Construct validity of the Maslach Burnout Inventory-General Survey: a two-sample examination of its factor structure and correlates

TOON W. TARIS,*†‡ PAUL J. G. SCHREURS†‡
and WILMAR B. SCHAUFELI†

†Department of Social and Organizational Psychology, Utrecht University,
PO Box 80 140, 3508 TC Utrecht, The Netherlands
‡Institute of Work and Stress, Bilthoven, The Netherlands

This research examines the construct validity of Schaufeli, Leiter, Maslach, and Jackson's (1996) general burnout measure, the Maslach Burnout Inventory-General Survey (MBI-GS) Whereas burnout is traditionally defined and measured in terms of a phenomenon occurring among workers who work with people, the MBI-GS is intended for use outside the human services. The authors first address the internal validity of the MBI-GS using data from two Dutch samples (179 software engineers and 284 university staff members) Confirmatory factor analysis revealed that the distinction among the three subscales of the MBI-GS was retained To examine external validity, these subscales were then related to selected work characteristics Based on conservation of resources theory, differential patterns of effects were predicted among the correlates and the three burnout subscales Expectations were largely supported, suggesting that the meaning of the three subscales is quite different These results largely replicate findings obtained in similar studies on the validity of the contactual version of the MBI

1. Introduction

Burnout is traditionally construed as a phenomenon occurring among professionals who work with people Maslach (1993, p 20) defines burnout as 'a psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals *who work with other people in some capacity*' (our italics). Emotional exhaustion refers to feelings of being emotionally overextended and depleted of one's emotional resources Depersonalization involves a negative, indifferent, or overly detached attitude to others (often the recipients of one's services or care) Finally, reduced personal accomplishment refers to a decline of feelings of competence and successful achievement in one's work. In line with this conceptualization, Maslach, and Jackson (1986) devised the three-scale Maslach Burnout Inventory (MBI) that measures burnout among human services professionals (the MBI-HSS, for 'Human Services Survey'). The MBI-HSS is currently the most popular instrument to assess professional burnout. Unfortunately, its use is limited to professions in which contact with other people constitutes a major part of the tasks. Many items of the MBI-HSS explicitly refer to contacts with clients, rendering it inappropriate for use in non-contactual professional contexts

To overcome this difficulty, Schaufeli, Leiter, Maslach, and Jackson (1996) developed an MBI-HSS-based instrument for the measurement of burnout in non-contactual professions

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* Author for correspondence mail t taris@fss uu nl

(the MBI-GS, for 'General Survey'). Like the MBI-HSS, the MBI-GS consists of three scales, tapping emotional exhaustion, cynicism, and reduced professional efficacy. Some of the items of the MBI-GS were directly borrowed from the MBI-HSS, whereas several other items were slightly reworded. Other items, however, were newly formulated. Contrary to the MBI-HSS, the exhaustion items of the MBI-GS are generic, they refer to fatigue, but without referring to people as the source of those feelings. Cynicism reflects indifference or a distant attitude towards work, unlike the MBI-HSS, the MBI-GS items refer to work itself and not to personal relationships at work. Finally, professional efficacy has a broader scope than personal accomplishment as measured by the MBI-HSS; it encompasses both social and non-social accomplishments at work

Whereas many studies have addressed the factor structure and correlates of the MBI-HSS (Lee, and Ashforth, 1996), as yet there is a paucity of research on the internal and external validity of the MBI-GS. Given the potential importance of the MBI-GS for research on burnout and stress in non-contactual professions, it would seem imperative, however, to critically review its properties. The current research therefore presents a validation study of the Dutch version of the MBI-GS (Schaufeli, 1995). First, the authors examine the internal validity of the MBI-GS, by systematically evaluating the models that have to date been proposed for its structure. Then the authors focus on the appropriateness of the distinction among three dimensions of burnout, by relating these to selected job characteristics

