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Efficacy or inefficacy, that's the question: Burnout and work engagement, and their relationships with efficacy beliefs

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Abstract
We challenge traditional view that lack of efficacy — measured with the corresponding *reversed* efficacy scale (Maslach Burnout Inventory, MBI) — is a burnout dimension. Instead, we claim that in addition to exhaustion and cynicism, *in*efficacy — measured with a newly developed scale — characterizes burnout. MBI-efficacy is apparently related to work engagement, considered as the positive antithesis of burnout. We performed Structural Equation Modeling in two samples of Spanish ($n=239$) and Dutch ($n=235$) university students, and two Spanish employee samples, working in various jobs ($n=342$) and working with information and communication technologies ($n=283$). Our expectations were largely confirmed: (1) compared with efficacy beliefs *in*efficacy beliefs relate more strongly to the other two burnout components; (2) the alternative three-factor burnout model including *in*efficacy fits better to the data than the traditional model including efficacy; (3) a model with *in*efficacy loading on burnout and efficacy loading on engagement fits the data. It is suggested that an *in*efficacy scale rather than a reversed efficacy scale should be used to assess burnout in future studies.

Keywords: *Burnout, work engagement, efficacy, inefficacy*

Traditionally, burnout is considered as a reaction to chronic occupational stress characterized by emotional exhaustion (the draining of emotional resources), depersonalization (a negative, callous attitude towards patients, clients, students, or customers), and lack of personal accomplishment (the tendency to feel incompetent and to assess one's work with other people negatively) (Maslach & Jackson, 1986). Initially, burnout was restricted to those who do "people work" of some kind, but the concept was subsequently broadened to all occupations (Maslach, Schaufeli & Leiter, 2001). The Maslach Burnout Inventory-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996) is used to assess burnout across different types of occupations. This inventory consists of the same three underlying dimensions as the original MBI except that they are more generic and do not refer to other people one is working with. That is, the first MBI-GS dimension — exhaustion — is measured by items that tap fatigue but do not directly refer to other people as the source of one's tiredness. Items measuring cynicism reflect indifference or a distant attitude towards work in general, not necessarily with other people

("despersonalization"). Finally, professional efficacy has a broader focus compared with the corresponding MBI personal accomplishment scale, encompassing both social and non-social aspects of occupational accomplishment. High levels of exhaustion and cynicism, and low levels of efficacy, are indicative for burnout. Hence, positively worded items assess efficacy (e.g. "I efficiently solve any problems that may arise in my work"), which are then reversed in order to indicate professional inefficacy.

The present paper contributes to the ongoing discussion about the conceptualization and measurement of burnout (Cox, Tisserand & Taris, 2005) by challenging the common view that lack of efficacy — as measured with a reversed efficacy scale — is a constituting dimension of burnout. Instead, it is argued that inefficacy — as measured with a newly developed scale that uses negatively worded items — characterizes burnout.

Burnout and efficacy beliefs

The role of lack of efficacy in the burnout syndrome is rather peculiar, both from a conceptual and empirical point of view. From the onset, lack of efficacy — or "reduced personal accomplishment" as it was called initially — was a special case because it was added on second thoughts as the third constituting dimension of burnout. Looking back at the psychometric construction of the MBI, Maslach (1993, p. 26) writes: "Our working definition of burnout consisted of two components: emotional exhaustion and depersonalization. . . . Our findings confirmed the components of emotional exhaustion and depersonalization but also revealed a third separate component of reduced personal accomplishment." This third unexpected factor consisted exclusively of positively worded items. Given the fact that the accomplishment factor was added on second thought, it may come as no surprise that the validity of this burnout dimension has been questioned. For instance, lack of efficacy was considered to be similar to a personality characteristic (Cordes & Dougherty, 1993), a way of coping that moderates the effect of exhaustion on mental distancing (Koeske & Koeske, 1989), and as one of the sequels of burnout (Shirom, 2003).

Empirical results confirm the exceptional role of lacking efficacy compared with the other two burnout dimensions, and three types of findings illustrate this. First, lack of efficacy correlates relatively low with exhaustion and cynicism (i.e., depersonalization) compared with the inter-correlations between the other two burnout dimensions. Based on nearly 50 studies, Lee and Ashforth (1996) observed an average correlation between exhaustion and depersonalization of .52, whereas correlations with professional efficacy were only −.33 and −.36, respectively. This consistent result led Green, Walkey, and Taylor (1991) to the conclusion that exhaustion and cynicism constitute the "core of burnout," thereby excluding lack of efficacy. Second, studies among employees who receive professional psychotherapeutic treatment show that those who are diagnosed as "burned-out" — based on a standardized clinical interview — show significantly higher scores for exhaustion and cynicism, but *not* for lack of efficacy, compared with those with other diagnoses (Roelofs, Verbraak, Keijsers, de Bruin & Schmidt, 2005; Schaufeli, Bakker, Schaap, Kladler & Hoogduin, 2001). So, burnout apparently manifests itself by both core dimensions in psychotherapeutic clients, but is not manifested by lacking efficacy. Third, lack of efficacy shows a different pattern of correlations with job characteristics when compared with exhaustion and cynicism. The meta-analyses of Lee and Ashforth (1996) reveal that exhaustion relates positively to job stressors such as work overload, work pressure and role problems, whereas cynicism additionally and negatively relates to (job) resources such as social support from coworkers and supervisors, team cohesion, skill utilization, and family

resources (see also Schaufeli & Enzmann, 1998, p. 83–84). In contrast, lack of efficacy is *not* usually related to job stressors, rather to poor job resources and more particularly to poor coping strategies.

So collectively, empirical evidence documents the special role of efficacy beliefs in the burnout process. Please note that we obtained these empirical results with an efficacy scale consisting of *positively* worded items that was subsequently reversed, presumably to assess *lack* of efficacy.

