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Stability and change in burnout profiles over time: A prospective study in the working population

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This is a prospective study on the development of burnout in the general Swedish working population from a person-oriented perspective. A large random sample of the general working population ($N=1118$) was cluster analyzed, using scores on the subscales of the Maslach Burnout Inventory at baseline and at 1-year follow-up. The individual and structural stability of the configurations over time, as well as accompanying changes on work-related and mental health variables were investigated. The results show the occurrence of several different configurations of burnout variables. Scoring patterns with high exhaustion and cynicism reflected burnout; those with a high level of professional efficacy reflected engagement; there were also scoring patterns characterized by only one of the dimensions in the relative absence of others. These patterns show structural, as well as individual stability over time. The risk factors for development of burnout or engagement from clusters with only one burnout characteristic varied according to the cluster. These results give new insights, indicating that the road to burnout may be different for subgroups of different burnout profiles, and that these subgroups may potentially have different risk factors associated with the development of burnout. This is of importance for the development of early interventions.

Keywords: burnout; development; early identification; risk factors; burnout profiles; engagement; work-related stress

Work-related stress continues to be a problem that causes suffering to the individual and high costs to the society across Western countries. In the European Union, work-related stress is the second most common reported work-related health problem (Parent-Thirion, Fernández Macías, Hurley, & Vermeylen, 2007). A recent study in Sweden showed that 7% of men and 12% of women report that work-related stress led to complaints that made it difficult to perform at work or at home during the previous year (Swedish Work Environment Authority, 2008). Furthermore, epidemiological studies on the related concept of burnout show that its prevalence may be estimated to be approximately 4–7% of the general working population (Schaufeli, 2003). These figures indicate that a considerable proportion of the

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working population suffers from substantial feelings of overstrain, disengagement and diminished accomplishment in relation to their work. This makes work-related stress and burnout a large concern at the individual, as well as the organizational level and highlights the importance of the early identification of individuals at risk for the development of burnout and for the implementation of preventative interventions.

To investigate means to prevent the development of burnout, there may be a need to complement research on organizational and individual risk factors, correlates and consequences of burnout with studies on individual variations in burnout patterns, as well as possible differential developmental pathways across time. Recent data suggest that, rather than speaking of either “burned out” or “engaged,” there may be several distinct patterns or “profiles” of burnout or engagement characteristics, some of which may be important early warnings signs (Demerouti, Verbeke, & Bakker, 2005; Maslach & Leiter, 2008).

Burnout is a prolonged response to chronic emotional and interpersonal stressors on the job (Maslach, Schaufeli, & Leiter, 2001). The concept of burnout, as measured with the Maslach Burnout Inventory (General Survey), consists of three robust and related but conceptually distinct dimensions: exhaustion (emotional exhaustion), cynicism (depersonalization) and lack of professional efficacy (reduced accomplishment) (Maslach, Jackson, & Leiter, 1996; Taris, Schreurs, & Schaufeli, 1999). From a theoretical point of view, it has been argued that exhaustion and cynicism comprise the “core” dimensions of burnout (Schaufeli, 2003). Exhaustion refers to an incapability to perform because of energy drainage, while cynicism represents mental distancing and poor identification with the job, possibly as an adaptive attempt to cope with excessive job demands and feelings of exhaustion (Maslach et al., 2001). Empirical data confirm the central role of exhaustion and cynicism and underscore the more ambiguous role of professional efficacy (Lee & Ashforth, 1996; Toppinen-Tanner, Kalimo, & Mutanen, 2002; van Dierendonck, Schaufeli, & Buunk, 2001).

Burnout has been linked to a wide range of organizational risk factors across different occupational populations (Lee & Ashforth, 1996; Maslach et al., 2001; Schaufeli & Enzmann, 1998). Even though most (cross-sectional) studies have shown consistent results when it comes to identifying the correlates of burnout, there are no conclusive results on its specific antecedents (Schaufeli, 2003). One reason may be that the sheer number of operating variables to take into account makes it difficult for a single study to be all-inclusive. In line with this, Leiter and Maslach have argued for a model that organizes organizational variables into six distinct areas of work life: workload (the experience of qualitative and/or quantitative work overload), control (e.g. role conflict, role ambiguity, autonomy), reward (financial, institutional or social), community (e.g. social support), fairness (extent to which decisions at work are perceived as fair and equitable) and values (mismatch in individual and organizational values and goals) (Leiter & Maslach, 2004). In addition, indefinite results may be due to the nature of burnout as a phenomenon that shows relatively little variation over time. This can make it difficult for even longitudinal and advanced correlational designs to explain additional variance (Schaufeli, 2003). A third reason could be that risk factors operate differently for different people – an assumption that is not being made within traditional correlational designs, which treat variables as being equally important across individuals (Von Eye & Bergman,

2003). These statistical methods that focus on the relations between independent and dependent variables at a group level and have accurate prediction as an important goal are very well suited for the identification of operating variables, but possibly, less suited to further the understanding of variables driving developmental processes within individuals (Bergman, 1998). Methodology with a slightly different orientation, such as cluster analysis, could here be helpful in elucidating processes since this approach focuses on the analysis of patterns of simultaneously operating variables as a tool for the study of processes of development and of inter-individual differences in this respect (Bergman, Magnusson, & El-Khoury, 2003). This study will employ such methodology.

Even though it is recognized by many that exhaustion and cynicism are core aspects of burnout, and that the role of professional efficacy is influential but more ambiguous, very little is actually known about how and when these variables interact over time in the process towards burnout. Also here, most work has been done with variable or “contingency” oriented methods, such as advanced correlational analyses (Lee & Ashforth, 1996; Toppinen-Tanner et al., 2002; van Dierendonck et al., 2001). Differences in outcome have been explained as due to differences in context (burnout developing differently under different environmental conditions) as well to differences in measurement and design (Maslach & Leiter, 2008). A third possibility, that there are different pathways to burnout for different individuals, has been acknowledged and explored in two recent studies by Demerouti and colleagues (2005) and Maslach and Leiter (2008).