2. Internal validity of the MBI-GS

Many studies have addressed the factorial structure of the MBI-HSS. This research usually favoured a three-dimensional structure with factors corresponding to emotional exhaustion. depersonalization, and reduced personal accomplishment (Abu-Hilal, 1995, Byrne, 1993; Cordes, Dougherty, and Blum, 1997; Evans, and Fischer. 1993, Gold, Bachelor, and Michael, 1989; Golembiewski, Munzenrider, and Stevenson, 1986; Gorter, Albrecht, Hoogstraten, and Eijkman, 1999; Green, and Walkey, 1988, Kantas, and Vassilaki, 1997; Koeske, and Koeske, 1989; Lee, and Ashforth, 1990; Leiter, and Durup, 1994; Leiter, and Schaufeli, 1996; Pretorius, 1994, Schaufeli, Daamen, and Van Mierlo, 1994; Schaufeli, and Van Dierendonck, 1994, Scherer, Cox, Key, and Stickney, 1992; Soderfeldt. Soderfeldt, Warg, and Ohlson, 1996; Tang, 1998). Other studies found that a two-factor structure (with emotional exhaustion and depersonalization combined) fitted the data at least as well (Green, Walkey, and Taylor, 1991; Holland, Michael, and Kim, 1994; Schaufeli, and Van Dierendonck, 1993; Sonnentag, Brodbeck, Heinbokel, and Stolte, 1994; Walkey, and Green, 1992).

The remarkable feature of these studies is perhaps not the apparent support for the three-factor model, as the MBI-HSS was explicitly designed to measure burnout as three dimensions. What is interesting, however, is that the fit of the two-factor model often approximates the fit of the three-factor model, even in studies that ultimately preferred a three-factor solution. This finding supports current theory holding that either exhaustion results from depersonalization (Golembiewski *et al*, 1986; Golembiewski, Scherb, and Boudreau, 1993) or, conversely, that depersonalization is the result of exhaustion (Lee, and Ashforth. 1993; Leiter, 1993, Leiter, and Maslach, 1988) · whichever the causal direction, cause and effect are often strongly correlated Thus. a three-factor model for the relations among the items of the MBI-GS will fit the data better than a two-factor model in which the exhaustion and cynicism scales are collapsed, however, a two-factor model will also fit the data well.

Interestingly, one-factor models that account for the fact that the items of the MBI-HSS were generated within three (two) general domains have hardly been tested against two- or three-factor models (but see Cordes *et al.*, 1997). Therefore, the fit of such unidimensional models is assessed as well. Whereas such models might be judged to be theoretically uninteresting (Leiter, 1993), from a *practical* point of view it is important to examine whether the data are consistent with unidimensional conceptualizations of burnout Support for an unidimensional conceptualization of burnout would provide justification for using a composite burnout score, solving the practitioner's problem of drawing inferences on levels of burnout (a *unitary* construct) that are based on scores on three separate dimensions.

2 1. *Method*

2.1.1. *Samples and procedure*

The present research employed two samples. The first sample consisted of software engineers working for a large Dutch information technology company. A completed questionnaire was returned by 179 participants, yielding a 60% response rate. Their mean age was 34 8 years (SD = 6.7 years), and 93% were male. The second sample consisted of employees of the Social Sciences Department of a large Dutch university. They received a questionnaire that was similar to the one completed by the software engineers As in the first sample, 60% of the participants (*N* = 336) returned a completed questionnaire. Listwise deletion of missing values yielded a final sample of 284 participants (Mean age of the sample was 37 9 years, SD = 9.3 years, 45% male). In a companion paper to the current research, Schreurs, and Taris (1998) present detailed information about the questionnaires and the composition of the samples.

2.1 2 *Measurement of burnout*.

Feelings of burnout were assessed using the Dutch version of Schaufeli *et al* 's (1996) MBI-GS (Schaufeli, 1995). Contrary to the MBI-HSS, this instrument can be used in non-human services professions. It consists of 16 items representing emotional exhaustion (five items, e.g 'working all day is really a strain for me', 0 = 'never', 6 = 'everyday'); cynicism (five items, e.g. 'I doubt the significance of my work'), and professional efficacy (six items, e g. 'I have accomplished many worthwhile things in this job') [A slightly different version of the original item 11 (I feel exhilarated when I accomplish something at work') of the MBI-GS was used (I feel exhilarated when I can use my creativity at work') Exploratory factor analysis showed that, as expected, the reworded item loaded highly on professional efficacy Further analyses revealed that results based on a 15-item version of the MBI-GS (without item 11) were similar to those based on the full 16-item version Thus, rewording item 11 did not seem to affect results.]