Our key issue is that the recurrent conceptual issue — whether or not lack of efficacy should be considered as a burnout dimension — cannot be solved as long as it is assessed by reversed positively worded items. In such a case, we cannot rule out an artifact because reversing efficacy scores assume that efficacy and inefficacy are perfect counterparts for each other: a low score on efficacy is deemed the equivalent to inefficacy, and vice versa. However, this is most unlikely to be the case. We argue that efficacy and inefficacy are more likely to be strongly (but not perfectly) and negatively related to each other. For instance, imagine an employee who scores low on the efficacy item "I efficiently solve any problems that may arise in my work." Reversing the score would indicate that the employee is not efficient in solving problems at work. But this does not necessarily imply that the employee is inefficient in solving problems. This would be the case if the employee agreed with the inefficacy item "At my work, I think I'm in efficient when it comes to solving problems." An analogy with positive and negative affects might illustrate this point. Research on the structure of affect demonstrated that a low score on sadness (negative affect) differs from a high score on happiness (positive affect), and vice versa (Lloret & Gonzalez-Romá, 2003). In other words, although people do not feel happy they do not necessarily feel sad, and when they do not feel sad they do not necessarily feel happy. It therefore follows that assessing happiness with reversed sadness items, or sadness with reversed happiness items, makes no sense. Likewise, it is our contention that it would not make sense to assess lack of efficacy with reversed efficacy items.

An indication that measures of efficacy and inefficacy beliefs produce different findings comes from a study by Bouman, Te Brake and Hoogstraten (2002), who reworded the positive MBI-personal accomplishment items into negatively-stated lack of accomplishment items. Compared with the group that filled out the traditional MBI-scale, the group that completed the reworded scale showed much higher (positive) correlations with exhaustion and depersonalization (r's $< -.20$ versus r's $> .45$), respectively. Thus, negatively rewording efficacy items leads to higher positive correlations with the other two burnout dimensions: this means that not only the sign, but also the magnitude of the correlation change. This suggests that reversing positively worded items might cause the low correlations of efficacy with the other two burnout dimensions (see Lee & Ashforth, 1996). Unfortunately, Bouman et al. (2002) used two separate groups that completed an efficacy and an inefficacy scale, respectively, so that the relationship between both scales could not be assessed. Besides, the generalizability of the study results is limited because only students were included. Therefore, we used both scales simultaneously in our study and we also included employees.

Engagement and efficacy beliefs

Further evidence suggesting that efficacy beliefs — as measured with the MBI-GS scale — play a special role in burnout comes from the recent study of engagement, the assumed positive antithesis of burnout. Engagement is defined as "a positive, fulfilling, work-related

state of mind that is characterized by vigour, dedication, and absorption" (Schaufeli, Salanova, Gonzalez-Romá & Bakker, 2002a; p. 72). Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Finally, absorption is characterized by full concentration and being happily engrossed in one's work, whereby time passes quickly and one has difficulties to detach oneself from work. Based on the above-mentioned definition of work engagement, a self-report questionnaire — the Utrecht Work Engagement Scale (UWES) — has been developed that includes the three constituting dimensions: vigor, dedication, and absorption (Schaufeli et al., 2002a). Recently, Gonzalez-Romá, Schaufeli, Bakker, & Lloret (2006) showed that vigor and exhaustion, and dedication and cynicism, indeed span a separate continuum that is labeled "energy" (from vigor to exhaustion) and "identification" (from dedication to cynicism), respectively.

Results from various studies using confirmatory factor analyses (CFA) showed that instead of loading on burnout, the MBI-GS efficacy scale loads on engagement, as measured by the three UWES factors (Salanova et al., 2000; Schaufeli et al. 2002a; Schaufeli & Bakker, 2004). Hence, all positive scales load on one latent factor (labeled "extended engagement"), whereas both negative scales load on a second, separate latent factor (labeled "core of burnout"). Additionally, on a slightly different note, it appeared that the fit of the second-order factor model could increase substantially when cynicism and dedication were allowed to be correlated (Salanova et al., 2000; Schaufeli et al. 2002a; Schaufeli & Bakker, 2004). This is in line with the previously mentioned finding that cynicism and dedication are opposite poles which span a continuum that is labeled "identification".

The present study

Taken together, research in which positive MBI-GS efficacy items were reworded negatively, as well as research on the relationship between burnout and engagement, illustrate the peculiar role of lack of efficacy in burnout. This might possibly result from an artifact caused by reversing positively worded items. Rather than arguing that the conceptual base of poor efficacy beliefs as a constituting part of burnout is fallacious, we argue that the traditional efficacy scale might prove invalid because it is reversed. In our opinion, the role of inefficacy as a burnout dimension can only be studied when an inefficacy scale is used instead of a reversed efficacy scale. This is precisely what we intend to demonstrate with the present study.

We used *four* samples from *two* different countries: Dutch and Spanish university students, and two samples of Spanish employees. This allows us to investigate the cross-national validity of our research findings as well as the validity across different samples within one country, respectively. Formally speaking however, students are neither employed nor hold jobs; their core activities can be considered as "work" from a psychological perspective. Namely, they are involved in structured, coercive activities (e.g., attending classes and making assignments) that are directed towards a specific goal (i.e., passing exams and acquiring a degree). Hence, being a work-related phenomenon, burnout may also exist in students where it manifests itself through exhaustion because of study demands, having a cynical and detached attitude towards one's study, and feeling incompetent as a student (Balogun, Helgemoe, Pellegrini & Hoeberlein, 1996; Chambell

& Curral, 2005; Chang, Rand & Strunk, 2000; Gold, Bachelor & Michael, 1989; McCarthy, Pretty & Catano, 1990; Schaufeli et al., 2002b; Yang, 2004).

In addition to student samples, a heterogeneous sample of employees from various jobs was included as was a homogeneous sample of employees working with Information and Communication Technologies (ICT). According to the Social Cognitive Theory (Bandura, 1997), domain specific efficacy beliefs, such as working with ICT or academic self-efficacy, are more relevant than general efficacy beliefs. Or as Bandura (1997), p. 42) puts it: "efficacy beliefs should be measured in terms of particularized judgments of capability that may vary across realms of activity". Accordingly, computer self-efficacy buffers the impact of job demands on burnout, whereas this effect was *not* shown for general self-efficacy (Salanova et al., 2000; Salanova, Peiró & Schaufeli, 2002). Hence, in our study we assessed *specific* efficacy beliefs that refer to academic efficacy (in student samples), job efficacy (in the heterogeneous employee sample), and ICT-efficacy (in the ICT sample) instead of general efficacy beliefs.

