Anxiety, Stress, and Coping, Vol 13, pp 247–268
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USING EQUITY THEORY TO EXAMINE THE DIFFERENCE BETWEEN BURNOUT AND DEPRESSION

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(Received in final form 20 September 1999)

This study among a sample of 154 Dutch teachers examines the discriminant validity of burnout and depression, as measured by the Maslach Burnout Inventory (MBI) and the Center for Epidemiologic Studies Depression Scale (CES-D), respectively. Confirmatory factor analyses show that burnout can be statistically discriminated from depression. Results corroborate the three-factor structure of the MBI and partly confirm the four-factor structure of the CES-D. Furthermore, results of structural equation modeling analyses show that a lack of reciprocity in the relationship with one's partner predicts depression (and not burnout), and that a lack of reciprocity in the relationship with students predicts burnout (and only indirectly depression). These findings are consistent with equity theory, and confirm the central hypothesis that burnout is work-related, whereas depression is context-free

Keywords Burnout; Depression, Reciprocity; Teacher

According to Warr (1987), depression may be conceived as context-free affective well-being, whereas burnout concerns job-related affective well-being. Thus, whereas depressive individuals may experience a loss of energy at work *as well as* during leisure time, burned-out individuals presumably experience a similar loss of energy primarily at work.

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The latter group may still be happy and productive in other spheres of life, though. However, despite this presumed difference, many dysphoric symptoms of burnout, including fatigue, distancing, irritability, difficulty relaxing off work, and feelings of diminished enthusiasm, may be typical for depression as well. Indeed, questions have been raised regarding the extent to which burnout can be distinguished from depression (Schaufeli and Buunk, 1996, p. 316). The primary aim of the present study among teachers is to clarify the distinction between both concepts by using equity theory (Adams, 1965; Walster *et al.*, 1978).

BURNOUT AND DEPRESSION

Burnout has been described as a specific kind of occupational stress reaction among human service professionals, that is, as a result of the demanding and emotionally charged relationships between professionals and their recipients (Maslach and Jackson, 1986). More specifically, burnout is defined as a multi-faceted syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, 1993). Emotional exhaustion refers to energy depletion or the draining of emotional resources. Depersonalization refers to the development of negative, cynical attitudes toward the recipients of one's services. Lack of personal accomplishment is the tendency to evaluate one's own work with recipients negatively, an evaluation that is often accompanied by feelings of insufficiency and poor self-esteem.

Burnout is a major problem among teachers. Based on a thorough review of the literature, Farber (1991, pp. 37–44) concluded that depending on the type of school and the way of assessment, between 5% and 20% of all American teachers is burned-out. In addition, another 30–35% is strongly dissatisfied with the teaching profession. Ample evidence suggests that burnout among teachers is related to psychosomatic complaints and illnesses such as headaches, sleep disturbances, and gastroenteritis (Belcastro *et al.*, 1982), psychological symptoms such as depressed mood, anxiety, and somatization (Greenglass *et al.*, 1990), and to behavioral stress-reactions such as increased consumption of alcohol and cigarettes (Siedman and Zager, 1991).

In contrast to burnout, depression can be the result of all kinds of negative life events and life traumas (Bouma *et al.*, 1995). Depression

is usually a reaction to a serious event with which an individual cannot cope adequately. This event may take place in the context of the family, close personal relationships or in the context of work. The symptoms of depression comprise fatigue, social withdrawal, and feelings of failure (Beck, 1970; Beck *et al.*, 1988). Leiter and Durup (1994) have argued that the emotional exhaustion component of burnout is comparable to the sadness and fatigue symptoms of depression, and that depersonalization implies social withdrawal. In addition, they observed that: "Depression includes an element of poor self-efficacy or learned helplessness (Abramsen *et al.*, 1978), that shares features with the burnout concept of reduced personal accomplishment" (Leiter and Durup, 1994, p. 359). It is therefore not surprising that research has shown that measures of depression and burnout are correlated (e.g., Glass *et al.*, 1993; Maslach and Jackson, 1986; Meier, 1984).