Demerouti et al. (2005) made a case for the necessity to simultaneously take into account the three basic symptoms of the burnout syndrome and cross sectionally explored different configurations of burnout dimensions and their relationships with intra- and extra- role performance, using cluster analysis. They identified five meaningful burnout configurations: a non-burnout cluster, a burnout cluster and three clusters with what they called, “incomplete” burnout, characterized respectively by exhaustion only, cynicism only and reduced efficacy only. Beside expected relationships with performance for the non-burnout and the burnout clusters, the exhaustion only cluster showed intact intra- as well as extra-role performance, while the cynicism only cluster showed intact within-role performance as also partially inadequate extra-role performance. These findings were hypothesized to signify differential coping strategies. For the exhaustion cluster, the findings were hypothesized to signify an increased mobilization of effort and “compensation” strategy, and for the cynicism cluster an engagement in “loss based selection” and a display of an attitude of detached concern (Demerouti et al., 2005). Furthermore, the performance of their “inefficacious” group was in line with that of the burnout group, having low intra- as well as extra-role performance. Since the design of the study was cross sectional, it remains a question whether the identified subgroups are stable over time, as well as whether the individuals within “incomplete” subgroups are at risk to develop burnout, and which factors might influence this development.

Maslach and Leiter (2008) performed a study that extends the above results. They explored the trajectories of change over time for individuals with different scoring patterns, with a specific focus on those individuals who display “incomplete” (which the authors called “incongruent”) scoring patterns on the Maslach Burnout Inventory and who might therefore be displaying early warning signs of burnout and be a potential target group for early intervention. They profiled individuals on

the basis of scoring on the two core dimensions of burnout by using median splits. In this way, they created subgroups with “congruent” patterns (*burnout*: high exhaustion, high cynicism; and *engaged*: low exhaustion, low cynicism) and “incongruent” patterns (*exhaustion only*: high exhaustion, low cynicism; and *cynicism only*: low exhaustion and high cynicism). Based on the reasoning of consistency theory (Abelson et al., 1968), they predicted higher stability of congruent patterns over time and investigated correlates of change from incongruent patterns to burnout versus engagement over time. Their results yielded new insights into the development of burnout over time. Individuals with incongruent scoring patterns (either *exhaustion only* or *cynicism only*) were more likely to change over the course of a year, and scores on quality of work life variables (mainly fairness) were indicative of the direction of change towards burnout. However, as Maslach and Leiter, as well as Demerouti et al. (2005) point out, the results should be viewed with caution, as replications and extensions are needed to confirm stability and generalizability. Where the Demerouti et al. study was cross sectional in nature, Maslach and Leiter’s sub-grouping approach was based on median splits, thereby largely disregarding the distribution of scores. More sophisticated methodology for extracting configurations in combination with a longitudinal design could improve knowledge of naturally occurring scoring patterns, their direction of change and the accompanying changes in the organizational context. This approach to studying the development of burnout could provide new insights that would be of both theoretical and clinical value. It might shed light then on interactions of variables across time, and on the different developmental pathways. Not least, it could give information that would be of value in the early identification and secondary prevention of burnout.

Therefore, the aim of this study is to explore the occurrence and developmental trajectories of high burnout and of low scores on burnout (the latter situation may be regarded as indicating engagement (Maslach & Leiter, 2008)) in the general working population. To capture the multidimensional nature and internal dynamics of burnout, a person-oriented approach is taken to study the occurrence of subgroups of workers with comparable scoring patterns on the burnout characteristics of exhaustion, professional efficacy and cynicism. These profiles are investigated on their structural and individual stability over time and are validated against work-related and individual psychological variables. Furthermore, based on the work of Demerouti et al. (2005) and Maslach and Leiter (2008), the hypothesized trajectories of the incongruent scoring patterns towards burnout and engagement are further explored by examining changes in quality of work life and mental health factors associated with these developmental pathways.

Method

Design, participants and procedure

This study employs a prospective design (baseline and 12-month follow-up).

In 2001, a random sample of 3000 residents was obtained from the population register of Örebro County, Sweden. Included were adults from 20 to 60 years old, assuming that individuals in this age range represented the work force. A postal questionnaire was sent to the possible respondents ($N = 2954$; 34 had an unknown address and 12 had moved out of the county). The response rate at the initial

assessment was 61% ($N = 1812$). One thousand seven hundred fifty respondents were sent a follow-up questionnaire 1 year later (62 respondents had an unknown address). Of these, $N = 1496$ (85%) people responded. Given the purpose of this study, it was necessary for participants to be employed and to have complete data on the dimensions exhaustion, cynicism and professional efficacy of the Maslach Burnout Inventory-General Survey (the main measure in this study). Seventy-four percent of the participants, who filled out both the initial assessment and the follow-up, fulfilled these criteria, leaving a study population of $N = 1118$ (38% of the original sample from the population register). The Hospital's Board on Research Ethics approved the study.

An analysis of non-responders was conducted in two steps. The first analysis compared the initial non-responders with the participants in this study. A short telephone interview was conducted with a sample of $N = 98$ non-responders and showed that non-responders had a slightly lower average response on the question "do you feel burned out by your work?" as compared to responders ($M = 1.6$, $SD = 0.74$ resp. $M = 1.8$, $SD = 0.85$; $t(1207) = 2.25$, $p < .05$). This difference represents an effect size of $r = .07$. The second analysis compared baseline responders who did not respond to the follow-up questionnaire with the participants in this study. The non-responders had slightly higher levels of exhaustion ($M = 2.63$, $SD = 1.62$ resp. $M = 2.34$, $SD = 1.48$; $t(1534) = 3.33$, $p < .05$) and cynicism ($M = 2.06$, $SD = 1.58$ resp. $M = 1.78$, $SD = 1.42$; $t(1488) = 3.32$, $p < .05$) and slightly lower levels of professional efficacy ($M = 4.65$, $SD = 1.03$ resp. $M = 4.79$, $SD = 0.97$; $t(1498) = 2.40$, $p < .05$) as compared to the participants in this study. These differences represent effect sizes of $r = .08$ for exhaustion, $r = .09$ for cynicism and $r = .06$ for professional efficacy.

Measures

Background factors. The composite questionnaire included background questions on age, gender, nationality, civil status, education and sick leave for stress. The question on sick leave for stress was a categorical question (yes, no) on the accumulated sick leave during the past 12 months. It was followed up with a question asking to specify the number of days on sick leave.