More specifically, we hypothesize that:

H$_1$: Inefficacy correlates more strongly with exhaustion and cynicism when compared with efficacy.

H$_2$: The alternative three-factor burnout model, which includes exhaustion, cynicism, and inefficacy, fits the data better than the traditional burnout model which includes efficacy.

H$_3$: The model with inefficacy loading on and efficacy loading on engagement instead of loading on burnout fits the data.

H$_4$: The model assumed in H$_3$ is invariant across all four samples.

Method

Sample and procedure

Sample 1 consisted of 239 undergraduate Spanish students; 172 were female (73%) and 67 male (27%). Their mean age was 22.4 years ($SD = 4$). Psychology students filled out the questionnaires voluntarily either before classes started (80%) or by Intranet (20%). A website with the questionnaire was designed and students filled this in on line using University computers.

Sample 2 consisted of 235 undergraduate Dutch students; 204 were female (87%) and 31 male (13%). Their mean age was 21.8 years ($SD = 3.4$). Questionnaires were handed out during breaks and filled out voluntarily by students of psychology (43%), educational science (31%), general social sciences (16%), sociology (7%), and anthropology (3%). The response rate was about 75%.

Sample 3 was a convenience sample consisting of 342 Spanish employees; 229 (67%) were male and 113 (33%) female. Their mean age was 34.6 years ($SD = 8.7$); 5% had not completed primary education, 16% had only completed primary education, 41% had a secondary education, and 38% had a college education. Employees worked in various jobs, such as machine operator (51%), hospital nurse (13%), and social worker (4%). The remainder of the sample (32%) was recruited via the Internet and included, for instance, clerical and administrative staff, technical support staff, middle managers, and human service professionals. All respondents completed an electronic version of the questionnaire either by Intranet (the first 68%) or Internet (the remaining 32%). As in students' case, an

online version of the questionnaire was designed on the Internet, which was filled out by workers from different companies who used computers at work or elsewhere.

Sample 4 consisted of 283 Spanish employees working with ICT in various jobs and occupational fields; 173 were female (61%) and 110 male (39%). Their mean age was 33.2 years ($SD = 7.8$); 1% had not completed primary education, 6% had only completed primary education, 27% had a secondary education, and 66% had a college education. Employees worked as technical and support staff (52%), clerical and administrative staff (38%), or as managers and supervisors (10%). On average, employees used ICT 69% ($SD = 25.2$) of their working time. Employees were asked to voluntarily answer a set of self-report questionnaires which were handed out by their human resources departments. The response rate was 31%.

Variables

Burnout was assessed in both student samples using a slightly adapted version of the MBI-GS (Schaufeli et al., 1996) — the MBI-Student Survey (MBI-SS; Schaufeli, Martinez, Marqués-Pinto, Salanova, & Baaker, 2002b). For instance, we rephrased the item "I feel emotionally drained from my work" as "I feel emotionally drained by my studies." The MBI-SS consists of 16 items that are grouped into three scales: Exhaustion (EX; five items), Cynicism (CY; fve items), and Efficacy (EF; six items) (see Appendix 1). All items scored on a seven-point frequency rating scale ranging from 0 ("never") to 6 ("always"). High scores on EX and CY, and low sores on EF are indicative of burnout (i.e., all EF-items were reversely scored). The three-factor structure of the MBI-SS is largely invariant across student samples from Spain, Portugal and the Netherlands (Schaufeli et al., 2002b).

In both employee samples, burnout was measured with a slightly adapted version of the MBI-GS (Schaufeli et al, 1996). The validity of the three-factor structure of the MBI-GS was demonstrated — amongst others — among Spanish ICT workers (Salanova, Schaufeli, Llorens, Peiró, & Grau, 2000), white and blue collar workers from Sweden, Finland, and the Netherlands (Schutte, Toppinnen, Kalimo, & Schaufeli, 2000), and Dutch professionals who used the Internet to fill out the questionnaire (Bakker, Demerouti, & Schaufeli, 2002). In order to reduce test length, we dropped items that included the words "exhausted," "burnout," and "cynical" because they were thought to be tautological. In order to be consistent with Social Cognitive Theory (Bandura, 1997), the efficacy scale only includes those items referring to the employees' own perceived competence in the work domain (e.g., "I efficiently solve any problems that may arise in my work"). Furthermore, we included one new item regarding the perception of one's own competence by others (i.e., "Other people say I am good at doing my job"). The resulting EX, CY, and EF scales include four items each (see Appendix 2). We reworded items in the ICT-sample in order to obtain a better match of the specific nature of the ICT work domain (i.e., "I efficiently solve any problems that may arise in my work with ICT"). All burnout items scored on a seven-point frequency rating scale ranging from 0 ("never") to 6 ("always").

Engagement was assessed in both student samples by the slightly adapted student version of the UWES (Schaufeli et al., 2002b). For instance, we reworded the item "When I get up in the morning, I feel like going to work" as "When I get up in the morning, I feel like going to class." We used the original UWES (Schaufeli et al., 2002a) in both employee samples, but items in the ICT sample were reworded so that they specifically refer to ICT work (i.e., "When I am working with ITC, I feel I am bursting with energy"). Both UWES versions consist of 17 items, which were grouped into three scales: Vigor (VI; six items), Dedication (DE; five items), and Absorption (AB; six items). All items scored on a seven-point

frequency rating scale ranging from 0 ("never") to 6 ("always"). Confirmatory factor analyses showed that the hypothesized three-factor UWES structure is superior to the one-factor model (Salanova et al., 2000; Salanova, Agut, & Peiró, 2005; Schaufeli et al., 2002a). Furthermore, the three-factor structure of the slightly adapted UWES student version is largely invariant across samples from Spain, the Netherlands, and Portugal (Schaufeli et al., 2002b).

Inefficacy (INEF) was assessed by negatively rephrasing the positively worded MBI-GS and MBI-SS efficacy items for students and employees (see Appendices 1 and 2). In addition, we reworded items in the ICT to specifically refer to ICT work (e.g., "I don't feel confident about finishing my ICT job efficiently") and to academia (e.g., "During class I don't feel confident that I am effective in getting things done"). All items scored on a seven-point frequency rating scale ranging from 0 ("never") to 6 ("always").