Research on the discriminant validity of burnout and depression shows that particularly the emotional exhaustion component of burnout is related to depression. Based on 12 studies, Schaufeli and Enzmann (1998; p. 86) calculated that the latter concepts share on an average 26% of their variance. The relationships between depression on the one hand, and depersonalization and personal accomplishment on the other hand are much weaker, sharing 13% and 9% of their variance, respectively. It is unlikely that the overlap between emotional exhaustion and depression is due to overlap in item content of the scales used, since factor-analytic studies show that different burnout and depression factors emerge when the items of the burnout and depression instruments are pooled (e.g., Leiter and Durup, 1994; McKnight, 1993). In addition, the fact that depression is differently related to the three burnout dimensions underscores the validity of a distinctive burnout syndrome (cf. Schaufeli *et al.*, 1993). Recently, Glass and McKnight (1996) concluded their review of studies on burnout and depression stating that: "Burnout and depressive symptomatology are not simply two terms for the same dysphoric state. They do, indeed share appreciable variance, especially when the emotional exhaustion component is involved, but the results do not indicate complete isomorphism. We conclude, therefore, that burnout and depressive symptomatology are not redundant concepts" (p. 33).

The first aim of our study is to investigate the discriminant and factorial validity of burnout and depression – as measured by two popular

self-report questionnaires – by using confirmatory factor analyses to test models with different factor structures. On the basis of the literature, we predict that burnout consists of three related, but empirically distinct components, namely emotional exhaustion, depersonalization, and (reduced) personal accomplishment that can be distinguished from the four components of depression, namely somatic-retarded activity, depressed affect, positive affect and interpersonal affect (Hypothesis 1). The items of the subscales underlying burnout and depression will be examined simultaneously in one factor-analysis, because such a procedure enables a more stringent examination of the discriminant validity of the two syndromes than a correlational analysis of the dimensions underlying the two syndromes (e.g., Maslach and Jackson, 1986).

LACK OF RECIPROCITY AND BURNOUT/DEPRESSION

The present study also contributes to the discussion about the discriminant validity of burnout and depression on a theoretical level by utilizing principles derived from equity theory (Adams, 1965; Walster *et al.*, 1978). Thus, in addition to a *psychometric* approach that focuses exclusively on the discriminant validity of both constructs (as in Hypothesis 1), the current study takes a *theoretical* stance and attempts to show that differential etiological factors may be involved in both negative conditions. According to equity theory, people evaluate their relationships with others in terms of investments and outcomes. A central proposition is that people have a deeply rooted tendency to pursue reciprocity in interpersonal relationships, and that they feel distressed if they perceive these relationships as inequitable (Walster *et al.*, 1978). Recently, Buunk and Schaufeli (in press) argued that reciprocity is a universal and evolutionary rooted psychological principle that increased the likelihood of our ancestors' survival in the evolutionary past. Equity or reciprocity exists when a person's investments and outcomes in a relationship are proportional to the investments and outcomes of the other person in the relationship (Adams, 1965), or when a person's own investments equal his or her own outcomes (Pritchard, 1969).

How important is equity for teachers, the participants in this study? One may argue that the relationship between teachers and their students

is out of balance by its very nature, because teachers are supposed to give, whereas students are supposed to receive. Blau's (1964) social exchange theory suggests that even in such a relationship equity theory's propositions will hold. At a conceptual level, Blau argues that individuals in high power positions expect deference and gratitude from those in low power positions. Deference and gratitude are exchanged for the services of the powerful in order to preserve equity in an otherwise lopsided relationship. In the relationship with students, teachers' investments may include – for example – their enthusiasm and effort. These investments are reciprocated when students react with gratitude, or when there exists a good classroom atmosphere, for example. Investments are not reciprocated when students are inattentive, disrespectful, and bored. If this lack of reciprocity turns into a chronic condition, whereby teachers continuously give more than they receive in return, it may eventually deplete teachers' emotional resources, and thus foster the development of the burnout syndrome (see also Farber, 1991). Blase (1982, 1986) gives vivid examples of this process of emotional draining: "When I first started teaching, I was excited ... I would try all kinds of things to make the class interesting. I was learning, growing myself ... Teaching drains you! I've lost a lot of my enthusiasm for the profession. It's hard to keep up a facade of excitement when so many kids and parents don't give a damn about education". Indeed, recent studies showed a positive relationship between perceptions of a lack of reciprocity and burnout among teachers (Van Horn *et al.*, 1999), and several other occupational groups, including nurses (Schaufeli *et al.*, 1996; Van Yperen *et al.*, 1992), and general practitioners (Bakker *et al.*, 1999; Van Dierendonck *et al.*, 1994).

Equity theory (Adams, 1965; Walster *et al.*, 1978) is a *general* social exchange theory which is not limited to the occupational field. Indeed, Glass and Fujimoto (1994) have shown that a lack of reciprocity in the relationship between spouses regarding household labor is positively related to depressive symptoms. Moreover, Scafer and Keith (1980) found that husbands and wives who felt that there was equity in the performance of marital roles were less depressed than those who felt under- or overbenefited (see also Sinclair and Mark, 1991). Accordingly, the second aim of our study is to investigate the relationship between lack of reciprocity in occupational

and intimate relationships on the one hand and burnout and depression on the other hand.

