
EMPLOYMENT						
Full time	830	1204.72*	.87	.88	.85	.11
Part time	836	1321.95*	.86	.86	.83	.12

*p=.001

Internal consistency and test-retest reliability

Table 4 displays the internal consistencies (Cronbach's α) of the MBI-NL-ES subscales for the total sample and the subsamples of teachers from secondary, vocational, primary, and special education schools.

Nunnaly (1978) proposed a value of .70 as a criterion for a satisfactory internal consistency. With exception of the depersonalization subscale, the internal consistencies of emotional exhaustion and personal accomplishment are well above this criterion (Table 4). The internal consistencies of the Emotional Exhaustion and Personal Accomplishment subscales also agree with those mentioned for the MBI-HSS (EE: α=.90, DP: α=.79, PA: α=.71) *(Maslach & Jackson, 1996)* and the MBI-ES (EE: α=.90, DP: α=.76, PA: α=.76) *(Maslach, et al., 1996)*. The elimination of item 16 in the EE-subscale and item 12 in the PA-subscale of the MBI-NL-ES obviously does not affect the internal consistency of both scales.

TABLE 4

INTERNAL CONSISTENCIES (CRONBACH'S α) OF THE MBI-NL-ES SUBSAMPLES*

	TOTAL SAMPLE (N=3198)	SECONDARY TEACHERS (N=1054)	VOCATIONAL TEACHERS (N=935)	PRIMARY TEACHERS (N=832)	SPECIAL TEACHERS (N=259)	TEACHERS ON SICK LEAVE (N=141)
EE	.90	.91	.88	.90	.89	.89
DP	.66	.66	.67	.57	.61	.63
PA	.82	.82	.78	.82	.77	.88
	(N=1496)	(N=590)	(N=321)	(N=610)	(N=109)	(N=141)
DPext	.72	.73	.74	.65	.71	.64

Note: EE = Emotional Exhaustion; DP = Depersonalization; PA = Personal Accomplishment.

** Teachers on sick leave are not included*

As also can be seen from Table 4, internal consistencies of the burnout subscales are quite similar across subsamples of teachers. For emotional exhaustion and personal accomplishment, internal consistencies meet the criterion of α=.70. This does not apply to the reliability of depersonalization. An extension of the depersonalization subscale (DP_{ext}) with two items increases the reliability in the total sample (α=.73, n=1647), and each of the subsamples. With exception of the primary school teacher sub sample the internal consistency of DP_{ext} in the other subsamples are satisfactory.

In Table 4 internal consistency coefficients of burnout subscales are presented for the sample of teachers on sick leave. As can be seen, the coefficients are comparable to those mentioned for the secondary, vocational, primary, and special education teacher samples.

To examine the stability of the MBI-NL-ES over time, test-retest reliabilities were computed for sample C. Test-retest reliabilities for EE, DP_{ext}, and PA were r=.81, r=.65, and r=.72 respectively over a 12 months period. For the American MBI-ES, test-retest reliabilities over a 12 months period were r=.60, r=.54, and r=.57, respectively *(Jackson, Schwab & Schuler, 1986)*. For the MBI-NL-ES, comparable test-retest correlations were found in the American manual. Only the test-retest correlation for EE was significantly higher (Z=4.03, p=.05) for the MBI-NL-ES.

Intercorrelations between burnout subscales

Pearson's correlations coefficients between MBI-NL-ES subscales are shown in Table 5. Z-values were computed in order to compare the magnitude of these correlations across groups.