We presented burnout, engagement, and inefficacy items in a random order to avoid any answering bias.

Data analyses

Structural equation modeling (SEM) was employed, as implemented by the AMOS program (Arbuckle, 1997) to test various factorial models: (1) the traditional correlated three-factor burnout model including EX, CY, and EF (M1); (2) the alternative correlated three-factor burnout model that includes INEF instead of EF (M2); (3) a correlated two-factor model with a latent burnout factor (EX, CY, INEF) and an extended engagement factor (VI, DE, AB, EF) (M3). In addition, the errors of CY and DE in M4 are allowed to be correlated (cf., Hakanen, Bakker & Schaufeli, 2006; Salanova et al., 2000; Schaufeli et al., 2002a; Schaufeli & Bakker, 2004). As noted before, this is justified since cynicism and dedication constitute the two endpoints of an identification dimension (González-Romá et al., 2006). Note that M1 and M2 include the *items* of each scale, whereas M3 and M4 include the mean *scale* scores. The former allows the checking of the factorial validity of the revised, shortened MBI-GS that we used in both employee samples. In contrast, the factorial validity of both the UWES (e.g., Schaufeli et al., 2002a) and UWES-S (Schaufeli et al., 2002b) has been established. Once the validity of the revised MBI-GS is demonstrated — that is, when M1 and M2 are successfully fitted to the data of both employee samples — the scale means are used in the remaining analyses of M3. As we wish to assess the invariance of M3 across all four samples, and since we used slightly different versions of the questionnaires for students and employees, we can only use scale means, and not item scores, to assess M3. In any case, although the content of the items differs slightly, they are meant to measure the same underlying psychological construct as assessed by the scale mean.

We first fitted all models to the data of each sample separately, and then we performed multi-group analyses to assess factorial invariance across samples, including all four groups simultaneously (Byrne, 2001; pp. 173–199). Multi-group analyses provide more efficient parameter estimations than single-group models (Arbuckle, 1997).

Fit indices. We used maximum likelihood estimation methods and the input for each analysis was the covariance matrix of the items. Absolute and relative indices assessed the goodness of fit of the models. The absolute goodness of fit indices calculated were (cf. Jöreskog & Sörbom, 1986): (1) the χ^2 goodness of fit statistic; (2) the root mean square error of approximation (RMSEA); and (3) the Goodness of Fit Index (GFI). Non-significant values

of χ^2 indicate that the hypothesized model fits the data. However, χ^2 is sensitive to sample size so the probability of rejecting a hypothesized model increases when sample size increases. The use of relative goodness of fit indices is strongly recommended to overcome this problem (Bentler, 1990). RMSEA values <.08 indicate an acceptable fit and values >0.1 should lead to model rejection (Cudeck & Browne, 1993). In contrast, the distribution of both the GFI and the AGFI is unknown, so that no statistical test or critical value is available (Jöreskog & Sörbom, 1986).

As recommended by Marsh, Balla, and Hau (1996), the relative goodness of fit indices computed were: (1) Normed Fit Index (NFI); (2) Incremental Fit Index (IFI); and (3) Comparative Fit Index (CFI). The third index (CFI) is a population measure of model misspecification, which is particularly recommended for model comparison purposes (Goffin, 1993). As a rule of thumb, values >.90 are considered as indicating a good fit for all three relative fit indices (Hoyle, 1995).

Results

We performed descriptive analyses and computed internal consistencies for the scales in each sample separately (see Table I). In all samples, values of Cronbach's α are higher than the criterion of .70 (Nunnally & Bernstein, 1994), except for three cases. The value of α for EX in the Dutch sample is slightly lower than .70 (i.e., .68) and the value of α for INEF does not meet its criterion in both student samples (Dutch: $\alpha = .65$; Spanish: $\alpha = .62$). Most scales even fulfilled the more stringent criterion of .80 (Henson, 2001) in both employee samples.

As Table II shows, only *one* out of 84 correlations is not in the expected direction (i.e., between AB and EX in the ICT sample). Furthermore, the correlations of EX with the other scales are often relatively non-significant (six out of 24).

Hypothesis 1: Differing correlations of efficacy and inefficacy

We hypothesized that inefficacy compared with efficacy is correlated more strongly with exhaustion and cynicism. In accordance to our expectation, the observed correlations of INEF with EX and CY are higher than they are with EF in all four samples. On average, INEF is correlated across samples .37 and .45 with EX and CY, respectively, as opposed to −.13 and −.27 with EF. This means that the differences in correlations between INEF and EF are |.24| and |.18| for EX and CY across samples, respectively. However, not all differences between correlations were statistically significant (see Table III).

When compared with EF among students, INEF shows a significantly higher correlation with both EX and CY in the Dutch sample but *not* in the Spanish sample. So Hypothesis 1 was supported for Dutch students but *not* for Spanish students. Results were slightly better for the employee samples. When compared with EF for the heterogeneous employee sample, INEF shows a significantly higher correlation with EX but not with CY, whereas INEF for the ICT sample shows a significantly higher correlation with both EX and CY than the case for EF. Hence, Hypothesis 1 is supported in both employee samples with only one exception.

As predicted, all correlations of EX and CY with INEF are collectively larger than with EF. In three out of eight cases, however, this difference is not significant. In other words, Hypothesis 1 is partially confirmed as far as the observed correlations are concerned.

Hypothesis 2: The alternative model with inefficacy

We then performed a Confirmatory Factor Analysis (CFA) to test the fit of M1 (including EF) and M2 (including INEF) to the data of all four samples separately (Hypothesis 2), and to also estimate the "true" correlations between the latent burnout components (Hypothesis 1).

As Table IV demonstrates, both M1 and M2 fit the data in all four samples. However, the original fit in the Dutch student sample is relatively poor (M1: $\chi^2 = 204.19$, $df = 87$; GFI = .89, RMSEA = .08, NFI = .82, IFI = .82, CFI = .82; M2: $\chi^2 = 225.87$, $df = 87$; GFI = .88, RMSEA = .08, NFI = .83, IFI = .86, CFI = .86), but could be improved by allowing one pair (between cy-1 and cy-2 in M1) and two pairs of errors (between cy-1 and cy-2, and between inef-4 and inef-5 in M2) to be correlated, respectively.