MODEL SPECIFICATION

Figure 1 displays a schematic presentation of our theoretical model. First, burnout and depression are included in the model as latent factors. Three burnout components (emotional exhaustion, depersonalization and personal accomplishment) and four depression components (somatic-retarded activity, depressed affect, positive affect and interpersonal affect) are included as manifest variables that are directly observed. In this study, we will examine the factorial validity of burnout and depression before the underlying dimensions are included in the structural equation model (cf. Jöreskog and Sörbom, 1993). Hypothesis 1 states that burnout consists of three related, but empirically distinct components that can be distinguished from the four components of depression in a confirmatory factor analysis. The reason to include these components as structural variables in the model was to limit the total number of relationships to be estimated. A more conservative strategy would be to test both the measurement and

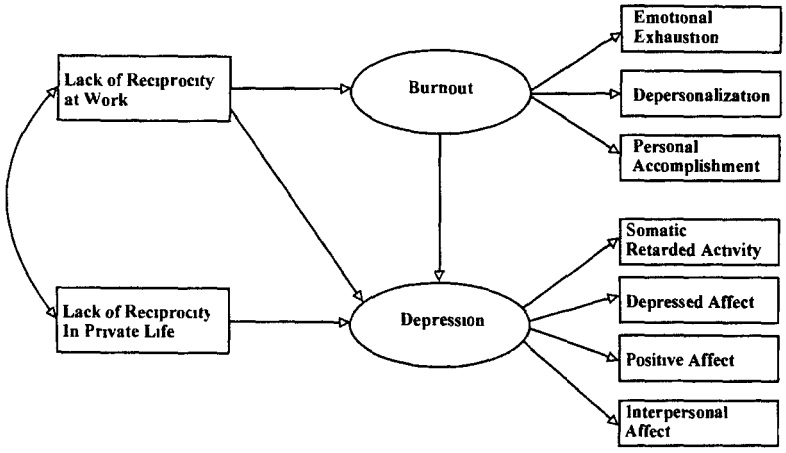

FIGURE 1 Integrated model of reciprocity, burnout, and depression.

structural model together in one SEM-analysis. However, in the current study, such a model would include 40 manifest variables, and a simultaneous consideration of all these variables would result in under-identification problems and insufficient power of the results (cf. Bentler and Chou, 1987). Lack of reciprocity at work and in private life are also included in the model as manifest variables in order to further reduce the number of parameters to be estimated.

Second, different "predictors" of depression and burnout are distinguished in our model. Maslach and Schaufeli (1993) have argued that a "real" depression is characterized by a generalization of an individual's symptoms across all spheres of life, whereas burnout is situation- (job-) specific rather than pervasive (see also Warr, 1987). On the basis of this contention, we hypothesize that a lack of reciprocity at work (in the relationship with students) is predictive of both burnout and depression, and that a lack of reciprocity in private life (in the relationship with one's partner) is predictive of depression, but not of burnout (Hypothesis 2).

Third, we expect a positive relationship between lack of reciprocity in private life and lack of reciprocity at work. It is well conceivable that there exist individual differences in people's tendency to evaluate their relationships with others in terms of investments and outcomes and to pursue reciprocity. Finally, on the basis of earlier research (see Schaufeli and Enzmann, 1998, pp. 86, 87), we expect a positive relationship between burnout and depression. As a study among nurses has suggested that burnout leads to depression instead of the other way around (Glass *et al.*, 1993), we predict that burnout has a positive effect on depression (Hypothesis 3).

METHOD

Participants

The participants in this study were 86 male (56%) and 68 female (44%) Dutch high-school teachers, from a large number of different schools. Their mean age was 44 years (SD = 9). The average number of years working experience in teaching was 19 years (SD = 9.5), of which an average of 13.5 years (SD = 9) was acquired at the present school.

The mean number of students to teach was 23 (SD = 6). At the time of the study, most participants were involved in an intimate relationship: 63% were married, 16% were cohabiting, and 3% were "living apart together" (LAT-relationship). Unfortunately, we do not know how many and what type of schools are included in our study, because this was not systematically recorded.