Burnout – engagement. The three dimensions of the burnout-engagement continuum were measured, using a Swedish translation of the Maslach Burnout Inventory-General Survey (MBI-GS; Vingård et al., 2001). Several studies have confirmed the internal and external validity of the MBI-GS (Schutte, Toppinen, Kalimo, & Schaufeli, 2000; Taris et al., 1999). The MBI-GS has three subscales: "exhaustion" containing five items (e.g. feeling emotionally drained at work), "cynicism" containing five items (i.e. a cynical, negative attitude towards the workplace, tasks and colleagues) and "professional efficacy" containing six items (e.g. feeling that one's work capacity is valued in a positive way). All items use a frequency rating scale ranging from 0 (*never*) to 6 (*daily*) and were summed up and averaged to form a subscale score. For the subscales exhaustion and cynicism, higher scores indicate increased problems while for professional efficacy, lower scores indicate increased problems.

Anxiety and depression. The Hospital Anxiety and Depression Scale (HAD-S; (Zigmond & Snaith, 1983)) assessed anxiety and depression. The depression and anxiety subscales each consisted of seven items, for example, "I have lost interest in my

appearance” (depression) and “I feel tense or wound up” (anxiety). Participants scored each item on a 4-point scale (0–3) with end points varying with the item. Total scores for the subscales were calculated by summing the ratings for the seven items, with higher scores indicating more depressed mood and anxiety, respectively. The scales have, in the literature, and as in the Swedish population specifically, been found to have satisfactory reliability (mean Chronbach’s alpha for anxiety $\alpha = .83$ and for depression $\alpha = .82$) and validity (Bjelland, Dahl, Haug, & Neckelmann, 2002; Herrmann, 1997; Lisspers, Nygren, & Söderman, 1997).

Quality of work life. Six questions were used to touch upon the organizational context of burnout. In accordance with Leiter and Maslach (Leiter & Maslach, 1999), each of these questions was intended to tap into six different and important areas of work life: workload (“Do you have too much to do at your work?”), control (“Do you have the possibility to influence your working conditions?”), reward (“Do you get feedback when you do a good job?”), community (“Is there a spirit of friendly cooperation at your workplace?”), fairness (“Are you treated fairly by management?”) and values (“Does the organization’s values correspond with your own?”). The first four questions were taken from a survey, assessing psychosocial work factors (Hane, Berggren, & Eriksson, 1984). The last two questions are based on questions from the Organizational Check up Survey constructed by Leiter and Maslach (Leiter & Maslach, 2000). Each item had four response alternatives: 1 = *yes, mostly*; 2 = *yes, sometimes*; 3 = *no, seldom* and 4 = *no, never*.

Data analysis

Cluster analyses were used to group individuals with similar scoring patterns on the MBI-GS subscales: Exhaustion, Professional Efficacy and Cynicism. The analyses were done within SLEIPNER, a statistical package for pattern-oriented analyses (Bergman & El-Khoury, 2002). The data were analyzed, using the *LICUR* rationale (*L*inking of *CL*usters after removal of a *R*esidue (Bergman, 1998). This procedure encompasses the following. First, the sample of 1118 participants was examined for multivariate outliers at baseline and follow-up, separately. This procedure identified no candidates with diverging patterns to be excluded from further analysis. Thereafter, two hierarchical cluster analyses were performed cross sectionally at baseline and at the 12-month follow-up, using squared Euclidean distance as the similarity measure and Ward’s method to minimize within-cluster differences. To ensure reasonably homogeneous clusters, we selected cluster solutions that explained at least 67% of the total error sum of squares for further analysis (Bergman & El-Khoury, 2002). Thereafter, k-means cluster analyses were used to fine-tune the results. This procedure aims to increase the homogeneity of the clusters by allowing cases to move to a better fitting cluster, if this leads to a reduction in the error sum of squares of the cluster solution. Then, these two separate cluster solutions, extracted from the same sample at two different time points, were linked across time, using the “centroid” procedure to examine structural stability and the “exacon” procedure to examine individual stability. The centroid procedure assists in examining the similarity of the cluster solutions extracted at the two different time points by calculating the average squared Euclidean distance between the centroids of the two-cluster solutions. The exacon procedure produces a contingency table of the two-cluster solutions and examines it with a focus on cell-wise analysis of common

pathways: “*types*” (an overrepresentation of units in a cell) and uncommon pathways: “*antitypes*” (an underrepresentation of units in a cell). It calculates, among other things, the one-tailed probability of finding a cell frequency as high/low as the observed one by chance, and can, in this way, highlight relationships between clusters (the typical and a-typical individual progressions from one cluster to another over time). Thereafter, the cluster solution at baseline was validated descriptively against quality of work life variables, depression, anxiety and sick leave. Analysis of Variance (Tukeys-b as *post hoc* analysis), Kruskal-Wallis (Mann-Whitney U as *post hoc* analysis) and chi-square were used to statistically test differences between clusters on these variables.

As a last step, an exploratory analysis was performed, investigating whether the developmental pathways towards and away from burnout were accompanied by differential changes in quality of work life variables and anxiety and depression. For this analysis, the trajectories of individuals belonging to incongruent clusters towards engagement, burnout or continued incongruency were singled out. Kruskal-Wallis (Mann-Whitney U as *post hoc* analysis) and Analysis of Variance (Tukeys-b as *post hoc* analysis) were used to test for significant differential changes. To protect against family-wise error, Bonferroni corrections were applied for all statistical significance tests.

Results

Table 1 gives an overview of background characteristics and descriptive values on the independent measures for the participants in this investigation.

Subgroup analysis at baseline

A subgroup analysis at baseline was performed to investigate whether there were homogeneous subgroups with comparable patterns on exhaustion, professional efficacy and cynicism. The number of clusters selected was determined by the proportion of explained variance. After using a relocation procedure to fine-tune the results from the hierarchical procedure, this resulted in a six-cluster solution that explained 72% of the variance. Figure 1 graphically displays the cluster centroids expressed in Z-scores for the six clusters at baseline, while Table 2, Panel A, shows the mean scores on the variables within each cluster.