2 2 *Results*

The factorial structure of the MBI-GS was examined using confirmatory factor analysis (Joreskog, and Sorbom, 1993) Seven a priori models that might account for the relations among the items of the MBI-GS were specified and fitted to the data (MacCallum, Roznowski, and Necowitz, 1992) The fit of these models is compared, and the best-fitting model is accepted as the model that best approximates the mechanism that generated the data. Although this confirmatory' procedure improves significantly on traditional 'exploratory' factor analysis, the danger of capitalization on chance remains present. Thus, cross-validation of results remains desirable. Model fit was assessed using the χ^2 test, as well

Table 1 Comparison of the fit of seven models for the relations among the items of the MBI-GS (Dutch version)

| Sample | | Software engineers, $N = 179$ | | | | | | University staff, $N = 284$ | | | | | |
Model	df	χ^2	p	NNFI	RFI	RMR	GFI	χ^2	p	NNFI	RFI	RMR	GFI
1 One factor	104	329.6	< 001	86	81	12	90	404 5	< .001	89	86	10	93
2 One factor, two clusters of correlated errors	44	43 5	50	1.00	.94	04	99	28 1	.97	1 01	.99	03	99
3. One factor, three clusters of correlated errors	64	59 9	62	1.00	94	05	98	64 1	47	1 00	96	04	99
4 Two factors, orthogonal	104	667 8	< 001	65	.61	17	80	1015 5	< 001	47	64	16	82
5 Two factors, oblique	103	267 0	< 001	90	84	11	92	267.2	< 001	94	91	08	95
6 Three factors, orthogonal	104	838.7	< 001	55	51	19	75	1528 8	< 001	48	47	20	73
7 Three factors, oblique	101	136.1	.01	98	93	08	96	173 4	< .001	97	.94	07	97

as the goodness-of-fit index (GFI), the root mean squared residual (RMR), Bentler, and Bonett's (1980) non-normed fit index (NNFI), and Bentler's (1990) Relative Fit Index (RFI); the latter two indexes are relatively insensitive to sample size.

2.2.1. *Models* first model to be tested (Model 1) is a one-factor model, assuming that burnout is an unitary latent variable. All items load on the same latent dimension, and no corrections are made for the fact that these were generated within distinct domains. Models 2 and 3 are identical to Model 1, except that these models acknowledge that the items were generated in two (Model 2: exhaustion/cynicism versus professional efficacy) or three (Model 3) different domains. Greater inter-item correlations are expected within each of those domains than across these domains. Hence, Models 2 and 3 include a specification of correlated errors, that is, shared domain-specific variance within each of the two (three) domains. By accounting for this shared domain-specific variance by allowing the errors of items to correlate, Models 2 and 3 should fit the data better than Model 1, while still emphasizing the unitary character of the burnout concept

Alternatives to these unitary models are models with two (three) orthogonal or two (three) correlated factors, corresponding to the two (three) domains within which the items were generated. Model 4 is an orthogonal two-factor model; factors correspond to exhaustion/cynicism versus professional efficacy. Model 5 is the oblique version of Model 4 Model 6 is an orthogonal three-factor model; Model 7 is identical to Model 6, except that it allows for correlations among the three factors. Note that Model 7 and, to a lesser degree, Model 5 received most support in previous research

2.2.2. *First-order factor analyses*: Table 1 summarizes the results of the confirmatory factor analyses. Clearly, the one-factor model without a specification of correlated errors (Model 1) could not be retained, suggesting that any acceptable model must incorporate the fact that the items were sampled from a limited number of domains Model 2 recognized two such domains (professional efficacy versus cynicism/exhaustion), whereas Model 3 in addition distinguishes between cynicism and exhaustion. These models fitted the data about equally well, as judged from the NNFI and RFI. However, as Model 3 is considerably more parsimonious than Model 2 (Model 3 has 20 degrees of freedom (df) extra), Model 3 is preferred to Model 2.

As in previous studies, the orthogonal two- and three-factor models (Models 4 and 6) could not be retained, indicating that the relationships between the two (three) factors were too important to be ignored. Although the oblique two-factor model (Model 5) fitted the data quite well in both samples, the oblique three-factor model (Model 7) improved strongly on this model. At a loss of 2 df, the oblique three-factor model resulted in decreases of 130.9 and 93.8 χ^2 points ($p < .001$) compared to the oblique two-factor model. Indeed, Model 7 approximated the good fit of Model 3, whereas it needed 37 df less.