Procedure

Participants were recruited in one of the two ways. One-third (35%) of the sample was recruited by means of an advertisement in two teacher-oriented magazines with circulation rates of 4000 and 60,000 copies, respectively. In the ads, teachers were kindly invited to participate in a study on "teachers' health". The majority (65%) of the participants were visitors of a computer fair, where educational software for school and home use was displayed and sold. At the fair, visitors were approached by two research-assistants, who asked them whether they were teachers, and – if so – whether they were willing to participate in a study on teachers' health. In total, 186 teachers expressed their willingness to participate in the study. They received a questionnaire by mail, and were kindly requested to fill it out in private. A total of 154 teachers filled out and returned the questionnaire (response = 83%).

Measures

Lack of Reciprocity in the Relationship with Students was measured with 12 items. Six of these items refer to investments in this relationship, and six items refer to outcomes. Examples of investment items are: "How much do you invest in motivating your students?" and "How much do you invest in the preparation of lessons?" (1 = *very little*, 5 = *very much*). The outcomes refer to the same behaviors, for example: "How much outcome do you receive from the motivation of the students to attend your classes? and "How much appreciation do you receive from your students for your teaching efforts?" The internal consistency of the investments scale and the outcomes scale was adequate: Cronbach's alpha was 0.68 and 0.84, respectively. Lack of reciprocity was assessed by calculating the *ratio* of investments and

outcomes, that is, by dividing the total score for investments by the total score for outcomes. Thus, *higher* scores on this measure refer to *less* reciprocity in the relationship with students.

Lack of Reciprocity in the Intimate Relationship was assessed with 16 items, eight items relating to investments, and eight items relating to outcomes. Participants not involved in an intimate relationship were instructed to fill out the questions for the relationship with an intimate other (sister or brother, close friend). Examples of investment items are: "How much do you invest in giving support to your partner?" and "How much do you invest in solving conflicts within your relationship?" (1 = *very little*, 5 = *very much*). Outcomes were measured in a comparable way, and refer to the same behaviors, for example: "How much support do you receive from your partner?" and "How much does your partner invest in solving conflicts within your relationship?" The internal consistency of both scales was high: Cronbach's alpha was 0.87 for the investments scale, and 0.90 for the outcomes scale. Lack of reciprocity scores were calculated by dividing the total investments score by the total outcomes score. *Higher* scores on this measure refer to *less* reciprocity in the intimate relationship.

Burnout was measured using the Dutch version of the Maslach Burnout Inventory (MBI; Maslach and Jackson, 1986), that was slightly adjusted to make it suitable for the teaching profession (Schaufeli *et al.*, 1994). The Dutch MBI includes the three original subscales – emotional exhaustion, depersonalization, and personal accomplishment. However, Items 12 ("I feel energetic"), and 16 ("Working with people directly puts too much stress on me") were omitted, as suggested by Byrne (1993) and Schaufeli and Van Dierendonck (1993). Both studies have shown that these items do not load on the intended factors. *Emotional exhaustion* was measured with eight items, for example "I feel emotionally drained from my work". Cronbach's alpha of this scale was 0.92. *Depersonalization* was measured with five items, including "I don't really care what happens to my students" (Cronbach's alpha = 0.75). Finally, *personal accomplishment* was measured with seven items, such as "I think I accomplish many valuable things through my work" (Cronbach's alpha = 0.87). All items were scored on a seven-point rating scale, ranging from (0) *never* to (6) *every day*. High levels of emotional exhaustion and depersonalization, and a low level of personal accomplishment are indicative for burnout.

Depression was measured with the Dutch version (Bouma *et al.*, 1995) of the Center for Epidemiological Studies Depression Scale (CES-D; Ensel, 1986; Radloff, 1977). The CES-D has been developed as a screening device for identifying depressive symptomatology among the general population, rather than as a measure for assessing clinical depression among patient groups. In general, research has shown that the instrument has good psychometric properties (Bouma *et al.*, 1995). For example, correlations between the CES-D and the Beck Depression Inventory (Beck, 1970) amount to $r = 0.67$, and support its convergent validity. In addition, test–retest reliabilities attain values between 0.45 and 0.70, dependent on the time-lag between repeated measurements (see also Radloff, 1977). The CES-D is a 20-item self-report scale accompanied by four-point Likert scales ranging from (0) *seldom or never (less than 1 day)* to (3) *most of the times or always (5–7 days)*. Participants are asked, for example, to indicate how often they experienced feelings of worthlessness, hopelessness, loss of appetite, and sleep disturbance during the preceding week. The CES-D includes four subscales, namely somatic-retarded activity (7 items; $\alpha = 0.86$), depressed affect (5 items; $\alpha = 0.85$), positive affect (4 items – reverse coded; $\alpha = 0.79$), and interpersonal affect (2 items; $\alpha = 0.62$). Items 9 and 13 are not included in any subscale, but do contribute to the depression score based upon the total scale in practical applications. Each of the subscales has an acceptable internal consistency, although the reliability index of the interpersonal affect scale is relatively low. This is most likely due to the small number of items included in this subscale.