Table IV displays the fit of the resulting revised model. As M1 and M2 are not nested, a formal χ^2 difference test cannot be used to determine which model fits best. According to the absolute and relative fit indices however, M2 fits slightly better among Spanish students and Spanish workers, whereas both models virtually fit equally well among Spanish ICT workers. In contrast, M1 fits slightly better among Dutch students. Hence on balance, we can conclude that M2 (which includes INEF) fits slightly better, or at least equally well, to data than M1 (which includes EF), meaning that Hypothesis 2 is partly confirmed.

As with the correlations observed, the latent correlations of INEF with the other two burnout dimensions are higher across samples than the corresponding correlations with EF (.51 and .58, as opposed to −.19 and −.36 for EX and CY). Indeed, in three samples (i.e., Dutch students and both employee samples) the latent correlations between EF and EX were not even significant. Hence, Hypothesis 1 was also confirmed for the latent correlations.

Hypothesis 3: The model with INEF loading on and EF loading on engagement instead of loading on burnout fits the data

In order to test Hypothesis 3, that INEF loads on burnout and EF loads on engagement, the corresponding model (M3) was fitted to the data of each sample separately. As Table IV illustrates, M3 fits reasonably well to data with almost all fit indices satisfying their criteria, except RMSEA. Rather than sufficing, all fit-indices approach their criteria only in the heterogeneous Spanish employee sample. Based on the so-called Modification Indices however, the fit of M3 could significantly improve in *all* samples when the errors of EF and INEF are allowed to be correlated (see Table IV). This makes sense because efficacy and inefficacy are supposed to be the opposite poles of a continuum, and thus share some unique variance. As we can see from Table IV, the revised model — M3(r) — fits data well. Hence, we conclude that Hypothesis 3 is confirmed in all samples, albeit that in addition to cynicism and dedication, efficacy and inefficacy also seem to be related negatively.

We then went on to assess the fit of the model across all four samples simultaneously with a multi-group analysis of M3(r). As Table V indicates, M3(r) fits data well, with all fit indices satisfying their criteria.

As expected, the latent burnout and engagement factors are significantly and negatively related with a mean correlation across all four samples of −.47 ($-.20 < r < -.62$) (see Figure 1).

Table I. Means (*M*), standard deviations (*SD*), and internal consistencies (Cronbach's α) of the study variables in Spanish students (*n* = 239), Dutch students (*n* = 235), Spanish general workers (*n* = 342), and Spanish ICT workers (*n* = 283).

	Spanish students			Dutch students			Spanish General workers			Spanish ICT workers		
	M	*SD*	α	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
1. Exhaustion	2.48	1.15	.78	1.98	.85	.68	2.70	1.33	.77	2.22	1.21	.82
2. Cynicism	1.72	1.22	.80	1.36	1.03	.84	1.44	1.43	.84	1.87	1.28	.88
3. Efficacy	3.76	.86	.72	3.64	.77	.73	4.58	.92	.81	3.73	1.26	.92
4. Inefficacy	2.86	.84	.62	1.54	.73	.65	1.00	1.21	.80	1.58	1.28	.89
5. Vigor	3.10	.95	.73	3.13	.84	.70	4.87	.95	.79	3.14	1.32	.80
6. Dedication	4.31	1.12	.84	3.83	1.17	.71	3.90	1.36	.90	3.77	1.07	.88
7. Absorption	3.10	.97	.75	2.61	.94	.79	3.56	1.14	.75	2.59	1.21	.88

Table II. Intercorrelations among the study variables in Spanish students ($n = 239$), Dutch students ($n = 235$), Spanish general workers ($n = 342$,) and Spanish ICT workers ($n = 283$).

	2	3	4	5	6	7
Spanish students						
1. Exhaustion	.51***	−.27***	.36***	−.33***	−.28***	−.20*
2. Cynicism	–	−.42***	.45***	−.26***	−.60***	−.20*
3. Efficacy		–	−.53***	.62***	.62***	.61***
4. Inefficacy			–	−.40***	−.48***	−.31***
5. Vigor				–	.57***	.72***
6. Dedication					–	.50***
7. Absorption						–
Dutch students						
1. Exhaustion	.22***	−.11	.40***	−.12*	−.05	−.03
2. Cynicism	–	−.27***	.40***	−.34***	−.62***	−.25***
3. Efficacy		–	−.47***	.67***	.44***	.52***
4. Inefficacy			–	−.33***	−.21**	−.14*
5. Vigor				–	.50***	.69***
6. Dedication					–	.50***
7. Absorption						–
Spanish general workers						
1. Exhaustion	.44***	−.11*	.21***	−.18**	−.34***	−.13*
2. Cynicism	–	−.28***	.34***	−.47***	−.58***	−.36***
3. Efficacy		–	−.36***	.70***	.41***	.45***
4. Inefficacy			–	.35***	−.10*	−.14*
5. Vigor				–	.53***	.54***
6. Dedication					–	.58***
7. Absorption						–
Spanish ICT workers						
1. Exhaustion	.52***	.03	.51***	.07	−.03	.24*
2. Cynicism	–	−.12*	.60***	−.16**	−.31***	.10
3. Efficacy		–	−.27***	.56***	.70***	.42***
4. Inefficacy			–	−.12*	−.21***	.08
5. Vigor				–	.67***	.45***
6. Dedication					–	.48***
7. Absorption						–

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Hypothesis 4: Invariance across samples

Finally, we investigated the invariance of M3(r) across all four samples by following the procedure recommended by Byrne (2001). That is, the invariance of correlations between factors and the invariance of factor loading were assessed by comparing the fit of the model in which the targeted estimates were constrained to be equal across all four samples

Table III. Differences in correlations between efficacy and inefficacy with exhaustion and cynicism (Hypothesis 1) in Spanish students ($n = 239$), Dutch students ($n = 235$), Spanish general workers ($n = 342$,) and Spanish ICT workers ($n = 283$).

	Spanish students	Dutch students	Spanish general workers	Spanish ICT workers
Exhaustion	1.53	4.68***	4.80***	7.70***
Cynicism	0.54	2.15*	1.05	8.12***

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table IV. Confirmatory Factor Analyses of Burnout in Spanish students ($n = 239$), Dutch students ($n = 235$), Spanish general workers ($n = 342$), and Spanish ICT workers ($n = 283$).

