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Professional burnout and work engagement among dentists

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ABSTRACT

A recent development within burnout research is the shift to its conceptual opposite: work engagement. This study aimed to unravel the concepts of burnout and work engagement, and to determine their levels among dentists. A representative sample of 497 Dutch general dental practitioners was included (survey response rate of 59%), consisting of 372 men and 121 women (the gender of 4 dentists remained unknown). The hypothesized three-factor structure of work engagement (vigor, dedication, and absorption), as measured by the Utrecht Work Engagement Scale (UWES), was substantiated among dentists. It was also found that work engagement was related negatively to burnout, as measured by the Maslach Burnout Inventory (MBI). However, a model consisting of a reduced ('core') burnout factor and an 'enhanced' engagement factor (composed of the three original factors plus the burnout factor, personal accomplishment) showed the best fit. Overall burnout levels among dentists are low, and the levels of engagement indicate that dentists have a positive working attitude.

Within dentistry, chronic work stress and burnout are recognized as potential hazards for both the professional and personal lives of dentists (1, 2). In most research, burnout is measured using the Maslach Burnout Inventory (MBI) (3) which distinguishes three aspects of burnout: emotional exhaustion (EE), depersonalization (D), and personal accomplishment (PA). A recent development within burnout research is the shift from the traditional concept and scope to its opposite: work engagement (4–7). This development reflects an emerging trend towards a 'positive psychology' that focuses on human strengths and optimal functioning rather than on weaknesses and malfunctioning (8). In trying to reinforce these strengths, and by striving to promote optimal functioning, it is hoped that work stress and burnout can be prevented.

In early definitions (9), engagement was defined as being the opposite of burnout. As a result, burnout is the negative pole of a continuum, with engagement representing the positive antipode. From this one-dimensional view, it would follow that engagement is indicated by a combination of low levels of EE and D and high levels of PA. In positioning burnout and engagement as the end-points of one and the same dimension, the assumption is made that the two opposites are complementary. However, someone who is not burned out cannot automatically be considered engaged (or vice versa) and it is not unlikely that some

level of engagement and burnout can co-exist. This is also reflected in the measurement of burnout: the MBI is based on frequency scores, and it is possible that someone who indicates experiencing a negative state 'once a week', experiences feelings of joy in the same week.

In reaction to these considerations, Schaufeli & Bakker developed the Utrecht Work Engagement Scale (UWES), which aims to measure the concept of work engagement as a dimension that is separated from burnout (6). Analogous to burnout, work engagement encompasses three subscales. Vigor (VI) 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 (DED) is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. VI and DED are conceived to be the opposite of EE and D, respectively, spanning two dimensions labeled activation (EE-VI) and identification (D-DED). A final scale that is distinguished is absorption (AB), characterized by being fully concentrated and happily engrossed in one's work (5).

Because of their antipodal conceptualization, the empiric relationship between burnout and engagement is of interest. Research in which both the MBI and the UWES were administered indicates a medium to strong negative relationship between the burnout subscales EE and D and the engagement subscales VI and DED. Interestingly, the highest correlation is found between all three UWES subscales and PA. Moreover, support was found for a model that includes a 'core' burnout factor consisting of EE and D, and an extended engagement factor in which PA is incorporated with VI, DED, and AB (5). Thus, there is empiric reason to believe that PA fits better to the more positive, engagement, side than to its origins of burnout.

The first aim of this study was to test the factorial validity of the concept of work engagement among dentists, and its relationship to burnout. No studies exist that examine the structure of engagement among dentists and, additionally, investigate its inherent relationship to burnout. In view of earlier findings (6), it is expected that the three subscales of engagement will be highly related, but that a three-factor structure will find more support than a one-factor structure (hypothesis 1). Furthermore, consistent with the results reported by Schaufeli & Bakker (5), it is hypothesized that the MBI dimensions (EE, D, and PA) load on 'burnout', whereas the UWES subscales (VI, DED, and AB) load on 'work engagement', and that this model is to be preferred over one, undifferentiating, underlying structure (hypothesis 2). Interestingly, support was also found for a model composed of a 'core' burnout factor consisting of only EE and D, and an extended work engagement factor in which PA is incorporated with VI, DED, and AB (5). On an explorative basis, the current study also investigates the tenability of this model among dentists.