As can be seen, there are two clusters, cluster 1 and cluster 6, that are characterized by a relative absence of exhaustion. These clusters are, however, distinct in that cluster 1 (“*engagement*” cluster, $n = 391$) is characterized by a high level of professional efficacy, while cluster 6 (“*low professional efficacy*” cluster, $n = 158$) is characterized by a low level of professional efficacy. Clusters 2 and 4 have comparable levels of above average levels of exhaustion but differ greatly on professional efficacy and cynicism. While cluster 2 shows a somewhat above average level of professional efficacy and a somewhat below average level of cynicism (“*exhaustion*” cluster, $n = 185$), cluster 4 is characterized by very low levels of professional efficacy and high levels of cynicism (“*burnout*” cluster, $n = 82$). The pattern of scoring on exhaustion and cynicism of cluster 4 is similar to that of cluster 5; however, these clusters are dissimilar in that cluster 4 shows a very low level of professional efficacy, while this feature is absent in cluster 5 (“*burnout with intact*

professional efficacy” cluster, $n = 139$). Cluster 3 is characterized by an above average level of cynicism in combination with a slightly above average level of exhaustion and an above average level of professional efficacy (“cynicism” cluster, $n = 163$). Cluster 3

Table 1. Sample characteristics at baseline ($N = 1118$).

Variable	Mean (SD) or %
Age	43.0 (10.8)
Gender (% female)	52%
Civil status	
Cohabiting	76%
Single	24%
Education	
Grade school	22%
High school	45%
University	30%
Other	4%
Sicklisted for stress during past 12 months (% yes)	9%
Burnout (MBI-GS)	
Exhaustion	2.3 (1.5)
Professional efficacy	4.8 (1.0)
Cynicism	1.8 (1.4)
Mental health (HAD-S)	
Anxiety	6.5 (4.1)
Depression	4.8 (3.8)
Quality of work life	
Reward	2.25 (0.9)
Community	1.46 (0.7)
Control	2.12 (1.0)
Fairness	1.56 (0.80)
Values	1.71 (0.79)
Workload	3.16 (0.8)

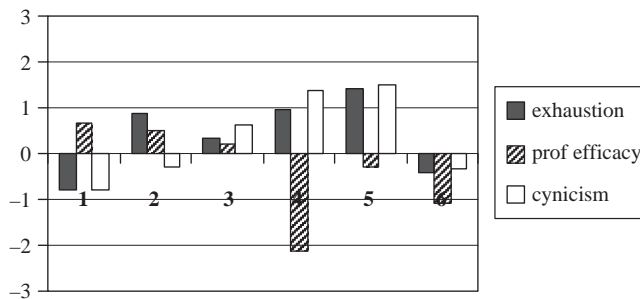


Figure 1. Graphic representation of the six-cluster solution at baseline, showing z-scores on the three subscales of the MBI-GS.

Table 2. Mean scores and standard deviations of the clusters obtained at baseline (Panel A) and 1-year follow-up (Panel B) on the three subscales of the MBI-GS.

<i>Cluster scores at baseline</i>			
<i>Panel A</i>	Exhaustion <i>M (SD)</i>	Professional efficacy <i>M (SD)</i>	Cynicism <i>M (SD)</i>
<i>Cluster 1</i>	1.1 (0.7)	5.4 (0.5)	0.6 (0.5)
<i>Cluster 2</i>	3.6 (0.8)	5.3 (0.5)	1.4 (0.7)
<i>Cluster 3</i>	1.8 (0.8)	5.0 (0.5)	2.6 (0.8)
<i>Cluster 4</i>	3.7 (1.2)	2.7 (0.8)	3.7 (1.1)
<i>Cluster 5</i>	4.4 (0.8)	4.5 (0.6)	3.9 (1.0)
<i>Cluster 6</i>	1.7 (0.9)	3.7 (0.6)	1.3 (0.8)

<i>Cluster scores at 1-year follow-up</i>			
<i>Panel B</i>	Exhaustion	Professional efficacy	Cynicism
<i>Cluster 1</i>	1.0 (0.6)	5.6 (0.3)	0.8 (0.7)
<i>Cluster 2</i>	3.3 (0.9)	5.3 (0.5)	1.4 (0.7)
<i>Cluster 3</i>	1.4 (0.6)	4.5 (0.5)	1.3 (0.8)
<i>Cluster 4</i>	4.4 (1.1)	2.9 (0.9)	4.5 (0.9)
<i>Cluster 5</i>	4.0 (1.0)	4.9 (0.5)	3.6 (0.8)
<i>Cluster 6</i>	2.6 (1.1)	3.4 (0.7)	2.4 (0.9)

shows some similarities with cluster 5, but cluster 3's scores are well within the range of average scoring of the sample.

In summary, a little over a third (35%) of this sample had a profile of engagement towards their work, while 20% had a profile of work-related burnout. In total, somewhat over half (55%) of the sample consisted of individuals in congruent clusters (either engaged (cluster 1) or burnout (clusters 4, 5), and 45% of individuals belonged to an incongruent cluster (cluster 2, 3 or 6).

Comparison of the structure of cluster solutions across time

In order to determine whether the configurations that appeared in the analysis at baseline reappeared at follow-up – that is, whether the clusters showed structural stability across time – a second cluster analysis was performed at the 1-year follow-up. The same procedure was followed to extract reasonably homogeneous clusters. Using a relocation procedure to fine-tune the results from the hierarchical procedure resulted in a six-cluster solution that explained 70% of the variance. Figure 2 graphically displays the cluster centroids expressed in *Z*-scores for the six clusters at the 1-year follow-up, while Table 2, Panel B, shows the mean scores on the variables within each cluster.

Visual inspection of Figure 2 shows that the emerging patterns at follow-up were very similar to the cluster solution extracted at baseline. The patterns that do not seem to reappear in a similar configuration as at baseline are cluster 3 and, possibly, cluster 6. Instead of cluster 3 (a cluster with elevated scores on cynicism and slightly elevated scores on exhaustion), a cluster with below average scores on exhaustion,

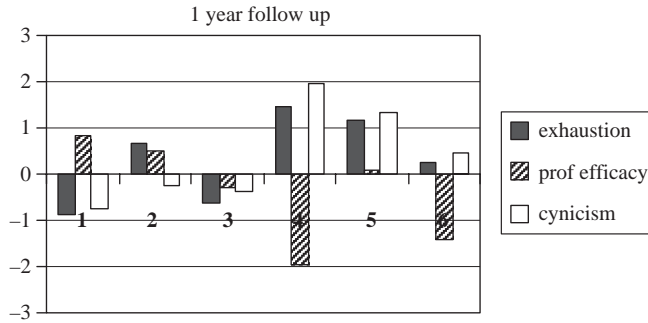


Figure 2. Graphic representation of the six-cluster solution at 1-year follow-up, showing z-scores on the three subscales of the MBI-GS.

cynicism and professional efficacy appears. Instead of cluster 6 (a cluster with as its main feature low professional efficacy), a cluster with low professional efficacy combined with slightly elevated scores on exhaustion and cynicism appears. To further explore the similarities between the cluster solutions, a centroid analysis was performed. The average squared Euclidian distances between the cluster centroids at the two time points were relatively small and varied between 0.011 (cluster 1) and 0.431 (cluster 5), which confirms the relative stability of the cluster solution across time.