At this point the authors concluded that a three-factor specification (whether made explicit, as in Model 7, or less so, as in Model 3) accounted best for the data. Table 2 presents the zero-order correlations among the three scales of the MBI-GS, their means, standard deviations, and reliabilities (Cronbach's α). Table 2 shows that the reliabilities of the scales were acceptable (ranging from 69 to .87). Confirmatory factor analysis revealed that there were considerable differences between the two covariance matrices, χ^2 with 6 df was 20.46, $p < .01$. However, this was due to the fact that the variance of professional efficacy was larger for the university staff than for the software engineers. Estimating this element of the covariance matrix separately for each sample resulted in a χ^2 value of 9.32 with 5 df, $p = 10$. Thus, the relations among the three scales were largely invariant across samples

Table 2   Correlations among the three burnout variables, means, standard deviations, and scale reliabilities (correlation matrix—upper half = university staff. lower half = software engineers)

| Variables | (1) | (2) | (3) | Software engineers | | | University staff | | | |
				M	SD	α	M	SD	α	T‡
1 Emotional exhaustion	1 00	52**	.38**	1 89	1.00	87	1 46	87	86	4 88**
2 Cynicism	.43**	1.00	42**	1 74	1.00	.74	1 55	96	72	2 04*
3 Professional efficacy†	.22**	37**	1 00	3 54	.47	69	3.25	82	.73	4.31**

*p < 05; **p < 001.
†Reversed
‡Multivariate $F(3,459) = 4\ 81, p < 01$

Table 2 shows that the means of all three variables differed significantly across samples, multivariate $F(3,459)$ was 4.81, $p < 01$. The software engineers were on average more subject to feelings of exhaustion ($M = 1.89$ and 1.46, respectively, $T = 4\ 88$, $p < .001$), cynicism ($M = 1.74$ and 1.55, $T = 2.04$, $p < .05$), and reduced professional efficacy ($M = 3.54$ and 3 75, respectively, $T = 3.25$, $p < .001$) than the university staff Thus, whereas the factorial structure of the MBI-GS is comparable for both occupational groups, their mean scores differ significantly. Score levels, however, may vary with professional context (Soderfeldt *et al.* 1996).

2.2.3. Second-order factor analysis

A three-factor specification (either implicit, as in Model 3, or explicit, as in Model 7) accounted best for the relations among the items of the MBI-GS. A second-order CFA was conducted to examine the degree to which the three subscales tapped the same underlying dimension As burnout is considered to be a syndrome that manifests itself in three substantive domains, this analysis was expected to reveal that the three scales corresponding with these domains loaded substantially on the same latent factor. Empirically speaking, the fit of this model cannot be distinguished from the fit of the oblique three-factor model (Model 7 in table 1) The main advantages of this model specification are (1) that it is a more appropriate 'translation' of the expected relations among the subscales of the MBI-GS; and (2) that it 'converts' the intercorrelations among the three latent subscales in factor loadings, yielding more insight in the degree to which the three subscales measure the same latent construct than can be obtained by inspecting the intercorrelations among the scales.

The loadings of the three latent subscales on the second-order factor were quite comparable across samples. For exhaustion the authors found a standardized loading of .59 for the software engineers, compared to .72 for the university staff ($p < .001$). The corresponding loadings were .74 (.68) for cynicism, and .86 (.89) for professional efficacy, respectively (all p's $< .001$). Thus, whereas all three subscales loaded substantially on the same latent dimension, professional efficacy seemed somewhat more important than the other two scales.

2.3. Discussion

The factorial structure of the MBI-GS was examined in two samples. Eight models were evaluated using confirmatory factor analysis. These models fitted the data reasonably well, provided that they (1) accounted for the fact that the items were generated within two

(three) substantive domains, and (2) acknowledged that these domains were strongly related This is in line with previous research; models for the relations among the items of the MBI-HSS do not fit the data, unless these criteria are met

As in earlier research on the MBI-HSS, the oblique two-factor model did not fit the data as well as the oblique three-factor model. However, the one-factor models that included a specification of correlated errors to account for the shared domain-specific variances fitted the data even better than the oblique three-factor model In this light it was revealing to note that the three subscales all loaded quite substantially on the same latent second-order factor. Thus, whereas there are substantial conceptual and empirical differences among the three burnout subscales, the scores on these subscales apparently reflect the same underlying phenomenon. This finding is compatible with Maslach, and Jackson's (1986) original conceptualization of burnout as a three-dimensional syndrome

This result has important conceptual implications. Current theory and research tends to emphasize the differences among the three burnout dimensions, up to the point where it seems more appropriate to think of burnout as three separate concepts, rather than as a unitary phenomenon that becomes manifest in different domains (Golembiewski *et al*, 1986; Lee, and Ashforth, 1996; Leiter, 1993; Maslach, 1993). The present findings suggest that this tendency is at least partly due to past failure to evaluate one-dimensional models with appropriate corrections for shared domain-specific variances The modified one-factor models evaluated here all accounted for the empirical and theoretical distinctions among the burnout dimensions, without neglecting the fact that these dimensions have much in common.