The second aim of this study was to determine the levels of burnout and work engagement within dentistry. As such, it can be considered an extension of earlier research on burnout among dentists (10), as well as an addition to the establishment of research on work engagement among dentists (11). Because in burnout research the possible influences of gender and age have been well described, the correlation of work engagement with age and gender among dentists were also examined.

MATERIAL AND METHODS

Participants and procedure

A group of 848 Dutch dentists were randomly selected from the files of Movir Insurances (at the time of the study, 77% of all Dutch dentists were insured by Movir for inability to work). The sample was stratified for gender, age, and region of practice. All participants were sent a questionnaire (12). Following the recommendations of Dillman (13), the survey included an announcement, two reminders, and (when necessary) complete resending of the questionnaire.

Materials

A Dutch translation of the MBI (3,14) was used to measure burnout. With the publication of a new manual (15), the Dutch version of the MBI was renamed Utrechtse Burnout Schaal (UBOS). The 20 items of the UBOS can be answered on a 7-point Likert-scale, ranging from 0 ('never') to 6 ('every day'). Three subscale scores can be acquired: EE (8 items); D (5 items); and PA (7 items). Engagement was measured using the 15-item version of the UWES (6). As with the UBOS, scores for each item ranged from 0 ('never') to 6 ('every day'), and three subscale scores were computed (VI, DED, and AB), each consisting of 5 items.

Statistical analysis

To address the first aim of the study, the internal consistency of the three UWES subscales was computed using Cronbach's alpha, and interscale correlations were assessed using Pearson's correlations. Structural equation modeling (described in more detail below) was used to further examine the structure of the UWES and its relationship with the UBOS. In addressing the second aim, mean scores and standard deviations were computed and compared with norm scores using multiple analyses of variance (manova). On a more explorative basis, each subscale was correlated with age, and gender differences in the mean score were examined.

To assess the structure of the UWES, three confirmatory factor analytic models were analyzed using the LISREL 8.50 program (16, 17). The LISREL Maximum Likelihood estimation procedure was used. Missing data were imputed using the item series mean. Two models were compared with a null model, in which all item scores are uncorrelated. In the first model, the 15 items of the UWES load on a single 'work engagement' scale. The second model tests the proposed three-factor structure of work engagement. To investigate the relationship between burnout and work engagement, three additional models were compared (M_1 , M_2 , and M_3). The first model (M_1) is a one-factor model in which the subscales of both UBOS and UWES load on one common factor. In the second model (M_2), EE, D, and PA load on a common 'burnout' factor, and VI, DED, and AB constitute a 'work engagement' factor. In a third model (M_3), EE and D load on a common 'burnout' factor, and PA, VI, DED and PA load on an 'engagement' factor.

The goodness-of-fit of the models was determined using absolute and relative fit indices. Absolute fit indices were the chi-square goodness-of-fit index (χ^2), with the accompanying degrees of freedom, and the root mean square error of approximation (RMSEA). Relative fit indices were the non-normed fit index (NNFI), also called the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI). In contrast to absolute indices, relative indices are independent of sample size and are therefore to be preferred (18). Furthermore, the NNFI is comparably more robust for sample size than either the RMSEA or the CFI (19). The fit of a model is good when the values of the NNFI and the CFI approach 1; higher values represent a better fit. For these indices, most studies consider a value of ≥ 0.90 as indicative of a good fit. For the RMSEA, values of < 0.06 imply an acceptable fit (20). The correlation matrices, means, and standard deviations of the data used in the structural equation modelling analyses are available on request.

RESULTS

Response

A group of 497 general dental practitioners returned a usable questionnaire (58.6%). Respondents consisted of 372 men and 121 women (the gender of 4 dentists remained unknown), and the mean age within this group was 44.6 yr (SD = 9.0). The distribution of these and several other descriptive characteristics (i.e. civil status, working hours, number of patients, region of practice) are congruent with the characteristics found in a representative sample taken in 2000 (12, 21). It is therefore safe to assume that the current sample adequately represents the Dutch dental population.