TABLE 5

PEARSON'S CORRELATION COEFFICIENTS AND Z-SCORES BETWEEN THE MBI-NL-ES SUBSCALES AND SUBSAMPLES

	SECONDARY TEACHERS (N=1054)			VOCATIONAL TEACHERS (N=936)			PRIMARY TEACHERS (N=832)			SPECIAL TEACHERS (N=259)			TEACHERS ON SICK LEAVE (N=141)			TOTAL SAMPLE (N=3048)			
CORRELATIONS	PA	DPext	DP	PA	DPext	DP	PA	DPext	DP	PA	DPext	DP	PA	DPext	DP	PA	DPext	DP	CORR.
EE	-.34	.44	.50	-.27	.37	.35	-.22	.32	.45	-.23	.46	.37	-.20	.12	-.13	-.17	.42	.43	EE
PA	_	-.37	-.39	_	-.25	-.26	_	-.30	-.27	–	-.40	-3.6	–	-.46	-.42	–	-.38	-.18	PA
Z-SCORES: EE										–	–	–	–	–	–	–	–	–	**Z-SCORES: EE**
Vocational	1.72	1.86	4.09*	_	_	_	_	_	_	–	–	–	–	–	–	–	–	–	Vocational
Primary	2.81*	3.03*	1.39	1.11	1.18	2.50*	_	_	_	–	–	–	–	–	–	–	–	–	Primary
Special	1.72	.36	2.31*	.60	1.54	.33	.15	2.32*	1.35	–	–	–	–	–	–	–	–	–	Special
On sick leave	1.67	3.89*	4.62*	.81	2.94*	2.57*	.23	2.30*	3.85*	–	–	–	–	–	–	–	–	–	On sick leave
Z-SCORES: PA										–	–	–	–	–	–	–	–	–	**Z-SCORES: PA**
Vocational	_	2.96*	3.24*	_	_	_	_	_	_	–	–	–	–	–	–	–	–	–	Vocational
Primary	_	1.70	2.90*	_	1.13	.23	_	_	_	–	–	–	–	–	–	–	–	–	Primary
Special	_	.51	.50	_	2.38*	1.57	_	1.60	1.40	–	–	–	–	–	–	–	–	–	Special
On sick leave	_	1.20	.40	_	2.65*	1.99*	_	2.04*	1.86	–	.70	.67	–	–	–	–	–	–	On sick leave

* $p \leq .05$

Overall analyses show a significant difference between the 5 subsamples concerning the intercorrelation between EE-DP (χ^2 with 4 df= 33.06, p=.05), EE-DPext ($\chi^2_4 = 22.67$, p=.05), and PA-DPext ($\chi^2_4 = 15.08$, p=.05). Intercorrelations between EE-PA (χ^2 with 4 df = 9.76, ns) and DP-PA ($\chi^2_4 = 15.62$, ns) were not significant. At subsample level, intercorrelations between EEand DPand DPext in particular are significantly higher in the secondary teacher sample, and lower in the sample of teachers on sick leave. Thus, in the secondary teacher sample, EE and DPare more closely linked than in the other subsamples. In the sample of teachers on sick leave these burnout dimensions are less interrelated.

Discriminant validity

In Table 6 intercorrelations are presented between the MBI-NL-ES subscales (emotional exhaustion, depersonalization, and personal accomplishment) and various health indicators such as mood (e.g., anger, depression), organizational commitment, satisfaction, and a variety of psychosomatic complaints (e.g., stomach and heart complaints).

As can be seen from Table 6, EE correlates highly with all indicators of well-being associated with feelings and health complaints, suggesting that the

TABLE 6

MEAN, SD, AND INTERCORRELATIONS BETWEEN BURNOUT AND VARIOUS INDICATORS OF WELL-BEING

	SATISFACTION	NEGATIVE MOOD	MENTAL HEALTH COMPLAINTS	PHYSICAL HEALTH COMPLAINTS	PSYCHO-SOMATIC HEALTH	ORGANIZA-TIONAL COM-MITMENT	COGNITIVE WEARINESS
N	1268	1634	280	283	1810	249	1631
M	3.66	2.45	1.84	1.88	1.78	4.42	1.40
SD	.68	.61	.50	.71	.19	.88	.99
EE	-.54*	.61*	.77*	.71*	-.52*	-.31*	.66*
DP	-.43*	.35*	.52*	.36*	-.19*	-.24*	.34*
PA	.48*	-.40*	.43*	.32*	.18*	.24*	-.32*