Individual trajectories over time

Cluster stability across time does not necessarily mean individual stability, and even though most moves from one cluster to another across a 1-year period of time are possible, some moves are more likely than others. Table 3 displays the frequency of occurrence of all across-time pathways in a 6×6 contingency table. Based on the Exacon analysis, all typical and atypical pathways are highlighted. The odds ratios for the typical pathways are given in brackets and are all significant at $p < .01$. As can be seen, the most typical pattern of change is one of stability, for congruent (clusters 1, 4, 5), as well as for incongruent (clusters 2, 3, 6) patterns. The likelihood of remaining in the same or a similar cluster is significantly higher than expected by chance for all clusters and ranges between an odds ratio of 1.5 (cluster 3, "cynicism" cluster) and 6.4 (cluster 4, "burnout" cluster). For clusters 3 and 6, this typical pathway means slight change rather than stability since the patterns at follow-up did not reappear in the exact same way. For cluster 3 ("cynicism") this means that a typical pathway is one of improvement, while for cluster 6 ("low professional efficacy"), this means that typical pathways can entail improvement (OR 1.8, towards cluster 3 at follow-up) or slight worsening (OR 2.1, towards cluster 6 at follow-up).

A significantly higher percentage of individuals belonging to a congruent cluster had the same scoring profile at follow-up (52%) compared to individuals belonging to an incongruent cluster (36%; $\chi^2 = 28.8$, $df = 1$, $p < .001$). However, this does not mean that individuals with incongruent scoring patterns have a direction of change towards congruity, as 57% of individuals belonging to an incongruent cluster at baseline also belonged to an incongruent cluster at 1-year follow-up.

Table 3. Number of individuals following particular developmental pathways from baseline to 1-year follow-up.

<i>Profile at baseline</i>	<i>Profile at 1-year follow-up</i>					
	<i>Cluster 1</i>	<i>Cluster 2</i>	<i>Cluster 3</i>	<i>Cluster 4</i>	<i>Cluster 5</i>	<i>Cluster 6</i>
<i>Cluster 1, Engagement: E --, PE ++, C --</i>	228 ^t 113.7* (2.0)	48 ^{at} 73.1*	86 83.9	0 ^{at} 22.4*	11 ^{at} 51.4*	18 ^{at} 46.5*
<i>Cluster 2, Exhaustion: E ++, PE +, C +-</i>	20 ^{at} 53.8*	89 ^t 34.6* (2.6)	23 ^{at} 39.7*	5 10.6	31 24.3	17 22.0
<i>Cluster 3, Cynicism: E +-, PE +-, C +</i>	36 47.4	29 30.5	53 ^t 35.0* (1.5)	6 9.3	24 21.4	15 19.4
<i>Cluster 4, Burnout: E ++, PE --, C ++</i>	4 ^{at} 23.8*	6 ^{at} 15.3*	7 ^{at} 17.6*	30 ^t 4.7* (6.4)	14 10.8	21 ^t 9.8* (2.2)
<i>Cluster 5, Burnout with intact PE: E ++, PE +-, C ++</i>	11 ^{at} 40.4*	18 26.0	11 ^{at} 29.8*	17 8.0* (2.1)	59 ^t 18.3* (3.2)	23 16.5
<i>Cluster 6, Low professional efficacy: E +-, PE --, C +-</i>	26 ^{at} 45.9*	19 29.5	60 ^t 33.9* (1.8)	6 9.0	8 ^{at} 20.8*	39 ^t 18.8* (2.1)

Shown above in the table are observed (upper number in each cell) and expected frequencies (lower number in each cell). The odds ratios for the typical pathways are given in brackets.

* $p < .01$.

Note: E = exhaustion; PE = professional efficacy; C = cynicism.

++ = very high score; + = high score; +- = neither high nor low score; - = low score; -- = very low score; relative to the mean scores of the other clusters on this dimension.

^t = typical (often-occurring) pathway; ^{at} = a-typical (seldom occurring) pathway.

Individual patterns of change occurred from the *burnout* clusters (clusters 4 and 5) towards improvement and towards worsening. That is, there was a higher likelihood than expected by chance that improvement in level of exhaustion and cynicism occurred for cluster 4 (OR 2.2), and a higher likelihood than expected by chance that worsening in level of professional efficacy occurred for cluster 5 (OR 2.1). It is noteworthy that many of the significant *a-typical* pathways were found to and from the healthy engagement cluster. That is, it is a-typical that engaged workers developed partial or even full burnout over the course of a year, as well as that individuals with single signs or full burnout developed into an engaged worker across this time period.

Validation of the cluster solution

To study how the six patterns related to mental health and quality of work life variables, a cross-sectional comparison was made. We obtained data on mental health complaints (anxiety and depression), and quality of work life variables workload, control, community, reward, fairness and values. As can be seen in Table 4, the clusters show meaningful differences on these outcome variables. In fact, the burnout clusters (clusters 4 and 5) and the clusters, characterized by increased emotional exhaustion, distinguish themselves by the elevated scores on all variables, while the engaged cluster distinguishes itself by having the most favourable scores on all variables. Note, that there are significant differences in gender distribution between clusters; clusters 2 and 5 include higher percentages of women and cluster 3 lower percentages of women.

Are there differential changes on work life and mental health variables for trajectories towards and away from burnout?