The measurement of burnout and work engagement

The internal consistencies of the UBOS subscales were highly satisfactory (Cronbach's alpha: EE, 0.90; D, 0.70; and PA, 0.83), and the interscale correlations were comparable to norm scores (EE-D, 0.59; EE-PA, -0.36; and D-PA, -0.44). The three UWES subscales also all had high internal consistencies (VI, 0.84; DED, 0.90; and AB, 0.82), that showed only minimal deviation from the figures presented in the UWES manual (6). For each scale, all items contributed to the internal consistency. Cronbach's alpha for the UWES as a whole was very high (alpha = 0.94), which is consistent with the alpha of 0.92 reported in the manual. Interscale correlations were 0.77 (VI-DED), 0.80 (VI-AB), and 0.82 (DED-AB). Again, these results are very similar to results reported in the UWES manual.

[TABLE 1]

Table 1 shows the intercorrelations between the UBOS and UWES subscales for this study and the UWES manual. Apparently, within dentistry, work engagement has a relatively high (negative) relationship with EE, although the pattern (highest correlation between EE and VI, lowest between EE and PA) is identical. Although EE shows the highest correlation with VI, and D correlates highest with DED, these correlations are only marginally higher than the EE-DED or D-VI correlations. These results therefore do not provide

strong support for the predicted contrasts between VI-EE and between D-DED. On the other hand, the strong correlation of personal accomplishment with work engagement concurs with results found among other professions.

[TABLE 2]

The results from confirmatory factor analyses are shown in Table 2, together with the results found in the UWES manual (6). The lower chi-square ratio and RMSEA, and the higher NNFI and CFI values, indicate a better fit for the three-factor model compared with the one-factor model. Moreover, only the three-factor model shows an acceptable CFI value. These findings are similar to the results reported by Schaufeli & Bakker (6), although the figures in the UWES manual suggest a slightly better fit.

[TABLE 3]

In Table 3 the results are shown of the different combinations of the burnout and work engagement concepts. When considering the absolute values of the fit indices, the results are mixed. None of the models have an acceptable RMSEA value, all models have CFI values that can be considered indicative of an acceptable fit, and only M_3 has an acceptable NNFI. However, when comparing the fit indices, a clear pattern emerges. Model M_1 , in which all subscales load on one general factor, clearly is least fitting, whereas model M_2 shows only a slightly better fit. In contrast, the chi-square value and all fit indices are indicative for a superior fit of M_3 . These results are in line with the results found by Schaufeli et al. (5), also included in Table 3, and demonstrate an even better fit of M_3 among dentists. Standardized correlations between burnout and work engagement are -0.88 for M_2 and -0.66 for M_3 . This means that burnout and work engagement share a common variance of 77% and 44% for M_2 and M_3 , respectively. With regard to M_3 , the results correspond to those reported by Schaufeli et al. (5) who found, in a diverse sample of employees, a correlation between burnout and work engagement of -0.62 (representing a common variance of 38%).

Levels of burnout and work engagement among dentists

[TABLE 4]

[TABLE 5]

Table 4 shows the mean scores for burnout, as well as the norm scores reported in the UBOS manual. As recommended in the UBOS manual, the scores on D are presented separately for men and women. Differences between dentists' results and the figures reported in the manual were small, although the women's D score and the overall PA score were significantly higher [$t(118) = -3.01$, $P = 0.003$, and $t(486) = 5.27$, $P < 0.001$, respectively]. Table 5 shows the mean scores on the three work engagement subscales. On both DED and AB, dentists had a significantly higher score compared with the norms [$t(490) = 8.28$, $P < 0.001$, and $t(490) = 5.63$, $P < 0.001$, respectively].

Significant correlations of the three subscales with age were found (ranging between -0.11 for AB and -0.14 for VI). Interestingly, these correlations were negative, indicating a loss of work engagement with age, whereas the UWES manual reported positive correlations (ranging between 0.05 for VI and 0.17 for AB). To explore this issue further, subscale scores for each of five age groups were computed and compared (Table 6). Multivariate tests indicated significant differences for VI [$F(4) = 2.69$, $P = 0.031$], DED [$F(4) = 3.18$, $P = 0.014$], and AB [$F(4) = 2.45$, $P = 0.045$]. Considering categories 1 (dentists up to 29 yr) through 4 (up to 59 yr), within each subscale a pattern emerges of lower mean scores with higher age. Bonferroni post hoc tests indicated that these differences were significant for VI and DED, and only between the youngest dentists and dentists aged 50–59 yr (Table 6 also includes the less restrictive Tukey's Least Significant Difference post hoc results).

[TABLE 6]

Remarkably, dentists in the highest age group (60 yr and older) had UWES subscale levels that were on a par with those of the youngest dentists, although it should be noted that the highest age group consisted of only 18 dentists.