*$p \leq .001$. *NB. High scores on Negative mood, Mental and Physical health complaints, and Cognitive Weariness indicate relatively more health complaints. High scores on Satisfaction, Psychosomatic health and Organizational commitment indicate a relatively higher level of well-being.*

TABLE 7

MEAN, SD, AND INTERCORRELATIONS BETWEEN BURNOUT AND VARIOUS WORK STRESSORS

	STUDENTS	COLLEAGUES	SCHOOL	TIME PRESSURE	TEACHING
N	860	862	861	866	852
M	2.41	2.16	2.32	2.52	2.16
SD	.91	.78	1.06	.87	.70
EE	.43*	.35*	.31*	.55*	.57*
DP	.37*	.17*	.23*	.22*	.35*
PA	-.38*	-.05	-.05	-.17*	-.29*

*$p \leq .001$. NB. *High scores on all work stressors indicate that teachers experience relatively more stress.*

discriminant validity of this particular burnout dimension is relatively low. Regression analyses show that these well-being indicators account for 67 per cent of the variance in EE, with the psychological health complaints accounting for the highest variance ($R^2 = .59$). The indicators of well-being explained almost 30 per cent of the variance in DP, with the psychological health complaints explaining 26 per cent. As for PA, the 29 per cent of variance in this burnout dimension is explained, in particular, by satisfaction ($R^2 = .23$). These lower percentages of explained variance in DP and PA suggest that these burnout dimensions are more distinct dimensions in the range of possible health complaints.

Construct validity

Table 7 presents the intercorrelation of burnout with selected stressors that were found to be relevant in previous studies to enhancing feelings of burnout in the long run.

As can be seen from Table 7, stress due to teaching and the relationship with students are highly correlated with feelings of emotional exhaustion, depersonalization and a reduced personal accomplishment. These work related stressors are considered the most salient aspects of the teaching profession. Regression analyses show that these work related stressors accounted for 38 percent of the variance in EE, with teaching accounting for the highest variance ($R^2 = .30$). Students accounted for 15 of the total of 18 per cent variance in DP. As for PA, the work related stressor, students, was accountable for 16 per cent of the variance in this burnout dimension. Other work related stressors did not explain any variance in PA.

TABLE 8

ODDS RATIOS FOR BURNOUT (PREDICTORS) AND HEALTH STATUS

PREDICTORS		EXP (B)	95% CI	OVERALL STATISTICS
EE	low[R]	1.00	_	-2 log likelihood: 318.42
	mean	5.64*	1.61	$R^2 = 9.7$
	high	11.66**	3.36	_
DP	low[R]	1.00	_	_
	mean	1.35	.54	_
	high	1.21	.46	_
rPA	low[R]	1.00	_	_
	mean	1.26	.58	_
	high	.96	.41	_

[R] = *reference group*; *$p \leq .01$; **$p \leq .001$.

Predictive validity

The predictive validity of the MBI-NL-ES was investigated using teachers from sample E who were healthy in 1997 and on sick leave in 1998 (N=45) and teachers who were healthy at both intervals (N=853).

Results from logistic regression analysis (Table 8) show that EE significantly predicts burnout. The risk to burnout is 5.64 and 11.66 times higher for teachers with average and high scores on EE, respectively.

Normative scores

Cut-off scores of the MBI-NL-ES

The American MBIstudy presents numerical cut-off points based on three equally sized groups, assuming that the top, intermediate, and bottom thirds of the sample experience 'high', 'average', and 'low' levels of burnout, respectively (*Maslach & Jackson, 1996*). Although the authors of the American MBI study emphasize that this classification should not be used for diagnostic purposes, many researchers tend to take this classification absolutely, that is, they consider 'high' levels as being burned-out. Following *Schaufeli and Van Dierendonck (1995)* the normative scores presented in the present study are based on a more refined classification using five percentile ranges (5^{th}, 25^{th}, 75^{th}, and 95^{th} percentile) (see Table 9). The validity of this categorization is supported by the finding that for the MBI-NL, mental strain, physical symptoms, as well as the proportion of identified psychiatric 'cases' (based in the General Health Questionnaire) increased linearly with