	χ^2	df	p	GFI	RMSEA	NFI	IFI	CFI	$\Delta\chi^2$	Δdf
Spanish students										
M1	208.30	87	.00	.90	.07	.83	.89	.89		
M2	171.40	87	.00	.91	.06	.84	.91	.91		
M3	80.62	12	.00	.91	.15	.90	.90	.90		
M3(r)	65.86	11	.00	.93	.14	.91	.93	.93	M3(r) −M3 = 14.75***	1
Dutch students										
M1(r)	163.96	86	.00	.91	.06	.84	.92	.92		
M2(r)	171.83	85	.00	.91	.06	.84	.91	.91		
M3	64.14	12	.00	.92	.13	.90	.91	.91		
M3(r)	29.54	11	.00	.96	.08	.95	.97	.97	M3(r) −M3 = 34.60***	1
Spanish general workers										
M1	222.84	51	.00	.89	.10	.87	.89	.89		
M2	214.15	51	.00	.90	.09	.87	.90	.90		
M3	111.08	12	.00	.91	.16	.87	.88	.88		
M3(r)	91.21	11	.00	.93	.13	.89	.90	.90	M3(r) −M3 = 19.87***	1
Spanish ICT workers										
M1	83.34	51	.00	.95	.04	.96	.98	.98		
M2	90.89	51	.00	.95	.05	.95	.98	.98		
M3	71.58	12	.00	.93	.13	.91	.92	.92		
M3(r)	52.33	11	.00	.95	.11	.93	.95	.95	M3(r) −M3 = 19.24***	1

Note. χ^2 =chi-square; df =degrees of freedom; GFI =Goodness of Fit Index; RMSEA =root mean square error of Approximation; NFI =Normed Fit Index; IFI =Incremental Fit Index; CFI =Comparative Fit Index; M1 = traditional model burnout with efficacy; M2 =alternative burnout model with inefficacy; M3 =model with a burnout (EX, CY, INEF) and an extended engagement factor (EF, VI, DE, AB); M1(r) =revised M1 (see p. 000); M2(r) =revised M2 (see p. 000); M3(r) =revised M3 (see p. 000); *** p <.001.

(M3(r)$_c$) with that of the unconstrained model (M3(r)), which was not the case. When the fit did *not* deteriorate, the model was deemed to be invariant across samples. However, the fit of the fully constrained model (M3(r)$_c$) deteriorated significantly compared with M3(r), meaning that the correlations and factor loadings of M3(r) were *not* invariant across samples. Next, a model with only the correlations between the latent factors constrained to be equal (M3(r)$_{co}$) as well as a model with only the factor loadings constrained to be equal (M3(r)$_{fa}$) were simultaneously fitted to the data of all four samples, respectively. Once again, the fit of both models deteriorated significantly compared with M3(r). Hence, the correlations, as well as the factor loadings of M3(r) vary systematically across samples. Finally, a model was tested with only the correlation between the errors of INEF and EF which were constrained to be equal across samples (M3(r)$_{fi}$). In comparison with M3(r), the fit of M3(r)$_{fi}$ did *not* deteriorate, so we can conclude that the correlation between the errors of EF and INEF is invariant across samples.

To summarize, the hypothesized model, which assumes that INEF loads on burnout and that EF loads on engagement, fits data well. However, the estimated model parameters differ significantly across all four samples (except the correlation between the errors of EF and INEF). This means that although the *structure* of the relationships between the components of burnout and engagement is similar across samples, the *sizes* of these relationships differ.

Table V. Multiple group analyses (MGA) of the two-factor Burnout-Engagement Model including Spanish students ($n = 239$), Dutch students ($n = 235$), Spanish general workers ($n = 342$), and Spanish ICT workers ($n = 283$).

	χ^2	df	p	GFI	RMSEA	NFI	IFI	CFI	$\Delta\chi^2$	Δdf
M3(r)	238.96	44	.00	.94	.06	.92	.94	.94		
M3(r)$_c$	360.61	68	.00	.91	.06	.88	.90	.90	M3(r)$_c$ − M3(r) =121.66***	24
M3(r)$_{co}$	284.34	53	.00	.93	.06	.91	.92	.92	M3(r)$_{co}$ − M3(r) =45.38***	9
M3(r)$_{fa}$	304.46	59	.00	.93	.06	.90	.92	.92	M3(r)$_{fa}$ − M3(r) =65.50***	15
M3(r)$_{fi}$	243.23	47	.00	.94	.06	.92	.94	.94	M3(r)$_{fi}$ − M3(r) =4.27	3

Note. χ^2 =chi-square; df =degrees of freedom; GFI =Goodness of Fit Index; RMSEA =root mean square error of approximation; NFI =Normed Fit Index; IFI =Incremental Fit Index; CFI =Comparative Fit Index; M3(r) = Revised Model with a Latent Burnout (EX, CY, INEF) and an extended engagement factor (VI, DE, AB, EF) (freely estimated); M3(r)$_c$ =fully constrained model. M3(r)$_{co}$ =constrained correlations; M3(r)$_{fa}$ =constrained factor loadings; M3(r)$_{fi}$ =final model; *** $p < .001$.

Discussion

The main aim of the present study was to investigate the role of efficacy beliefs in burnout using negatively framed inefficacy items instead of reversing positively worded efficacy items. As predicted by Hypothesis 1, the (positive) correlations of inefficacy with the other two burnout dimensions (exhaustion and cynicism) were stronger than the (negative) correlations with efficacy. We obtained this result in all four samples (i.e., students from Spain and the Netherlands, and general workers and ICT workers from Spain), albeit that the difference observed between correlations was statistically significant in five out of eight cases so that Hypothesis 1 is not fully supported. However, the expected differences were found to be more pronounced for the latent correlations.