Gender differences were only present on the UBOS D scale, which concurs with results reported previously (15, 21). Differences between men and women were not found on any of the UWES scales. Again, these results differed from the findings described in the UWES manual, in which men are reported to score significantly higher on DED and AB than women (although these differences were small).

DISCUSSION

The first aim of this study was to examine the factorial validity of the UBOS and UWES measures among dentists. The results replicated the psychometric properties of the Dutch version of the MBI (or UBOS) by re-establishing the invariance of its three-factor structure when used among dentists. Furthermore, among dentists the concepts of burnout and work engagement were negatively correlated, and the psychometric properties of the new UWES questionnaire were consistent with those reported in the manual. The second aim of this study was to investigate the levels of burnout and work engagement among dentists. The absolute level of EE among dentists did not differ from the norm within general healthcare, whereas female dentists showed a significantly lower level of D, and all dentists indicated higher feelings of PA. These results were consistent with previous findings (22). Compared with the UWES norm scores, dentists were more dedicated and more absorbed in their work, although these levels seemed to decrease with age. In sum, compared with norm scores found among the general Dutch working population, Dutch dentists seem somewhat less burned out and somewhat more engaged in daily work.

Psychometric analyses of the UWES found support for a one-factor solution (given the very high value of Cronbach's alpha), but also for a three-factor solution (given the preference found in model comparison). Interestingly, the alternative model, in which PA is grouped with VI, DED, and AB in an 'enhanced' work engagement factor, and EE and D in a 'core' burnout factor (M_3), had a better fit to the data than a theoretically proposed model of work engagement and burnout. Among dentists, burnout and work engagement are negatively correlated. However, although the common variance (44%) is higher than reported by Schaufeli, more than half of the variance is unique, underscoring the usefulness of a distinct concept of 'work engagement'.

Why does PA load on the 'wrong' factor? Two main reasons can be proposed. First, it is possible that the positive phrasing of the PA items – which coincides with the phrasing of the work engagement items, but is inconsistent with the negative phrasing of EE and D – is of influence. This notion is supported by the results reported by Bouman et al. (23). Alternatively, these results could also be indicative of the awkward position of PA within the concept of burnout. Whereas D is supposed to be a consequence of EE (a notion that is supported by the high correlations between these scales that are typically found), PA is repeatedly found to have a somewhat independent role (10, 24–26).

No clear support was found for the assumption that VI and DED are the opposites of EE and D, respectively. Although the negative relationship between EE and VI was somewhat higher than the D-VI relationship, the D-DED correlation showed only minimal deviation from the EE-DED correlation. This latter result also contrasts with the particularly strong D-DED relationship reported in the UWES manual. The highest correlations were found between PA and all subscales of work engagement. This is in concurrence both with the UWES manual figures, as well as with the finding that a model of work engagement, which includes the PA subscale, best fits the data.

It is noteworthy that Dutch dentists have a generally positive working attitude. It was also interesting to find a trend of declining work engagement with higher age, although the oldest dentists again have a fairly high engagement level. The latter finding can presumably be explained by a selection effect: only the most 'engaged' dentists are still working at an old age. However, this study was restricted to the working situation of dentists in the Netherlands. Further research in other countries and occupational settings is needed to shed more light on these findings and possibly replicate and strengthen them. Additional research is also essential to extend further our knowledge of work engagement and its relationship to burnout, and it may give rise to the construction of new models in addition to the three models tested in the current study.

We hope that increased attention to the positive side of work experience will inspire a closer examination of the important correlates of the work engagement scales. Burnout research has shown that the three MBI subscales differ in their antecedents and consequences (24), and that, within dentistry, specific job demands can be identified that are associated with higher levels of work-related stress and burnout (27). In the same vein, research on work engagement can yield practical implications of the construct of work engagement. In a recent study, specific positive aspects of the dental work were specified (28). The identification and

promotion of these positive aspects can serve to enhance overall work engagement, and conceivably it will even prove to be a very practical way to prevent future burnout among dentists.