TABLE 9

SCORING-CATEGORIES OF THE MBI-NL-ES

SCORING-CATEGORIES	SCORES
Very high	score > 95th percentile
High	75th percentile < score ≤ 95th percentile
Average	25th percentile < score ≤ 75th percentile
Low	5th percentile < score ≤ 25th percentile
Very low	score ≤ 5th percentile

TABLE 10

NORM TABLE SAMPLES OF TEACHERS AT WORK AND TEACHERS ON SICK LEAVE

SCALE	M	SD	SE	5%	25%	75%	95%	N
EE								
Men	2.08	1.22	.03	.38	1.13	2.88	4.38	1702
At work	1.92	1.18	.21	.38	1.0	2.63	4.25	3211
On sick leave	3.84	1.23	.11	1.5	3.13	4.88	5.63	137
DPEXT								
At work	1.26	.81	.02	.14	.57	1.71	2.86	1675
On sick leave	1.58	.85	.07	.29	.96	2.00	3.14	138
RPA								
At work	1.82	.91	.02	.43	1.14	2.43	3.43	3102
On sick leave	2.33	1.07	.09	.57	1.57	3.11	4.19	136

MULTIVARIATE F(3,1689)	UNIVARIATE F(1,1691)		
	EE	DP	rPA
6.03 ***	17.08 ***	4.52*	.47

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$

the severity of burnout (*Schaufeli & Van Dierendonck, 1994*). To establish the clinical and predictive validity of the MBI-NL-ES, the present study includes a sample of teachers who seek treatment for their work related mental health problems. For the MBI-NL it was shown that in the normative sample, the cut-off scores corresponding with the 95th percentile of the emotional exhaustion scale, the 75th percentile of the depersonalization scale and the 25th percentile of the personal accomplishment scale, are similar to the corresponding mean scores of the subscales in a sample of outpatients that are being treated for burnout (*Schaufeli, Bakker, Hoogduin & Schaap, 2001*).

TABLE 11

NORM TABLE GENDER

SCALE	M	SD	SE	5%	25%	75%	95%	N
EE								
Men	2.08	1.22	.03	.38	1.13	2.88	4.38	1702
Women	1.72	1.09	.03	.25	.88	2.38	3.88	1478
DPEXT								
Men	1.52	.85	.03	.43	.86	2.00	3.00	828
Women	1.0	.68	.02	.14	.43	1.43	2.29	841
rPA								
Men	1.89	.96	.02	.43	1.14	2.57	3.57	1651
Women	1.73	.85	.02	.43	1.14	2.29	3.29	1424

MULTIVARIATE F (3,1567)	UNIVARIATE F (1,1569)		
	EE	DP	rPA
22.08 ***	12.34 ***	62.53 ***	18.36 ***

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$

The following Tables present the normative scores (means and cut-off scores) for the total sample of teachers at work and an additional sample of teachers on sick leave (Table 10), gender (Table 11), age (Table 12), type of school (Table 13), teaching experience (Table 14), and number of hours employed (Table 15). In the norm tables, scores of the extended scale (DPext) are presented instead of the scores of the original five-item depersonalization scale.

Interpretation of the burnout dimension, personal accomplishment, has been simplified by subtracting the individual mean score (Mi) from the total mean score (Mt) so that similar to emotional exhaustion and depersonalization, high scores are indicative of a higher level of *reduced* personal accomplishment (rPA). The standard error of estimate (SE) is used to determine the confidence interval of an individual's true score. For instance, the confidence interval for the true score of a mean value of 1.92 on emotional exhaustion (mean value) lies between 1.88 and 1.96.