Hence, the earlier findings of Bouman et al. (2002) in university students were replicated and extended to employees in various jobs, including ICT workers. The relatively strong correlations of the inefficacy scale with the two remaining burnout dimensions support the
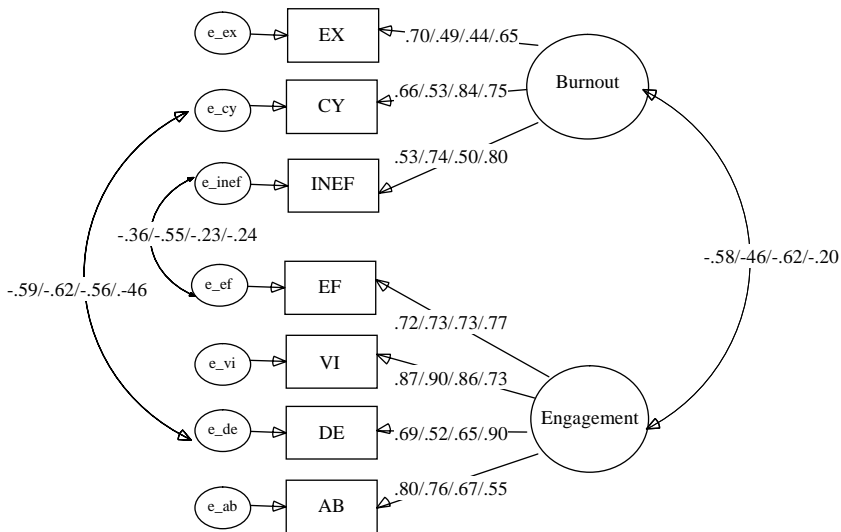

Figure 1. Results of the multi-group analyses (final model): Spanish students ($n = 239$); Dutch students ($n = 235$); Spanish general workers ($n = 342$); Spanish ICT workers ($n = 283$). *Note*: EX =Exhaustion, CY =Cynicism, EF = Efficacy, INEF =Inefficacy, VI =Vigor, DE =Dedication, AB =Absorption.

notion of burnout as a three-dimensional syndrome that is constituted by exhaustion, cynicism and inefficacy, instead of (reversed) efficacy.

Moreover, the fit of the alternative burnout model including inefficacy, which was slightly better than the original model including efficacy (Hypothesis 2). Remarkably, the best fit was shown in Spanish ICT workers, whereas the poorest fit was obtained among Dutch students. The former probably reflects that measures of domain specific efficacy beliefs usually perform better than more general measures of efficacy (Bandura, 1997; Salanova et al., 2000, 2002). Hence, it is likely that the rewording of efficacy and inefficacy items, so that they match the specific nature of ICT jobs better, resulted in a better fit of the model.

On the other hand, the relatively poor fit of the model in the Dutch student sample might be caused by the low internal consistency of the scales assessing exhaustion and inefficacy. However, the fit of the hypothesized model in the Dutch student sample could improve by allowing the errors of two pairs of items to be correlated. Although this procedure might increase the risk of chance capitalization (Cudeck & Browne, 1993), it is thought to be justified because: (1) correlated error terms were allowed exclusively between items belonging to the same scale; and (2) at least one correlated error between cy-1 and cy-2 has been previously observed in other samples including students from Portugal, Spain, and the Netherlands (Schaufeli et al., 2002a), as well as in blue collar and white collar workers from Sweden, Finland, and the Netherlands (Schutte et al., 2000).

Taken together, our results seem to indicate that rather than reversed efficacy beliefs, genuine *in*efficacy beliefs are the constituting third dimension of burnout. Future independent validation studies should confirm this assertion. At any rate, reversing positive efficacy scores yields different results than when genuine negatively phrased items are used to measure the same construct. In an almost similar vein, Keith, Hodapp, Schremmelleh-Engel, and Moosbrugger (2003) showed that by using CFA, one of the four subscales of the German Test Anxiety Inventory (TAI-G), which was positively worded and then reversed (confidence), was actually related to a positive latent factor representing self-esteem but not to the negative factor representing test anxiety. These findings not only agree with the theoretical view that positive and negative affects are independent (Diener & Emmons, 1984), but also that recent research on the structure of affect (Lloret & Gonzalez-Romá, 2003) and well-being (Huppert & Whittington, 2003) demonstrated that a high score on either the positive affect or well-being is *not* equivalent with a low score.

A second aim of the present study was to examine the relationship of efficacy and inefficacy beliefs with burnout and engagement. Results from a series of confirmatory factor analyses showed that the two-factor model with burnout (exhaustion, cynicism, and inefficacy) and extended engagement (vigor, dedication, absorption, and efficacy) fit data well (Hypothesis 3), albeit after the errors of cynicism and dedication, and those of efficacy and inefficacy, were allowed to be correlated. Previous research also revealed the former (Salanova et al., 2000; Schaufeli et al., 2002a; Schaufeli & Bakker, 2004) and reflected that cynicism and dedication are the opposite end points of a dimension labeled "identification" (Gonzalez-Romá et al., 2006). Analogously, it might be assumed that efficacy and inefficacy span a continuum and thus share some additional unique variance. To summarize, our data seem to suggest that inefficacy could be considered an element of burnout, whereas efficacy could be considered an element of engagement.

The finding that negatively worded scales (exhaustion, cynicism, and inefficacy beliefs) and positively worded scales (vigor, dedication, absorption, and efficacy beliefs) cluster together in two different second-order factors (burnout and engagement, respectively)

might be indicative of response bias. It seems that response bias cannot be completely ruled out despite the fact that the positive and negative items have been presented to the respondents in a random order. On the other hand, rather than exclusively loading on opposite positive and negative factors (as would be the case with response bias), EF and INEF also share some common variance, presumably — as noted above — because both may be considered as the opposite ends of a continuum. This goes against response bias.

Finally, subsequent analyses of invariance of the two-factor burnout-engagement model (Hypothesis 4) were only partially successful since only the correlation between the errors of efficacy beliefs and inefficacy beliefs was apparently invariant across all four samples. This means that all remaining estimated parameters of the model differ significantly across all four samples, so Hypothesis 4 was not confirmed. Obviously, the underlying *structure* of the relationships between the seven scales that constitute burnout and engagement is similar across samples, but the *sizes* of the parameters (factor loadings and correlations) differ. The most likely cause of this is cross-national differences in combination with sampling bias; the current samples originate from two different countries (i.e., Spain and the Netherlands) and include different occupational groups (i.e. general workers and ICT workers), and even a non-occupational group (i.e. students).