It would seem that the choice for either conceptualization (either emphasizing the differences between the three domains versus stressing what they have in common) is largely a matter of purpose In practical applications of the MBI-GS (and, possibly, the MBI-HSS as well), where subtle theoretical differences between the three domains are considered less important (e g. when large samples are screened for experienced work stress), a unidimensional conceptualization may be more appropriate (and certainly more feasible) than a multidimensional conceptualization That is, the scores on these dimensions may be combined into a single burnout score by summing the scores on the three burnout dimensions (preferably after standardization of the three scores, to eliminate differences in range and means) For scientific purposes, however, such an approach would seem to be unacceptable. Much of the more interesting research in this field focuses on the relations among burnout and antecedent and posterior variables, and for that purpose a multidimensional approach would seem much more productive and illuminating than a unidimensional conceptualization.

3. External validity of the MBI-GS

In the remainder of this paper the authors build upon the former results by conceptualizing burnout as a three-dimensional concept. The authors seek support for the distinctions among the three scales by examining their correlates If these distinctions are warranted, the three scales should be differentially related to other variables. However, if the pattern of relations to other variables would largely be the same for any pair of dimensions, the distinction between these would seem to be empirically superfluous.

The correlates of the three dimensions of the MBI-GS are examined in the context of Hobfoll's Conservation of Resources (COR) theory (Hobfoll, and Freedy, 1993; Hobfoll, and Shirom, 1993) Basically, COR theory assumes that people strive to obtain and maintain that which they value (their 'resources') Negative outcomes (such as burnout) are

likely to occur when valued resources are lost or threatened, are inadequate to meet demands, or do not reap the anticipated level of return. Major work demands include role ambiguity, work pressure, and work load, whereas major resources include control, participation in decision making, and job autonomy (Lee, and Ashforth, 1996). Leiter, and Maslach (1988) considered work demands and resources as potential sources of job stress, as in Lazarus, and Folkman's (1984) stress–strain–coping self-evaluation process. Exhaustion (a form of strain) would be directly affected by job demands and resources; depersonalization (a way of coping) and personal accomplishment (a form of self-evaluation) would be indirectly affected by job demands and resources, via exhaustion. Leiter, and Maslach's (1988) expectations were partially supported, leading Leiter (1993) to propose a more complicated model in which the demand and resource variables are differentially associated with the three burnout dimensions.

In Hobfoll, and Freedy's (1993) view, job demands trigger strain in the form of exhaustion, whereas resources would help to overcome the need for defensive coping and enhance one's self-efficacy. If these ideas are sound, the relation between job demands and exhaustion should be strong, whereas job resources in turn should be strongly related to depersonalization and personal accomplishment. These ideas were tested in Lee, and Ashforth's (1996) meta-analysis on the relations between the three dimensions of the MBI-HSS and other variables. Their results revealed that exhaustion was strongly associated with the demand correlates, whereas the correlations with job resources were somewhat lower Depersonalization was correlated with both resources and demands, although the meta-analytic correlations for the resources were lower than for the demands. Finally, personal accomplishment was largely uncorrelated to job demands and job resources, although if significant correlations were found, these concerned job resources rather than demands. Lee, and Ashforth (1996) concluded that their results were reasonably in line with the expectations derived from COR theory.

COR theory was used to generate explicit hypotheses on the differential patterns of effects between the three burnout subscales on the one hand, and selected job characteristics on the other. The three work characteristics in this study were taken from Karasek's (1979, 1985) job demand-control (JDC) model. According to this model, negative work outcomes can be expected if job demands are high, or when the worker's control over his job is low Further, the model assumes that the simultaneous occurrence of high job demands and low worker control results in more negative work outcomes than the additive negative effects of these factors separately (the 'demand-control interaction hypothesis'), but this interaction effect seems a fickle phenomenon (De Jonge, and Kompier, 1997). Like COR theory, the JDC model predicts that high job demands and low worker control will result in negative work outcomes Contrary to COR theory, however, it does not specify *how* particular work and health outcomes are affected by independent variables. In this sense, COR theory encompasses the JDC model, extending it by allowing for a more precise specification of hypotheses on the differential effects of job demands and worker control on work outcomes