The results of MANCOVA analysis are shown in Table 10. In this analysis, burnout subscales were dependent variables, sample (1=at work; 2=on sick leave) was the independent variable, and gender, age, type of school, teaching experience, and number of hours employed were included as covariates. As can be seen from Table 10, a significant multivariate effect of

TABLE 12

NORM TABLE AGE

SCALE	M	SD	SE	5%	25%	75%	95%	N
EE								
≤ 39	1.71	1.02	.03	.25	1.00	2.31	3.64	977
40-44	1.87	1.12	.04	.38	1.00	2.50	4.00	690
45-49	2.02	1.23	.05	.38	1.00	2.88	4.25	740
≥ 50	2.12	1.30	.05	.38	1.13	2.88	4.63	782
DPEXT								
≤ 39	1.08	.70	.03	.16	.57	1.46	2.43	462
40-44	1.20	.74	.04	.14	.71	1.57	2.57	376
45-49	1.33	.87	.04	.14	.71	1.71	3.00	383
≥ 50	1.45	.87	.04	.29	.86	2.00	3.08	448
rPA								
≤ 39	1.66	.84	.03	.43	1.14	2.14	3.14	932
40-44	1.78	.85	.03	.43	1.14	2.29	3.29	662
45-49	1.83	.95	.04	.43	1.14	2.43	3.57	726
≥ 50	2.04	.98	.04	.57	1.29	2.71	3.71	761

MULTIVARIATE F (9,4701)	UNIVARIATE F (3,1567)		
	EE	DP	rPA
2.32 *	.36	2.19	5.80 ***

*** p ≤.001; ** p ≤ .01; * p ≤ .05

'sample' (i.e., health status) was reached. Univariate results indicate that teachers on sick leave score significantly higher on emotional exhaustion and depersonalization than teachers who are at work. Obviously, teachers on sick leave suffer more from feelings of exhaustion and detachment. Note that, although not significant, mean scores on reduced personal accomplishment are also lower for teachers on sick leave.

Table 11 presents the results of a MANCOVA analysis in which the burnout subscales were dependent variables. Gender was the independent variable and age, type of school, teaching experience, and number of hours employed were included as covariates. As can be seen in Table 11, a significant multivariate effect of 'gender' was reached. Univariate results indicate that scores on emotional exhaustion, depersonalization, and reduced personal accomplishment between men and women differ significantly. On average, men obtained higher scores than women on all three burnout dimensions.

TABLE 13

NORM TABLE AGE

SCALE	M	SD	SE	5%	25%	75%	95%	N
secondary	2.02	1.23	.04	.38	1.13	2.75	4.38	1074
vocational	2.03	1.15	.04	.38	1.13	2.75	4.13	935
primary	1.70	1.13	.04	.25	.88	2.25	3.88	856
special education	1.73	1.08	.07	.25	.91	2.38	4.04	272
DPEXT								
secondary	1.48	.84	.04	.29	.86	2.00	3.00	590
vocational	1.40	.80	.05	.29	.86	1.86	2.86	321
primary	.99	.68	.03	.14	.43	1.29	2.43	610
special education	1.13	.80	.08	.14	.43	1.58	2.86	109
rPA								
secondary	1.99	.94	.03	.57	1.29	2.57	3.57	1030
vocational	1.93	.93	.03	.57	1.29	2.57	3.57	911
primary	1.57	.81	.03	.29	1.00	2.00	3.05	832
special education	1.43	.75	.05	.29	.86	2.00	2.73	257