RESULTS

Descriptive Statistics

Table I shows the mean values, standard deviations, and intercorrelations of the variables included in this study. As can be seen from this table, lack of reciprocity in the relationship with students correlates significantly with the indicators of burnout (i.e., emotional exhaustion, depersonalization, and personal accomplishment), and with the indicators of depression. This means that an important criterion

TABLE I Descriptive statistics and intercorrelations of the three burnout dimensions, the four depression dimensions, and lack of reciprocity, $N = 154$

		M	*SD*	1	2	3	4	5	6	7	8	9
1	Emotional exhaustion	17 84	11 24	—								
2	Depersonalization	5.97	4.74	0 47***	—							
3	Personal accomplishment	27 37	7.06	−0.42***	−0 57***	—						
4	Somatic-retarded activity	3.94	4.25	0.68***	0 25**	−0.26***	—					
5	Depressed affect	2.06	2.93	0.56***	0.38***	−0 34***	0 75***	—				
6	Positive affect (reversed)	3.92	3.28	0.56***	0.35***	−0.31***	0 63***	0 65***	—			
7	Interpersonal affect	0 55	0 95	0 36***	0.38***	−0.28**	0 50***	0 57***	0 52***	—		
8	LOR – work relationship	1.09	0.25	0.37***	0.24**	−0.32***	0 21**	0 26**	0 25**	0 15*	—	
9	LOR – intimate relationship	1 01	0 19	0.09	−0.01	−0.07	0.18*	0 23**	0 13*	0 14*	0.18*	—

Note. LOR = lack of reciprocity. ***$p < 0\ 001$, **$p < 0.01$, *$p < 0\ 05$.

for mediation is met in this study (cf. Baron and Kenny, 1986). In addition, note that lack of reciprocity in the intimate relationship is significantly related to the depression components ($p < 0.05$), but *not* to the burnout components.

Confirmatory Factor Analyses

Before testing the hypothesized model, the discriminant validity of burnout and depression was examined in a series of factor analyses conducted with LISREL 8 (Jöreskog and Sörbom, 1993), using the AMOS computer program (Arbuckle, 1997). The maximum likelihood method was used to examine the covariance matrices of the items. With help of LISREL, the extent can be investigated to which a theoretically postulated structure is consistent with the data. LISREL yields various indices that may be used to assess the quality of the fitted factor models, such as the goodness-of-fit index (GFI), and the root mean square error of approximation (RMSEA). For the GFI, values of 0.90 or higher indicate a close fit between the model and the data. Browne and Cudeck (1993) have suggested that a RMSEA value of 0.05 indicates a close fit, and that values up to 0.08 represent reasonable errors of approximation in the population. In addition, the incremental fit index (IFI; Bollen, 1989), the normed fit index (NFI), and the comparative fit index (CFI) were computed. These latter indices are largely independent of sample size and are appropriate to models with confirmatory factor analysis components (Gerbing and Anderson, 1993). For each of these statistics, values larger than 0.90 are generally considered acceptable.

For each of the burnout and depression factors separately, the model freed some of the coefficients of the measurement errors that were correlated. Byrne (1989) has shown that items with identical rating scales often have measurement errors that are correlated. This means that the fit of a model can be further improved if the measurement errors among the items of the subscales are considered. It is evident that particularly items *within* the dimensions of burnout and depression show conceptual overlap and that therefore their error terms may covary. Another explanation for error terms to covary is that a person who fills out a questionnaire may show the same response bias for items within a scale.