Figure 1 presents a heuristic representation of the model to be tested. Job demands are positively related to exhaustion, but not to cynicism and professional efficacy. The two 'resource' variables in Karasek's (1979) demand-control model (decision authority and skill discretion) are expected to have negative effects on cynicism (more resources lead to less feelings of cynicism), and positive effects on professional efficacy (more resources result in more efficacy). Further, figure 1 shows that the independent variables are assumed to be mutually correlated. As the relations among these variables are of no particular interest here, no hypotheses are formulated on their strength or direction Finally, COR theory
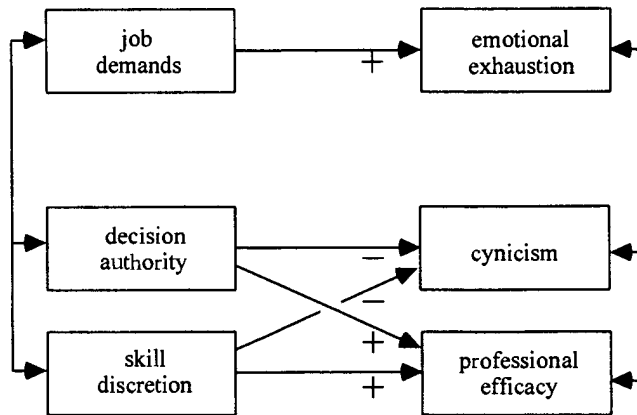
Figure 1 Heuristic model for the structural relations among resource variables (decision authority and skill discretion), job demands, and the three burnout scales In the analyses, this model is complemented with age, gender, and number of years the respondent is working for the organization. The ' + ' and ' − ' signs refer to the expected direction of the effects

predicts that once resource loss occurs, cycles of loss may follow. If allowed to continue, they will increase in strength and breadth This implies that initially only one component may appear, but that over time burnout will range out in breadth and speed including all three burnout components. Thus, there may be substantial associations among the three components of burnout. Consequently, the three burnout scales were left free to covary.

The second part of this research extends and enhances previous work in at least three respects. First, the validity of the distinction among three burnout subscales is tested. Second, it demonstrates that COR theory encompasses and extends Karasek's (1979) demand-control model by offering explicit hypotheses about the differential relations of the three burnout subscales to the antecedent demand-control variables. Third, it aims to identify the unique contributions of the demand-control variables to the explanation of exhaustion, cynicism, and professional efficacy, rather than to present bivariate correlations. As Leiter (1993) notes, demands and resources are not independent: the stress literature tends to define resources and demands in circular terms (Lazarus, and Folkman, 1984). Thus, work environments that are overly demanding usually offer insufficient resources as well (Leiter, 1993, p. 245). If this is correct, the theoretically malfitting large correlations between the resource variables and exhaustion reported by Lee, and Ashforth (1996) may diminish after controlling job demands.

3.1. *Method*

3.1.1. *Measures* Apart from the MBI-GS, the participants in this study completed a 13-item Dutch adaptation of Karasek's (1985) Job Content Questionnaire. Six items tapped the skill discretion construct. The reliability of this scale (Cronbach's α was .75 for the software engineers, and .76 for the university staff. Three items measured decision authority (α was 69 for the software engineers, and .63 for the university staff). Finally, four items measured job demands (α was .78 for the software engineers and .89 for the university staff). In Karasek's original conceptualization (Karasek, 1979, 1985), skill discretion and decision authority are combined into the overarching concept of 'decision latitude', measuring 'the working individual's potential control over his tasks and his conduct during the working day' (Karasek, 1979, p 289). As there is considerable doubt whether this practice is
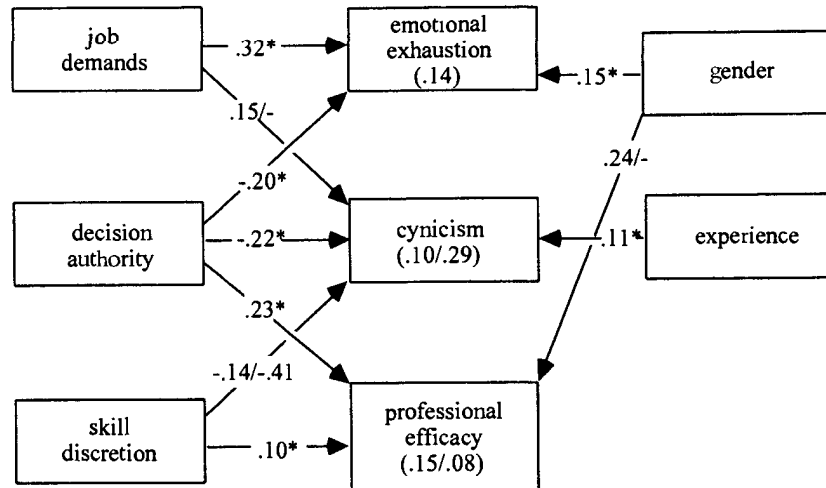
Figure 2   Maximum likelihood estimates for the structural effects in the final model, as computed across both samples simultaneously First estimate: university staff, second estimate software engineers (only if significantly different across groups). * = estimate constrained across groups All effects significant at $p < .01$ or better.

warranted (Fletcher, and Jones, 1993; Ganster, and Fusilier, 1989; Schreurs, and Taris, 1998; Wall, Jackson, Mullarkey, and Parker, 1996), the distinction between skill discretion and decision authority was retained.