MULTIVARIATE F (9,4596)	UNIVARIATE F (3,1532)		
	EE	DP	rPA
12.91 ***	4.22 **	17.26 ***	33.60 ***

*** p ≤.001; ** p ≤ .01; * p ≤ .05

Results of the MANCOVA analysis are shown in Table 12, with burnout dimensions as dependent variables, age as independent variable, and gender, type of school, teaching experience, and number of hours employed as covariates. Although mean scores on all three burnout dimensions increase with age, results at univariate level only show a significant effect of reduced personal accomplishment (p‹.05). Teachers of 50 years and over have significantly higher scores on reduced personal accomplishment than teachers in younger age groups. Thus, strictly speaking, for the purpose of interpretation, only the scores on reduced Personal Accomplishment can be used for diagnostic purposes. However, scores on emotional exhaustion and depersonalization are higher in the older age groups and could be used as an indication of higher emotional exhaustion and depersonalization complaints. Results from Scheffé analysis show that teachers in the age groups '45-49' and '50 and over' show significantly higher scores on EE, $F(3,3188) = 20.54$; p=.001, DP, $F(3,1668) = 18.06$; p=.001, and rPA, $F(3,3080) = 24.76$; p=.001 than other age groups.

TABLE 14

NORM TABLE TEACHING EXPERIENCE

SCALE	M	SD	SE	5%	25%	75%	95%	N
EE								
≤ 9	1.62	1.02	.04	.25	.87	2.25	3.63	668
10-19	1.93	1.16	.03	.38	1.00	2.63	4.25	1147
≥ 20	2.07	1.24	.04	.38	1.13	2.88	4.38	1261
DPEXT								
≤ 9	1.11	.72	.04	.14	.57	1.57	2.61	294
10-19	1.22	.78	.03	.14	.57	1.71	2.71	631
≥ 20	1.36	.86	.03	.18	.71	1.86	2.86	744
rPA								
≤ 9	1.74	.85	.03	.43	1.14	2.29	3.29	638
10-19	1.78	.88	.03	.43	1.14	2.29	3.43	1101
≥ 20	1.93	.96	.03	.43	1.14	2.57	3.57	1238

MULTIVARIATE F (6,3132)	UNIVARIATE F (2,1567)		
	EE	DP	rPA
2.35 *	1.89	.58	2.32

*** p ≤.001; ** p ≤ .01; * p ≤ .05

In Table 13 results of MANCOVA analysis are shown in which burnout subscales were the dependent variables. Type of school was the independent variable, and gender, age, teaching experience, and number of hours employed were included as covariates. A significant multivariate effect can be observed from Table 13. Univariate results indicate significant differences in scores on emotional exhaustion, depersonalization, and reduced personal accomplishment. Secondary and vocational school teachers in particular have higher scores on emotional exhaustion, depersonalization, and reduced personal accomplishment. Thus, to diagnose burnout, differences in type of school have an important bearing on all three burnout dimensions. Results from Scheffé analysis show that teachers from secondary and vocational schools show significantly higher scores on EE, F(3,3136) = 18.10; p=.001, DP, F(3,1629) = 44.91; p=.001, and rPA, F(3,3029) = 55.98; p=.001 than teachers from primary schools and special education.

The normative scores for burnout scales as a function of teachers' experience are shown in Table 14. In the MANCOVA analysis burnout scales were the dependent variables, teaching experience was the independent variable, and gender, age, type of school, and number of hours employed were included as covariates. A multivariate effect is shown. However, at univariate level no

TABLE 15

NORM TABLE EMPLOYMENT

SCALE	M	SD	SE	5%	25%	75%	95%	N
EE								
part-time	1.80	1.13	.03	.25	1.00	2.50	4.00	1355
full-time	1.98	1.22	.03	.38	1.00	2.75	4.38	1547
DPEXT								
part-time	1.21	.80	.03	.14	.57	1.71	2.71	820
full-time	1.32	.81	.03	.29	.71	1.71	2.86	814
rPA								
part-time	1.91	.91	.03	.57	1.29	2.43	3.57	1318
full-time	1.74	.91	.02	.43	1.14	2.29	3.43	1490

MULTIVARIATE F (3,1566)	UNIVARIATE F (1,1568)		
	EE	DP	rPA
4.19 **	1.42	.04	7.74 **

*** p ≤.001; ** p ≤ .01; * p ≤ .05

significant results were found. Thus, strictly speaking, differences in scores on separate burnout dimensions are too unreliable for diagnostic purposes where teaching experience is concerned. Results from Scheffé analysis show that teachers with experience of '20 years or more' show significantly higher scores on EE, F(2,3075) = 32.86; p=.001, DP, F(2,1668) = 12.17; p=.001, and rPA, F(2,2976) = 11.50; p=.001 than teachers with less experience.