Study limitations

The first weakness of the present study is that the newly constructed inefficacy scale for workers is not the exact mirror image of the MBI-GS efficacy scale with items that are simply reworded in a negative direction. For instance, the item "In my opinion, I'm inefficient in my job" is not the negative opposite of the MBI efficacy item "In my opinion, I'm good at doing my job." Moreover, the inefficacy scale used in the worker's sample is not parallel to that used in the student's sample (see Appendices 1 and 2). Consequently, comparisons involving worker inefficacy versus worker efficacy, or worker versus students inefficacy/efficacy, are biased. In other words, the observed differences between efficacy and inefficacy might also be attributed — at least to some extent — by differences in item content or differences in sample.

A second weakness is that we use slightly different versions of the original MBI-GS scales among students and workers. While the student's version of the MBI is validated (Schaufeli et al., 2002a), this is not the case for the worker's version. However, the psychometric properties (internal consistencies, scale inter-correlations, factorial validity) of the adapted version for workers is quite similar to that of the original MBI-GS (Schaufeli et al., 1996; Taris, Schreurs, & Schaufeli, 1999). Despite the fact therefore that the MBI-GS version used in the present study differs slightly from the original one, there is nothing to indicate that the adapted version is invalid.

Finally, part of the sample filled out a paper-and-pencil version of the questionnaire, whereas others completed a computerized version, either by using the Intranet of the company or university, or by using the Internet. As far as the Intranet is concerned, only the media are different (paper and pencil versus display and keyboard), yet sampling bias might be an issue as far the Internet is concerned. However, Gosling, Vazire, Srinastava, and John (2004) argued convincingly that Internet-based findings are consistent with findings based on traditional methods (e.g. self-esteem and personality) and that Internet users do not differ from nonusers on markers of adjustment and depression. Although we cannot completely rule out the systematic differences existing between those who filled out the questionnaire on paper and those who used a computer, it is quite unlikely that this would have influenced the study results.

Suggestions for future research

According to Nunnally and Bernstein (1994), the internal consistency of the inefficacy scale for students is acceptable for a newly developed scale. Such a scale will be most likely to reach more satisfactory levels of internal consistency when additional items are included, particularly because no unsound items were detected. These new items could be formulated in order to increase the mirror image of efficacy and inefficacy, and to increase the parallelism between the workers' and students' versions (e.g. "In my opinion, I am doing a poor job"). The scales for students would particularly benefit from this since the inefficacy scales used with employees already showed internal consistency meeting the more stringent criterion of .80, suggested by Henson (2001).

Evidently, our results should be replicated in other countries and in other occupational samples using other occupational groups. We nonetheless believe that more conceptually driven validation research is even more important. First, this study investigated efficacy and inefficacy beliefs in relation to burnout and engagement. A logical subsequent step in exploring the construct validity of efficacy beliefs would be to relate efficacy and inefficacy to possible antecedents (e.g., job demands and job resources) and to possible consequences (e.g., individual health and performance), as well as to test to what extent different (i.e., contrary) patterns are observed. For instance, it is likely that inefficacy is related to high job demands, poor health and poor performance, while in contrast, efficacy might be related to availability of job resources, good health, and high performance. Some of these associations have been found already as part of engagement for efficacy beliefs (Hakanen, Bakker, & Schaufeli, 2006; Schaufeli & Bakker, 2004), but this still stands out for inefficacy beliefs. Second, future research could uncover the role of efficacy beliefs in the development of burnout and engagement. Preliminary research (Salanova, Bresó, & Schaufeli, 2005) suggests that a so-called *loss spiral* exists in burnout, whereby inefficacy beliefs lead to elevated burnout (exhaustion and cynicism), which in turn decreases future efficacy beliefs. On the other hand, a so-called *gain spiral* might exist in engagement, whereby efficacy leads to increased engagement (vigor and dedication), which in turn enhances future efficacy beliefs. In addition, efficacy beliefs were seen to play a mediating role between task resources and engagement (Llorens et al., 2007). That is, feeling engagement when performing a particular task increases efficacy beliefs, which in turn increases task resources over time. This finding also supports the existence of a positive gain spiral in which efficacy beliefs play a central role.

Conclusion

Our study adds an important element to the ongoing discussion about the conceptualization and measurement of burnout (Cox et al., 2005). Despite the fact that not all hypotheses were confirmed unequivocally, our findings seem to suggest that including an inefficacy scale to measure burnout instead of adhering to the traditional (reversed) efficacy scale would be a good strategy to capture the "real" meaning of burnout.

Traditionally, burnout is measured with two negative dimensions (i.e. exhaustion and cynicism) and one reversed positive dimension (i.e., efficacy). Presumably, this might have led to a paucity of results, suggesting an extraordinary role for lacking professional efficacy as the "third dimension" of burnout. The present study suggests that this different role might be due to an artifact caused by reversing positive worded efficacy items. Moreover, our study illustrated that efficacy beliefs might play a role in engagement, the opposite pole of burnout.

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Appendix 1

Maslach Burnout Inventory-Student Survey (MBI-SS)

Exhaustion

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

Cynicism

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

Efficacy

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

Inefficacy

1. I can't solve the problems that arise in my studies.
2. I believe that I don't make an effective contribution to the classes that I attend.
3. In my opinion, I am not a good student.
4. I don't feel stimulated when I reach my study goals.
5. I haven't learnt any interesting things during my studies.
6. During class I don't feel confident that I am effective in getting things done.

Appendix 2

Adapted MBI for workers

Exhaustion

1. I find it hard to relax after a day's work.
2. I feel drained when I finish work.

3. When I finish work I feel so tired I can't do anything else
4. It's getting increasingly difficult for me to get up for work in the morning

Cynicism

1. I have become less interested and enthusiastic about my job I have become less enthusiastic about my studies
2. I feel increasingly less involved in the work I do
3. I doubt the significance of my work.
4. I can't really see the value and importance of my work

Efficacy

1. I efficiently solve any problems that may arise in my work
2. In my opinion, I am good at doing my job.
3. Other people say I am good at doing my job.
4. I am competent in my job

Inefficacy

1. At work, I think I'm inefficient when it comes to solving problems.
2. In my opinion, I'm inefficient in my job
3. Other people say I'm inefficient in my work.
4. I don't feel confident about accomplishing my work efficiently.