Further, the analysis included three background variables; the respondent's age and gender, as well as the number of years the respondent had been working for the organization (experience), respectively. These variables served as control variables, since they are systematically related to burnout (Schaufeli, and Buunk, 1996).

3.2.   Results

The data were analysed using structural equation modelling (Jöreskog, and Sorbom, 1993). Preliminary data analysis revealed that the demand–control interaction effect was not supported in either sample (Schreurs. and Taris. 1998). Then the model presented in figure 1 was examined. For both samples, this model was extended with effects of gender, age, and the number of years one had been working for the organization on all three burnout subscales The model was fitted across both samples simultaneously using the LISREL multiple group option. One advantage of this procedure is that parameters are computed across groups, increasing the power of the tests. Further, one can test whether parameter estimates differ across groups, reducing the risk of capitalizing on chance.

The model presented in figure 1 fitted the data badly, χ^2 with 25 df was 91.97, $p < .001$, NNFI = .77, RFI = .71, RMR = .08, GFI = .94 Inspection of the modification indices revealed that in both samples there was a strong effect of decision authority on exhaustion. Further, the strength of the effect of skill discretion on cynicism differed across groups After the corresponding amendments were made to the model and after stepwise deletion of non-significant effects, the final model yielded an acceptable χ^2 value of 37 64 with 28 df, $p = .11$, NNFI = .97, RFI = .90, GFI = .97, RMR = .05. Figure 2 presents the structural parameter estimates in a path diagram.

As expected, job demands were systematically related to exhaustion (a standardized effect of .32). Furthermore, for the university staff there was a small effect of job demands on

cynicism (.15). Decision authority affected all three burnout dimensions, whereas the magnitude of these effects was about the same (ranging from − .20 for exhaustion to .23 for professional efficacy) Thus, contrary to the authors' expectations, this resource variable was *not* more strongly related to professional efficacy and cynicism than to exhaustion. For the second resource variable, skill discretion, the authors' found the expected effects on professional efficacy (the more skill discretion, the higher the respondents' efficacy) and cynicism (cynicism was lower with increasing skill discretion). The latter effect was considerably stronger for the software engineers (− .41) than for the university staff (− 14) Finally, women suffered from more feelings of exhaustion and lack of professional efficacy than did men, whereas experienced employees were more cynical than less experienced employees.

Figure 2 does not present the estimates for the relations among the independent variables These were equal to the correlations among these variables, note that these were left free to vary across groups Neither does figure 2 present the estimates for the relations among the three burnout variables These were constrained across groups. The latent correlation between exhaustion and cynicism was 40, between exhaustion and professional efficacy the correlation was − 27, and the correlation between cynicism and professional efficacy was − .31 (p < .001). Finally, the proportions of explained variance were generally quite low (ranging from 8% for professional efficacy to 29% for cynicism, both for the software engineers; median value 14%).

3 3. *Discussion*

The research described in the second part of this paper served three goals First, the authors examined the validity of the three-factor model for the relations among the items of the MBI-GS As expected, the three subscales were differentially correlated to the other variables in this study. Job demands were more strongly related to exhaustion than to cynicism or professional efficacy. Both cynicism and professional efficacy were related to the two resource variables, but only cynicism was affected by experience, whereas only professional efficacy was linked to gender. This pattern of effects is very similar to those obtained by Lee, and Ashforth (1996) As expected, the pattern of correlates was rather similar for professional efficacy and cynicism, but in the first part of this research it has already been shown that the correlations among the sets of items tapping these two dimensions were too low to consider these as measuring the same factor. Thus, it appears that the often-reported three-dimensional structure of the MBI-HSS was replicated for the MBI-GS.