Results of MANCOVA analysis show a significant effect (Table 15). Results of univariate analysis indicate a significant difference between part time and full time teachers on reduced personal accomplishment. Part time teachers have higher scores than full time teachers on reduced personal accomplishment. Thus, strictly speaking, for the purpose of interpretation, only scores on reduced Personal Accomplishment can be used for diagnostic purposes.

Interaction effects

To examine the interaction effect of type of school on burnout, separate MANCOVA analyses were conducted for gender, age, teaching experience and number of hours employed. Results show no significant interaction effects for any of the investigated factors.

DISCUSSION

Our main objective in the present study was to examine the psychometric quality of the MBI-NL-ES. More specifically, results were presented on the factorial validity, internal consistency and test-retest reliability, intercorrelations between subscales, discriminant, construct, and predictive validity, and normative burnout scores for gender, age, type of school, number of hours employed, and teaching experience were assessed. Overall, it can be concluded that the MBI-NL-ES is a valid and reliable instrument for the study of burnout among Dutch teachers.

Factorial validity. Results of confirmatory factor-analyses in which the factor structure of the MBI-NL-ES was tested, show that the best relative fit of the four models is found for the 3-factor oblique model (M_4). This confirms prior results on the factorial validity of the MBI-NL-ES (*Schaufeli et al., 1994*). The values of the fit indices of the M_4-model were also quite satisfactory for the subsamples gender, age, type of school, teaching experience and number of hours of employment. Based on these results the factorial validity of burnout can be considered adequate.

Internal consistency and test-retest reliability. Of the three burnout subscales, depersonalization shows the least internal consistence and its reliability differs in the sub samples of secondary, vocational, primary, and special education teachers. The additional two DP-items improved the internal consistencies for both the total sample and the sub samples of teachers on sick leave, primary, secondary, vocational, and special education teachers. In addition, test-retest reliabilities over a 12 months period can be considered good. In sum, the MBI-NL-ES is a questionnaire with internally consistent subscales that is applicable in different types of school and is also found stable across time.

Intercorrelations between burnout subscales. In general, intercorrelations between subscales of the MBI-NL-ES correspond to the correlation coefficients mentioned in the American MBI manual. From these results it can be concluded that the burnout dimensions of MBI-NL-ES are separate, but related, aspects of burnout. Among secondary school teachers, interrelations (most notably between EE and DP/DP_{ext}) are stronger compared to other subsamples. This indicates that secondary school teachers who feel emotionally exhausted feel more detached from others than do teachers from other schools. Among teachers who are currently on sick leave, interrelations between EE and DP/DP_{ext} were less strong, suggesting that in this group the structure of the syndrome might be slightly different. It is possible that teachers on sick leave who are no longer confronted with the factors that resulted in burnout, experience decreasing feelings of depersonalization.

Discriminant and construct validity. From the intercorrelations between burnout subscales and various health indicators, it can be concluded that burnout discriminates in particular where feelings of DP and PA are concerned. EE seems to have some overlap with various other health indicators such as mental health complaints. As far as construct validity is concerned, results in our study showed that burnout complaints are strongly related to the core aspects of the teaching profession. That is, interactions with students and teaching in general are highly correlated with feelings of emotional exhaustion, depersonalization and a reduced personal accomplishment.

Predictive validity. Results on the predictive validity of burnout show that teachers with average and high scores on emotional exhaustion are more prone to require taking sick leave in the long run. However, future research is needed regarding the predictive validity, since the included sample of teachers was very small.