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TABLES

Table 1

Correlations between the Utrechtse Burnout Schaal (UBOS) subscales (EE, D, and PA) and the Utrecht Work Engagement Scale (UWES) subscales (VI, DED, and AB), for the current study and as reported in the UWES manual (n = 9,679)

	Current study			UWES manual		
	VI	DED	AB	VI	DED	AB
EE	-0.55	-0.46	-0.38	-0.38	-0.26	-0.15
D	-0.44	-0.50	-0.38	-0.50	-0.66	-0.46
PA	0.63	0.69	0.58	0.66	0.67	0.50

All correlations, $P < 0.01$.

AB, absorption; D, depersonalization; DED, dedication; EE, emotional exhaustion; PA, personal accomplishment; VI, vigor.

Table 2

Structural fit of one-factor and three-factor solutions of the Utrecht Work Engagement Scale (UWES)

Model	χ^2	d.f.	RMSEA	NNFI	CFI
Current study					
Null model	4990.91	105	0.53	0.0	0.0
One-factor model	622.11	90	0.12	0.87	0.89
Three-factor model	518.80	87	0.11	0.89	0.91
UWES manual					
One-factor model	10937.76	90	0.11	0.87	0.89
Three-factor model	7789.57	87	0.10	0.90	0.92

CFI, comparative fit index; χ^2 , chi-square goodness-of-fit index; d.f., degrees of freedom; NNFI, non-normed fit index; RMSEA, root mean square error of approximation.

Table 3

Measuring the fit of different models utilizing the Utrechtse Burnout Schaal (UBOS) and the Utrecht Work Engagement Scale (UWES) subscales

Model	χ^2	d.f.	RMSEA	NNFI	CFI
Current study					
M ₁	206.06	9	0.20	0.84	0.90
M ₂	178.53	8	0.20	0.85	0.92
M ₃	96.15	8	0.15	0.92	0.96
SCHAUFELI <i>et al.</i> (5)					
M ₁	451.64	18	0.16	0.72	0.83
M ₂	402.70	16	0.16	0.72	0.85
M ₃	216.29	18	0.11	0.87	0.92

Table 4

Mean scores (M) and standard deviations (SD) on the burnout subscale for dentists compared with norm scores (6, 15)

	Current study (n = 487)		UBOS manual (n = 10,552)	
	M	SD	M	SD
EE	1.75	1.07	1.81	1.00
D men	1.34	0.84	1.27	0.84
D women*	1.00	0.68	1.14	0.78
PA*	4.42	0.84	4.22	0.78

*Significantly different from norm scores ($P < 0.01$).

D, depersonalization; EE, emotional exhaustion; PA, personal accomplishment; UBOS, Utrecht BurnOut Scale.

Table 5

Mean scores (M) and standard deviations (SD) on the positive engagement subscale for dentists compared with norm scores (6, 15)

	Current study (n = 491)		UWES manual (n = 9,679)	
	M	SD	M	SD
VI	3.95	1.13	3.99	1.10
DED*	4.32	1.09	3.91	1.31
AB*	3.86	1.09	3.58	1.18

*Significantly different from norm scores ($P < 0.01$).

AB, absorption; DED, dedication; UWES, Utrecht Work Engagement Scale; VI, vigor.

Table 6

Age and engagement: differences between age categories, mean scores (M) and standard deviations (SD) for each Utrecht Work Engagement Scale (UWES) subscale

	Age category (yr)				n	M	SD
	30-39	40-49	50-59	> 60			
VI							
< 29	-0.3	-0.5*	-0.6**	-0.3	31	4.4	1.0
30-39		-0.2	-0.3*	0.0	105	4.1	1.0
40-49			-0.1	0.2	194	3.9	1.0
50-59				0.3	140	3.8	1.3
> 60					18	4.1	1.4
DED							
< 29	-0.4	-0.6*	-0.7**	-0.3	31	4.8	0.9
30-39		-0.2	-0.3*	0.0	105	4.5	1.0
40-49			-0.1	0.3	194	4.2	1.1
50-59				0.3	140	4.2	1.2
> 60					18	4.5	0.9
AB							
< 29	-0.3	-0.5*	-0.5*	-0.2	31	4.3	1.1
30-39		-0.2	-0.2	0.1	105	4.0	1.1
40-49			0.0	0.3	194	3.8	1.0
50-59				0.3	140	3.8	1.2
> 60					18	4.1	1.1

*Significant difference (Tukey's Least Significant Difference post hoc test, $P < 0.05$).

**Significant difference (Bonferroni post hoc test, $P < 0.05$).

AB, absorption; DED, dedication; n, number of subjects; VI, vigor.

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