In order to explore whether quality of work life and mental health variables were indicative of the direction of change towards burnout or engagement, the individuals belonging to incongruent clusters at baseline were selected for further analysis. For each of the incongruent patterns at baseline (respectively cluster 2 *exhaustion*, cluster 3 *cynicism* and cluster 6 *low professional efficacy*), change scores on work life variables, anxiety and depression were compared between the subgroup with a trajectory to an engaged pattern (cluster 1 at follow-up), the subgroup with a trajectory towards a burnout pattern (cluster 4 or 5 at follow-up) and the subgroup that remained in an incongruent pattern (cluster 2, 3 or 6 at follow-up).

Table 5 shows mean change scores, test statistics and results from the *post hoc* analyses. For the individuals with high exhaustion scores only (cluster 2), there were significant differences between the trajectories in terms of changes in workload, fairness, depression and anxiety. That is, individuals who moved towards an engaged pattern had a favourable change in work load score as compared to those who developed burnout. Those who remained in an incongruent cluster had a favourable change in fairness as compared to those who developed burnout, and those who moved to engagement at follow-up had a favourable change in scores on anxiety, as well as depression compared to the individuals moving to burnout, as well as to those remaining in incongruent clusters. For the individuals with high cynicism scores only (cluster 3), there were no significant differences between the trajectories in changes on work life variables. However, there were significant differences between the

Table 4. Cross-sectional validation of cluster solution at baseline.

	Clusters						$H/F/\chi^2$ ($df=5$)	<i>Post hoc</i>
	1	2	3	4	5	6		
Number	$N=391$	$N=185$	$N=163$	$N=82$	$N=139$	$N=158$	–	–
(% of total)	(35%)	(17%)	(15%)	(7%)	(12%)	(14%)		
% women	51%	57%	42%	52%	63%	51%	15,64*	
Age	44 (42–45)	42 (40–43)	42 (41–44)	43 (40–45)	46 (44–48)	42 (40–43)	3,57*	5 > 1 > 2,3,4,6
Workload	3 (3–3)	4 (3–4)	3 (3–4)	3 (3–4)	4 (3–4)	3 (3–3)	150,78**	2,4,5 > 1,6/2,5 > 3
Community	1 (1–1)	1 (1–2)	1 (1–2)	2 (1–3)	2 (1–2)	1 (1–2)	126,28**	4,5 > 2,3,6 > 1
Control	1 (1–2)	2 (2–3)	2 (1–3)	3 (2–4)	3 (2–4)	2 (1–3)	214,43**	4,5 > 2,3,6 > 1
Reward	2 (1–2)	2 (1–3)	2 (2–3)	3 (3–4)	3 (2–3)	2 (2–3)	174,20**	2,3,4,5,6 > 1/3,4,5 > 2/ 4 > 3/4,5 > 6
Fairness	1 (1–1)	1 (1–2)	1 (1–2)	2 (1–3)	2 (1–3)	1 (1–2)	176,42**	4,5 > 2,3,6 > 1
Values	1 (1–2)	1 (1–2)	2 (1–2)	2 (2–3)	2 (2–3)	2 (1–2)	216,39**	4,5 > 2,3,6 > 1/3 > 2
Anxiety (HAD-S, 0-24)	3.8 (3.5–4.0)	8.8 (8.3–9.3)	6.0 (5.5–6.6)	9.7 (8.9–10.6)	10.1 (9.4–10.6)	6.0 (5.5–6.6)	121,91**	5 > 4 > 2 > 3,6 > 1
Depressed mood (HAD-S, 0-24)	2.3 (2.0–2.5)	6.4 (5.9–7.0)	4.6 (4.1–5.0)	8.7 (7.8–9.5)	8.2 (7.6–8.8)	4.5 (4.0–5.1)	130,94**	5,4 > 2 > 3,6 > 1
Sick leave (% > 15 days)	0%	4%	1%	8%	13%	3%	56,07**	

Median scores (IR) on work life variables, mean scores (95% CI) on mental health variables,% sick leave > 15 days, test statistics and results from *post hoc* analysis.
* $p < .01$; ** $p < .001$.

Note: Clusters: 1 = *engagement*; 2 = *exhaustion*; 3 = *cynicism*; 4 = *burnout*; 5 = *burnout with intact professional efficacy*; 6 = *low professional efficacy*.

Table 5. Changes on quality of work life and mental health variables for individuals with development pathways from incongruent patterns to engaged, continued incongruent or burnout patterns, across a 1-year period.

Risk factors	Baseline Cluster 2 <i>Exhaustion</i>				Baseline Cluster 3 <i>Cynicism</i>				Baseline Cluster 6 <i>Low professional efficacy</i>			
	Pattern at follow-up			<i>H</i> (<i>df</i> =2)	Pattern at follow-up			<i>H</i> (<i>df</i> =2)	Pattern at follow-up			<i>H</i> (<i>df</i> =2)
	Eng.	Incong.	Burn.		Eng.	Incong.	Burn.		Eng.	Incong.	Burn.	
Workload change	.45 ^a (.83)	.11 (.63)	-.13 ^b (.65)	10.2*	.22 (.64)	.14 (.73)	-.05 (.72)	3.3	0.0 (.69)	-.14 (.76)	-.02 (.64)	1.6
Community change	-.05 (.60)	.04 (.73)	-.21 (.71)	3.0	.32 (.77)	0.0 (.62)	.11 (.65)	6.5	.04 (.45)	-.07 (.57)	.09 (.59)	2.0
Reward change	.40 (.75)	-.06 (.80)	-.04 (.65)	6.2	-.08 (.69)	.11 (.95)	-.33 (.81)	5.7	-.04 (.72)	.12 ^a (.83)	-.35 ^b (.67)	10.4*
Control change	.10 (.79)	.17 (.90)	-.33 (1.3)	8.2	.31 (.75)	-.13 (.93)	-.17 (.91)	7.3	-.04 (.87)	.03 (.81)	.02 (.97)	0.9
Values change	.05 (.60)	.02 (.72)	-.30 (.72)	7.2	.27 (.72)	.07 (.67)	.05 (.84)	3.1	.54 ^a (.86)	.12 (.81)	-.17 ^b (.79)	9.6*
Fairness change	.05 (.94)	.04 ^a (.87)	-.33 ^b (1.0)	9.2*	0.0 (.97)	-.01 (.86)	0.0 (1.1)	.07	.04 (.87)	.07 (.69)	-.21 (.86)	2.4
Depression change	2.2 ^a (2.4)	.31 ^b (2.9)	-.89 ^b (3.1)	7.9*	.69 ^b (1.8)	.02 ^b (2.4)	-1.6 ^a (2.2)	10.3*	.62 (2.1)	.51 (2.5)	-.26 (2.2)	1.9
Anxiety change	2.4 ^a (3.1)	.62 ^b (2.7)	-.09 ^b (2.8)	5.8*	1.1 ^a (2.2)	-.08 ^b (2.6)	-.81 ^b (2.4)	5.3*	.50 (2.0)	.36 (2.2)	0 (2.9)	0.5

Mean change scores (standard deviations in brackets), test statistics and results from *post hoc* analysis.