Normative burnout scores. As mentioned in the introduction, studies have indicated that burnout is significantly related to gender, age, teaching experience, type of school, and the number of hours employed (*e.g., Russell et al., 1987; Greenglass et al., 1990*). From our results it can be concluded that, in general, male teachers, older teachers, in particular those aged 45 and over, and teachers from secondary and vocational schools are most prone to burnout. In more detail, results show that male teachers have higher scores than female teachers on emotional exhaustion, depersonalization, and reduced personal accomplishment (*Van Horn, Schaufeli, Greenglass, Burke, 1997*). Several explanations for these findings have been proposed. For instance, *Greenglass et al. (1990)* argued that women are better able to reduce burnout than men because of their "*...greater investments in, and valuation of, friendship...*" and because they are more able to "*... turn to and enjoy activities other than work, i.e., socializing, the arts, etc.*" (p23). *Anderson and Iwanicki (1984)* suggested that female teachers have less feelings of depersonalization than male teachers because they are more caring and show stronger involvement with others and thus do not distance themselves from others easily. The finding that male teachers have higher Emotional Exhaustion scores is replicated by several Dutch studies (e.g., *Van Ginkel, 1987*). As for age, significant differences have been found for reduced personal accomplishment. That is, teachers of 50 years and over feel less competent than their younger colleagues. Although there was only a significant age effect for feelings of incompetence, levels of emotional exhaustion and depersonalization tend to rise monotonously with age. Results show that teaching experience has no

significant effect on burnout. A more substantial effect regarding differences in burnout scores has been found for type of school, indicating that teachers from secondary and vocational schools have higher scores on emotional exhaustion, depersonalization, and reduced personal accomplishment. These results correspond with previous findings in which secondary school teachers were found to suffer more from burnout than elementary school teachers (*Anderson & Iwanicki, 1984; Gold & Grant, 1993*). It has been argued by the last mentioned authors that secondary school teachers are more prone to burn out because, compared with students from elementary schools, secondary school students tend to be less interested and more difficult to motivate. Obviously, working in secondary and vocational schools requires more of a teacher's energy and effort.

In sum, the MBI-NL-ES can be considered a valid and reliable burnout-instrument. Moreover, the reliability of the depersonalization scale has been improved. With the present study, reference data are available for both individual as well as group diagnostic purposes. That is, levels of individual and group scores can be compared to normative scores from teachers on sick leave and teachers who are working. Furthermore, comparison is also possible with other normative data including gender, age, type of school, teaching experience, and the number of hours employed. It should be mentioned that future validation of the MBI-NL-ES is needed, especially where the predictive validation is concerned.

APPENDIX

MBI-NL-ES

0	1	2	3	4	5	6
NEVER never	SELDOM few times a year or less	NOW AND THEN few times a month or less	REGULAR few times a month	OFTEN once a week	VERY OFTEN few times a week	ALWAYS every day

1	I feel emotionally drained by my work	☐
2	I feel used up at the end of the day	☐
3	I feel fatigued when I have to get up in the morning to face another day on the job	☐
4	I can easily understand how my students feel about things	☐
5	I feel I treat some students as impersonal 'objects'	☐
6	Working with people all day is really a strain for me	☐
7	I deal very effectively with the problems of my students	☐
8	I feel 'burned out' from my work	☐
9	I feel I'm a positive influence on other people's lives through my work	☐
10	I have become more callous toward people since I took this job	☐
11	I worry that this job is hardening me emotionally	☐
12	I feel frustrated by my job	☐
13	I feel I'm working too hard in my job	☐
14	I don't really care what happens to some students	☐
15	I can easily create a relaxed atmosphere with my students	☐
16	I feel exhilarated after working with my students	☐
17	I have accomplished many worthwhile things in this job	☐
18	I feel like I'm at the end of my rope	☐
19	In my work I deal with emotional problems calmly	☐
20	I feel some students blame me for some of their problems	☐
21*	In my work, people bother me with personal problems that I don't want to be bothered with	☐
22*	I try to keep away from the personal problems of my students	☐

** Depersonalization items added to the depersonalization sub scale*

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