TABLE II Comparisons between different factor structures for burnout and depression among teachers, $N = 154$

Model	*Factors*	χ^2	*DF*	*GFI*	*IFI*	*NFI*	*CFI*	*RMSEA*
Seven-Factor Model	3 MBI, 4 CES-D	964.45	676	0.779	0 926	0 790	0 924	0 053
Six-Factor Model	3 MBI, SRA, DA, (POA + IA)	972.41	681	0.777	0.926	0 789	0 924	0 053
Five-Factor Model	3 MBI, SRA, (DA + POA + IA)	975.50	686	0.776	0 926	0.788	0.924	0 053
Four-Factor Model	3 MBI, depression	1017.30	690	0.764	0 916	0 779	0.914	0.056
Three-Factor Model	EE + DP, PA, depression	1129.81	693	0.727	0 888	0 754	0.886	0 064
Two-Factor Model	Burnout, depression	1319 97	695	0.672	0 840	0 713	0.836	0 077
One-Factor Model		1551 45	696	0.617	0 781	0.663	0.776	0 090
Null Model		4600.51	780	0 167	—	—	—	0 179

Note. MBI = Maslach burnout inventory, CES-D = Center for Epidemiologic Studies Depression scale, SRA = somatic-retarded activity, DA = depressed affect, POA = positive affect, IA = interpersonal affect, EE = emotional exhaustion, DP = depersonalization, PA = personal accomplishment χ^2 = chi-square; DF = degrees of freedom; GFI = goodness-of-fit index; IFI = incremental fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

The results of a series of confirmatory factor analyses are presented in Table II. The GFIs indicate that a Two-Factor Model, discriminating between MBI-burnout and CES-D-depression, is a substantial improvement over the One-Factor Model assuming that burnout and depression constitute a unitary construct. Because these two models are nested, the chi-square difference statistic can be used to *test* the improvement in fit (cf. Bentler and Bonnet, 1980). As can be seen from Table II, the improvement in fit provided by distinguishing between the two constructs in the Two-Factor Model is substantial, $\chi^2(\text{dif}) = 231.48$, 1 df, $p < 0.001$.

Moreover, the results show that alternative models which assume a further differentiation into separate burnout components fit even better to the data than the Two-Factor Model. Specifically, the Three-Factor Model, collapsing emotional exhaustion and depersonalization into a single factor, but making a distinction between this so-called "core of burnout" factor (Green *et al.*, 1991), personal accomplishment, and depression, is a substantial improvement over the Two-Factor Model, $\chi^2(\text{dif}) = 190.16$, 2 df, $p < 0.001$. The more refined Four-Factor Model, making a distinction between all three burnout dimensions (emotional exhaustion, depersonalization, and personal accomplishment) and depression and allowing correlations between the latent factors, fits even better to the data than the Three-Factor Model, $\chi^2(\text{dif}) = 112.51$, 3 df, $p < 0.001$. Taken together, these findings offer clear support for Hypothesis 1, and show that burnout consists of three related, but empirically distinct components that can be discriminated from depression as measured by the CES-D.

Table II also shows that a Five-Factor Model, discriminating between the three burnout components, and *two* (instead of one) depression components fits better to the data. The latter two components represent the original CES-D somatic-retarded activity scale, and a scale that is referred to as "depressed mood" (including the three original CES-D affect scales, that is, depressed affect, positive affect, and interpersonal affect). Note that the competing Six- and Seven-Factor Models, that further discriminate between the three affect scales included in the CES-D, fit equally well to the data as the Five-Factor Model. In other words, the Seven-Factor Model, including the hypothesized three burnout and four depression components, was not found to have better fit indices than the nested models in

which the items of the depression scale collapse in one, two or three factors. Nevertheless, the confirmatory factor analysis found that in the Seven-Factor Model all items loaded well beyond the $t = 1.96$ criterion on the predicted factors.

In sum, the results of this series of confirmatory factor analyses provide strong evidence for the *discriminant* validity of burnout and depression. The findings confirm the three-factor structure of the MBI, and provide partial evidence for the factorial validity of the CES-D in our sample, as a three- or two-factor structure of depression was not worse than the hypothesized, original four-factor structure. For theoretical reasons it was decided to test the structural model in Fig. 1 using the Seven-Factor Model for burnout and depression, because it includes the original differentiated factor structure of the depression scale.

Model Testing

Hypothesis 2 states that lack of reciprocity at work is predictive of both burnout and depression, and that a lack of reciprocity in private life is predictive of depression, but *not* of burnout. Hypothesis 3 predicts that burnout has a positive effect on depression but not the other way around. These hypotheses (see also Fig. 1) were tested simultaneously using structural equation modeling.

The results indicate that the model fits quite well to the data, $\chi^2(22) = 24.76$, $p = 0.31$, GFI = 0.966, IFI = 0.995, NFI = 0.957, CFI = 0.995, RMSEA = 0.029. A closer examination of the t tests for significance of the path coefficients revealed that all t values – except one – exceeded the critical level of 1.96. Only the coefficient of the path from lack of reciprocity at work to depression was low ($\gamma = -0.08$), and lacked significance ($t < 1$). Because bi-variate significant correlations exist between lack of reciprocity at work and the four depression components (see Table I), this finding suggests a mediating effect of burnout. In conclusion, Hypothesis 2 is partly accepted: lack of reciprocity in the relationship with students is predictive of burnout (but not of depression), and lack of reciprocity in the relationship with one's partner is predictive of depression, but not of burnout.