* $p < .01$.

Note: Change scores with different superscripts differ significantly at $p < .05$. Eng. = *Engaged* pattern (cluster 1 at follow-up); Incong. = *Incongruent* pattern (clusters 2, 3 and 6 at follow-up); Burn. = *Burnout* pattern (clusters 4 and 5 at follow-up).

trajectories on depression and anxiety, where those who developed burnout showed a worsening of depression scores as compared to the other two trajectories and those who moved to the engaged cluster showed a decrease in their anxiety scores as compared to the other two trajectories. For the individuals with low professional efficacy scores only (cluster 6), there were significant differences between the trajectories in changes on reward and values. Those who developed burnout showed less favourable changes in scores on reward and values as compared to those who remained in an incongruent cluster and the engaged cluster, respectively.

Discussion

This study explored the occurrence and developmental trajectories of burnout and engagement in a large general working population sample. The goal was to map naturally occurring subgroups of workers with similar scoring patterns on exhaustion, cynicism and professional efficacy. These scoring patterns were investigated on their structural and individual stability across a 1-year period and were validated against work life quality variables and mental health variables. Furthermore, the trajectories of incongruent patterns towards burnout and engagement were explored by examining differences in changes in quality of work life and individual psychological factors for these developmental pathways.

The results confirm the occurrence of several patterns of burnout symptoms, rather than the existence of a dichotomy of “burnout” versus “engagement” (Maslach & Leiter, 2008) (or vs. non-burnout, Demerouti et al. 2005). The results also largely replicate those findings regarding the specific configurations that appear; an engaged cluster with favourable scores, clusters with unfavourable scores on exhaustion and cynicism, mirroring “burnout,” as well as “incongruent” clusters characterized by one of the three burnout symptoms in the relative absence of the other two symptoms (Maslach & Leiter, 2008). However, while a hypothesized cluster characterized by only exhaustion (with below average cynicism and above average professional efficacy) was identified in this study, a hypothesized cluster of “only” cynicism was found to be rather a cluster with cynicism *and* somewhat above average exhaustion scores. Thus, a profile of cynicism in isolation did not seem to occur, or, at least, did not seem to be a common representation within this general working population sample. Although not a test of this hypothesis *per se*, this is in line with the notion that cynicism, at least to some degree, could be a response to exhaustion and a signal of a proactive, protective, coping strategy (Maslach et al., 2001). In accordance with the literature, the role of professional efficacy is somewhat elusive, and professional efficacy’s relation to exhaustion and cynicism does not seem consistent (Lee & Ashforth, 1996; Schaufeli, 2003; van Dierendonck et al., 2001). In cluster 6, low professional efficacy occurred as a stand-alone and in cluster 5, the cluster with high levels of exhaustion and cynicism and the most unfavourable scores on work life and mental health variables, scores on professional efficacy were close to the average. Very few people in cluster 6 developed burnout over a 1-year period, but one typical developmental pathway from cluster 6 was a pathway towards deterioration. In line with some theorists, this could mean that for some individuals low professional efficacy scores could be a very early warning sign for burnout (van Dierendonck et al., 2001). In this way, the “incongruent” subgroups may, in part, represent persons in different phases of the burnout process. Longitudinal studies

extending over a longer period of time than 1 year may shed light on this, and person-oriented approaches may well complement the extensive work that has been done regarding the order of the dimensions in the process of developing burnout (Golembiewski, 1999; Taris, Blanc, Schaufeli, & Schreurs, 2005).

The cross-sectional validation of the clusters at baseline confirms important differences between the profiles on work-related and mental health variables and indicates that different variables may be related to different profiles. Obvious (and in line with many previous studies), differences appeared between the engaged and the burnout clusters on all variables (Kalimo, Pahkin, Mutanen, & Toppinen-Tanner, 2003; Maslach et al., 2001; Peterson, Demerouti, Bergström, Åsberg, & Nygren, 2008). The incongruent clusters 2, 3 and 6 showed scores that are “in between” the scores of the engaged cluster on the one hand, and the burnout clusters, on the other hand. This supports the idea that the individuals in these clusters may be at risk for the development of burnout and that work life variables and individual variables may serve the role of critical incongruities, or “tipping points” towards or away from this development (Maslach & Leiter, 2008). Interesting differences appear between the exhausted cluster and the cynicism cluster, where the exhausted cluster stands out with significantly higher scores on work load, anxiety and depression but with more favourable scores on variables that may reflect job resources, such as matching values and receiving feedback about doing a good job (reward variable). This is in line with studies reasoning from a job demands-resources model, where work demands have been found to be related to the exhaustion component and job resources to the cynicism component of burnout (Bakker, Demerouti, & Verbeke, 2004; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001b).

The structure of the cluster solutions across a period of 1 year was very stable and further validates the natural occurrence of the congruent patterns burnout and engagement, as well as the natural occurrence of incongruent patterns, mainly one of exhaustion and one of decreased professional efficacy. The cynicism cluster, however, was not evident at follow-up, indicating the relative instability of this profile.

At an individual level, the developmental patterns across a 1-year period also indicate stability rather than change; although it should be pointed out that change for the worse and for the better did indeed occur. The odds ratios for showing a similar scoring pattern at follow-up as compared to baseline ranged between 1.5 and 6.4. The individuals within the two burnout clusters showed by far the highest rates of stability, reinforcing the finding that burnout is a chronic condition and relatively little change occurs over time (Bakker, Schaufeli, Sixma, Bosveld, & Van Dierendonck, 2000; Toppinen-Tanner et al., 2002). For the cynicism cluster, the likely developmental pattern was one of change towards decreased levels of cynicism and exhaustion rather than stability. This finding, also given this profile's structural instability, could indicate that this profile of a cynical attitude towards work is not necessarily a risk profile. Then again, given that indeed some individuals within this cluster developed burnout and others developed engagement, this may well depend on individual and work-related risk factors.