Second, the authors intended to identify the unique contributions of the demand-control variables to the explanation of the three burnout dimensions. To this aim, the correlates of the three burnout dimensions were examined in the context of a structural equation model, thus allowing for identification of the unique contributions of each independent variable to the explanation of a particular dependent variable The resulting pattern of effects was more supportive of COR theory than the meta-analytic correlations reported by Lee, and Ashforth (1996) in that exhaustion was hardly affected by the two resource variables; only in the sample of software engineers was there an effect of decision authority on exhaustion

Finally, the authors addressed the relations between COR theory and Karasek's (1979) JDC model. It was shown that the demand-control model and COR theory led to similar hypotheses on the direct effects of job demands and worker control on mental health. However, COR theory allowed for a more explicit specification of the presumed pattern of effects of the independent variables on different outcome variables. In this sense, COR

theory appears simultaneously to be more general (i e. applying to a wider range of explanatory variables) and more specific (allowing for more precise hypotheses regarding the effects of these variables) than the JDC model.

4. Overall discussion

The current research was designed as a validation study of the MBI-GS of Schaufeli *et al.* (1996). In the first part of this research the internal validity of the MBI-GS was examined The previous findings on the factor structure of the MBI-HSS for two different occupational groups were replicated. Unidimensional conceptualizations of burnout (a second-order factor model, or models with appropriate corrections for the fact that the items were sampled from two/three substantive domains) were found to fit the data at least as well as (or even better than) the often-preferred oblique three-factor model. Furthermore, these models correspond very well with the theoretical notions that underlie Maslach, and Jackson's (1986) conceptualization of burnout as a unidimensional phenomenon that becomes manifest in several substantive domains.

The main advantage of a unidimensional specification in comparison to a three-factor specification is that the first approach emphasizes what the three dimensions of burnout have in common (i.e. that they are all the manifestation of a common underlying phenomenon), whereas the second emphasizes the differences among these dimensions. Theoretically interesting as such differences may be, the results suggest that from a practical point of view it is perfectly possible to consider burnout as a *uni*dimensional concept This implies that a quick impression of the degree to which a person suffers from burnout can be obtained from inspection of the overall burnout score, rather than to consider and interpret the scores on three separate dimensions. For other purposes, however, the three-dimensional conceptualization appears to be more appropriate.

In the second part of this research the external validity of the MBI-GS was addressed. It was found that (1) the pattern of correlates was different for each of the three burnout dimensions, supporting the distinction among these; (2) these patterns of correlates could be predicted quite well using COR theory; and (3) the predictions generated by COR theory were more specific than those derived from Karasek's (1979) job demand-control model. As such, these findings underline the significance of the conceptual differences among the dimensions of the MBI-GS, simultaneously illustrating the power of COR theory for the study of work and work-related health outcomes

Three limitations of this research are worth mentioning One of these derives from the fact that the current results were based on cross-sectional data sets. Thus, strictly speaking it is inappropriate to speak of job demands and resources 'affecting' the three burnout dimensions all that has been shown is that the pattern of effects is consistent with theoretical notions regarding the temporal order of the variables.

A related limitation is that the authors did not deal with the temporal order of the dimensions of the MBI-GS. The two major theories in the field (Golembiewski *et al.*'s 'phase' theory, 1993, and Leiter's, 1993, approach) yield quite contradictory predictions regarding the temporal development of burnout Thus, it seemed inappropriate to impose a particular temporal (causal) order on the three dimensions of the MBI-GS. Only longitudinal research can resolve this issue.

Finally, the independent variables explained relatively little of the variance of the dependent variables (8 to 29 %) This suggests that important explanatory variables (such as personality variables, coping styles, job-related variables such as job level, supervisor and co-worker relations, number of hours worked, and the like) have been omitted from the

model, and that the results reported here could have been different if such variables had been included in the analyses. Thus, the results should be judged with caution, keeping in mind that this study included a limited number of explanatory variables

Despite these shortcomings, the authors believe that these results provide interesting insights in the relations among work characteristics and health-related outcomes The results reported here, albeit with limitations, have theoretical and practical implications for future research on burnout. As indicated above, under particular circumstances a simple unidimensional conceptualization of burnout may be as good as (and often more convenient than) the original three-dimensional operationalization Further, the results underline the potential of COR theory for the study of work and health. Further work within this theoretical framework, examining the effects of more diverse outcome and antecedent variables and, possibly, encompassing other specific theories, may contribute to further development of the field. Finally (and perhaps most importantly), the results reported here provide strong evidence for the internal and external validity of Schaufeli et al.'s (1996) non-contactual version of Maslach, and Jackson's (1986) MBI Thus, it appears that burnout can validly be measured across a range of different occupations, despite the qualitative differences between contactual and non-contactual professions. The strong resemblance between both versions of the MBI ensures maximum comparability (and, indeed, generalizability) of results obtained for one occupational group to another

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