As a more conservative test of Hypothesis 2, we built an alternative model, in which a *direct* path from lack of reciprocity in the intimate

relationship to burnout was included. Although this model fits to the data, $\chi^2(21) = 24.68$, $p = 0.26$, GFI = 0.966, NFI = 0.957, IFI = 0.993, CFI = 0.993, RMSEA = 0.034, the fit is not significantly better than the fit of the original hypothesized model, $\chi^2(\text{dif}) = 0.08$, 1 df, n.s. Moreover, consistent with our hypothesis, the coefficient of the path from lack of reciprocity in the intimate relationship to burnout was negligible ($\gamma = 0.02$) and non-significant ($t < 1$).

In order to test Hypothesis 3, we built a non-recursive model. In addition to the direct paths from lack of reciprocity at work to burnout, lack of reciprocity in the intimate relationship to depression and the path from burnout to depression, a path from depression to burnout was added. This model fits the data, $\chi^2(22) = 24.76$, $p = 0.31$, GFI = 0.966, NFI = 0.957, IFI = 0.995, CFI = 0.995, RMSEA = 0.029, but the path from depression to burnout was far from significant ($\beta = 0.23$, $t = 1.18$). This result supports Hypothesis 3: Burnout is a precursor of depression and not the other way around.

In the final, revised model, the non-significant path from lack of reciprocity at work to depression was deleted. This model shows a close fit to the data, $\chi^2(23) = 25.74$, $p = 0.314$, GFI = 0.965, NFI = 0.955, IFI = 0.995, CFI = 0.995. All path coefficients in the model are significant at the $p < 0.05$ level. As can be seen from Fig. 2, lack of reciprocity at work directly predicts burnout ($R^2 = 0.19$), and only

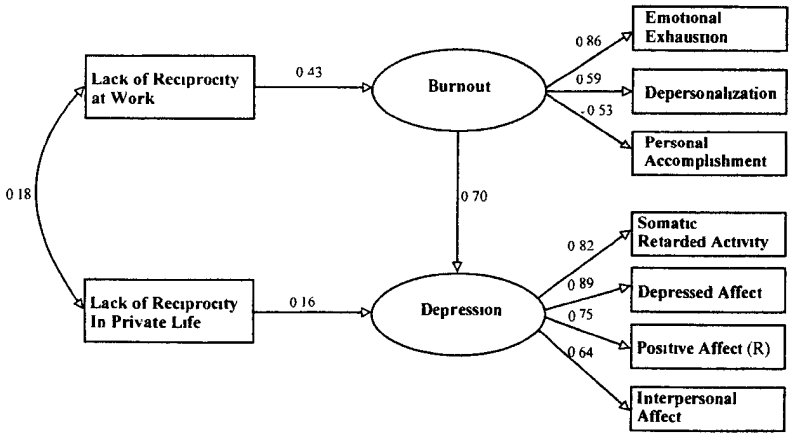

FIGURE 2 LISREL estimates of structural model coefficients for the revised structural model of reciprocity, burnout, and depression

indirectly depression. Lack of reciprocity in the intimate relationship and burnout predict depression and explain together 53% of its variance. This is consistent with our central hypothesis derived from equity theory and provides further evidence for the discriminant validity of burnout and depression.

DISCUSSION

The present study suggests that burnout and depression are related but distinct concepts. First, psychometric evidence exists for the discriminant validity of two popular self-report questionnaires that assess burnout and depression (i.e., the MBI and the CES-D, respectively). Second, conceptually speaking, burnout and depression are linked with lack of reciprocity in interpersonal relationships but in different spheres of life. Our results suggest that burnout is a work-related phenomenon whereas depression is more pervasive and context-free in nature. We will briefly comment on these two main conclusions.