Judging the prevalence of burnout in the general population has been problematic due to the multidimensional nature of the concept and the difficulties in establishing independent bench-marks that could be applied and compared across cultures (Brenninkmeijer & van Yperen, 2003; Schaufeli, 2003). Making use of profiling may provide new opportunities in judging and comparing the occurrence of

burnout and engagement in different populations. This study shows that a little over a third (35%) of a randomly selected sample from the general working population was characterized by a profile of engagement towards their work while close to a fifth (19%) was characterized by a profile of cynicism and exhaustion, the two main characteristics of burnout. Of these 19%, 7% also experienced a significantly low level of professional efficacy. These numbers are in line with attempts to judge the prevalence of burnout in the general working population (Schaufeli, 2003), yet the level of truly engaged individuals within our sample seems alarmingly low.

Maslach and Leiter (2008) found support for the idea that congruent patterns of burnout or engagement are more stable over time than incongruent patterns that are characterized by one component of burnout only. In this study, some support for this hypothesis was found as a significantly higher percentage of individuals belonging to a congruent cluster showed the same scoring pattern 1 year later (52%) compared to individuals belonging to an incongruent cluster (36%). On the other hand, individuals with incongruent scoring patterns were not particularly likely to have a direction of change towards congruity; 57% remained in an incongruent cluster. This result is not in line with the consistency hypothesis entertained by Maslach and Leiter (2008), as this hypothesis would predict a higher likelihood of change towards congruent clusters. Possibly, the direction of change is not dependent on an internal drive towards consistency within individuals, rather it is dependent on the presence of "tipping point" risk factors that may drive the development in a certain direction.

This exploratory investigation of what drives the development of burnout or engagement gives some preliminary support for this idea, as there were differential changes on work-related and mental health risk factors between the developmental pathways to burnout and to engagement, across a 1-year period. In addition, the results indicate that risk factors may differ, depending on the profile. For example, for the individuals characterized by a profile of only exhaustion, there were different changes in workload, fairness, anxiety and depression between those who developed burnout and those who developed engagement. Cross sectionally at baseline, the individuals in the exhaustion only cluster were characterized by high levels of anxiety and workload, while having relatively normal scores on variables in the realm of job resources. This is in line with recent data that confirm that individuals characterized by exhaustion report high job demands but good access to job resources (Demerouti, Bakker, deJonge, Janssen, & Schaufeli, 2001a; Peterson et al., 2008). Reasoning from the job demands-resources model, it is possible that a decrease in experienced fairness as well as an increase in already high workload tips the balance for these individuals and fosters disengagement.

For individuals characterized by a profile of cynicism, there appear to have been different risk factors associated with the development of burnout. Here, significant differential changes between the pathways emerge on the individual risk factors only. This suggests that, for individuals with a disengaged attitude towards their work in the relative absence of exhaustion, mental health variables may play an important role in the development of burnout. Yet, it should be kept in mind that the relatively small *N* or the restricted variance due to the single item measurement, may have influenced the significance testing of the work variables. Also, significance levels were set as conservative so as to not inflate family-wise error. However, this may have increased type II error. An evaluation of the results without attending to significance levels suggests that especially changes in job resource, such as community, reward

and control, may possibly play a role. Future studies could improve upon the measurement of work-related risk factors.

Last, also for individuals with a profile of low professional efficacy, there appear to be different risk factors associated with the development of burnout. Here, none of the mental health factors show significant differential changes between the pathways. However, different changes in reward and values occur between the pathways. Compared to the individuals that remain to have an incongruent scoring pattern at follow-up, individuals who develop a burnout scoring pattern have deteriorated scores on the item assessing whether one receives feedback about doing a good job ("reward"). Furthermore, individuals who change to a scoring pattern of engagement at follow-up have improved scores on values.

In summary, this part of the analyses should be regarded as exploratory due to the assessment with single items which may influence the reliability of the assessment of the work-related factors, as well as the inherent difficulty of the relatively small number of individuals within each developmental pathway. However, the assessment of the work related does cover ground, as it touches upon all six areas of work life identified by Leiter et al. (1999), as well as the items do appear valid representatives of each area, as the relationships at baseline are in line with theory and empirical findings. Also, due to the clustering procedure, each of the three incongruent, and possibly at risk, subgroups is homogeneous in scoring profile, and this allows for the possibility of comparing changes towards burnout and engagement for largely "similar" individuals. The results give herewith a preliminary indication of the differential importance of risk factors dependent on initial profile. This may have clear implications for early intervention, as, for example, a decrease in work load in combination with enhancing stress coping skills would be far more appropriate for the exhausted subgroup than for the cynicism or low professional efficacy group.

The sample in this study was large and came from a randomly selected sample from the general working population to strive for representativeness. However, the final sample, suitable for answering the questions in this study, contained just 38% of the random sample originally selected. Therefore, the sample in this study could be subject to a response bias, and generalization of the results should be done with caution. In fact, the analyses of non-responders showed some slight but significant differences between the participants in the study sample and original non-responders, as well as participants who had not responded to the follow-up questionnaire. These differences may have implications for judging the prevalence of the occurring profiles. For example, initial non-responders had a slightly lower average response on the question "do you feel burnout by your work" as compared to the participants in the study sample. This indicates a possible overrepresentation of work-related stress in this sample. However, even though the difference between responders and non-responders was statistically significant, it was very small, representing an effect size of $r = .07$. Furthermore, it should be kept in mind that cluster analysis is a mathematical method to structure multivariate data and not a parametrical statistical method. Thus, the validity and reliability of the profiles is not contested *per se*, by a slight sampling bias, but should instead be confirmed by replication in independent samples.

In summary, this study replicates and extends the findings from two recent studies (Demerouti et al., 2005; Maslach & Leiter, 2008) that take on a new, complementary approach to studying the development of burnout. The focus of the study is on the interrelationship of burnout characteristics within individuals, and the aim is to

investigate early warning configurations and their relation with risk factors in the development of burnout or engagement. This person-oriented approach provides new insights as the results show that the road to burnout may be different for different subgroups and that each of these subgroups may potentially have different risk factors associated to the development of burnout. This is of clear importance for the development of early interventions.

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