The results of a series of confirmatory factor analyses are consistent with earlier studies on the discriminant validity of burnout and depression, following a purely psychometric approach (e.g., Leiter and Durup, 1994; Meier, 1984). That is, a Five-, Six- or Seven-Factor Model, discriminating between the three burnout components included in the MBI (i.e., emotional exhaustion, depersonalization, and personal accomplishment), and two, three or four depression components fits adequately to the data. The fit of these models to the data was superior to that of various alternative models collapsing depression and one, two, or three burnout dimension(s) into a single factor. Taken together, these psychometric results provide evidence for the discriminant validity of burnout and depression. In addition, the present findings confirm once again the three-factor structure of burnout as measured by the MBI (Maslach, 1993). The original four-factor structure of the CES-D could be replicated, but was statistically not superior to a two-factor solution, representing the original CES-D somatic-retarded activity scale, and a scale that can be labeled "depressed mood" (including the three original CES-D affect scales, that is, depressed affect, positive affect, and interpersonal affect). Note, however, that our analyses were rather conservative because we

"pooled" the items of the burnout and depression scales. American factor analytic findings with the CES-D yielded four components (Ensel, 1986; Radloff, 1975). The Dutch CES-D manual (Bouma *et al.*, 1995) does not report results of factor analyses, but does state that the original factor structure is generally reproduced in Dutch samples. Nevertheless, it is evident that further research is needed to examine the factorial structure of the CES-D.

On a theoretical level, the present study suggests that burnout as well as depression are linked with similar social exchange processes which, however, take place in different domains: lack of reciprocity in the occupational domain is related to burnout, whereas lack of reciprocity in intimate relationships off work is related to depression. This is consistent with equity theory which assumes that individuals have a deeply evolutionary rooted tendency to pursue reciprocity in interpersonal relationships, and that they will feel distressed if they perceive these relationships as unreciprocated (Buunk and Schaufeli, in press; Walster *et al.*, 1978). More specifically, the present study confirms our hypothesis that a lack of reciprocity in the relationship between teachers and their students is predictive of burnout (and only indirectly of depression), whereas a lack of reciprocity in the relationship with one's partner is predictive of depression (and not of burnout). Put differently, depression is a direct result of a lack of reciprocity in private life, and an *in*direct result of a lack of reciprocity at work, that is, through the development of burnout. In contrast, burnout is directly related to lack of reciprocity at work, and *not* to a lack of reciprocity in private life. These findings are consistent with the literature about burnout and depression that assumes that burnout is work-related, whereas depression is context-free (Glass and McKnight, 1996; Maslach and Schaufeli, 1993; Warr, 1987). Interestingly, our results also suggest that burnout is an antecedent of depression. This is consistent with the findings of Glass *et al.* (1993) in a study among nurses. It supports the notion that depression is a more generalized and global phenomenon than burnout, and that burnout and depression may have different etiologies and different developmental sequences (Meier, 1984).

Some limitations of this study clearly must be noted as well. First, since self-report data were the source of information, common method variance may partly explain some of the results. Second, the design of the current study is cross-sectional, making it impossible to infer causal relationships, despite the use of advanced structural equation

modeling techniques. Thus, more complex forms of non-recursive linkages could not be examined. Third, we tested our model in a homogenous sample consisting of a specific group of professionals, namely teachers in The Netherlands. The Dutch school system probably has some unique features which may limit the generalizability of our findings. Although earlier research has provided evidence for at least parts of the model (i.e., for the relationship between lack of reciprocity and burnout) among several other occupational groups (Bakker *et al.*, 1999; Cordes *et al.*, 1997; Schaufeli *et al.*, 1996), a test of the entire model in a heterogeneous sample still stands out.

Despite these limitations, the present findings may have important implications for future research and practice. First of all, the findings show that burnout and depression can be discriminated from each other, which is a prerequisite for making a differential diagnosis. Second, we showed that burnout and depression are the result of a similar etiological process that unfolds in different domains of life. Building on this knowledge, interventions may be designed to improve teachers' quality of life at and off the job. For example, in the present study, teachers were asked to respond to a list of investments and outcomes at work and in private life. Knowledge or awareness of the most important sources of (a lack of) reciprocity may help teachers in preventing or reducing burnout or depression. A third, practical implication of the strong relationship between lack of reciprocity at work and burnout is that – during their education – teachers should be provided with realistic job expectations. This seems to be particularly important regarding their future relationships with students (Van Horn and Schaufeli, 1999). Newcomers in the teaching profession should be informed about what they can expect from students ("fore-warned is fore-armed"). Indeed, based on a thorough analysis of over 20 case studies, Cherniss (1995) has suggested that a lack of reciprocity primarily originates from unrealistic job expectations, which may eventually result in feelings of frustration, social incompetence, and burnout.

Acknowledgments

This research is part of the concerted research action on "Fatigue at Work" granted by the Netherlands Organization for Scientific Research (NWO) (# 580-01-010).

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