

Highly engaged but burned out: intra-individual profiles in the US workforce

Julia Moeller

*Yale Child Study Center and Yale Center for Emotional Intelligence,
Yale University, New Haven, Connecticut, USA and*

Department of Education, University of Leipzig, Leipzig, Germany
Zorana Ivcevic and Arielle E. White

*Yale Child Study Center and Yale Center for Emotional Intelligence,
Yale University, New Haven, Connecticut, USA*

Jochen I. Menges

WHU – Otto Beisheim School of Management, Düsseldorf, Germany, and

Marc A. Brackett

*Yale Child Study Center and Yale Center for Emotional Intelligence,
Yale University, New Haven, Connecticut, USA*

Abstract

Purpose – The purpose of this paper is to use the job demands-resources model to investigate intra-individual engagement-burnout profiles, and demands-resources profiles.

Design/methodology/approach – A representative sample of the US workforce was surveyed online. Latent profile analysis (LPA) and configural frequency analysis examined intra-individual profiles and their inter-relations.

Findings – A negative inter-individual correlation between engagement and burnout suggested that burnout tends to be lower when engagement is high, but intra-individual analyses identified both aligned engagement-burnout profiles (high, moderate, and low on both variables), and discrepant profiles (high engagement – low burnout; high burnout – low engagement). High engagement and burnout co-occurred in 18.8 percent of workers. These workers reported strong mixed (positive and negative) emotions and intended to leave their organization. Another LPA identified three demands-resources profiles: low demands – low resources, but moderate self-efficacy, low workload and bureaucracy demands but moderate information processing demands – high resources, and high demands – high resources. Workers with high engagement – high burnout profiles often reported high demands – high resources profiles. In contrast, workers with high engagement – low burnout profiles often reported profiles of high resources, moderate information processing demands, and low other demands.

Originality/value – This study examined the intersection of intra-individual engagement-burnout profiles and demands-resources profiles. Previous studies examined only one of these sides or relied on inter-individual analyses. Interestingly, many employees appear to be optimally engaged while they are burned-out and considering to leave their jobs. Demands and resources facets were distinguished in the LPA, revealing that some demands were associated with resources and engagement.

Keywords Burnout, Configural frequency analysis, Dark side of engagement, Demands-resources model, Intra-individual analyses, Latent profiles

Paper type Research paper

1. Introduction

Work engagement drives employees' productivity and well-being, and is therefore considered a desirable, optimal form of work motivation (e.g. Bakker and Demerouti, 2007; Gorgievski-Duijvesteijn and Bakker, 2010). Consistent findings of positive associations between work engagement, desirable employee characteristics, and work outcomes have

The study was conducted at the Yale Center for Emotional Intelligence but completed after the first author became an Assistant Professor at the University of Leipzig.



lead to the conclusion that highly engaged employees were flourishing and thriving (Bakker and Sanz-Vergel, 2013).

On the other hand, high work motivation may result in exhaustion and health impairment, particularly in the presence of high work demands and time pressure (Bakker *et al.*, 2007; Crawford *et al.*, 2010; Virtanen *et al.*, 2012). Extremes of such exhausting engagement are phenomena such as workaholism (Gorgievski-Duijvesteijn and Bakker, 2010) and karoshi (sudden death due to overwork; Ishiyama and Kitayama, 1994; Okudaira, 2004).

Recent studies suggest that engagement and exhaustion are experienced together in large groups of high school students (Tuominen-Soini and Salmela-Aro, 2014; Salmela-Aro, Moeller, Schneider, Spicer, and Lavonen, 2016). Likewise, high demands and resources co-occur in substantial groups of employees (Van den Broeck *et al.*, 2012). However, little is known about the relations of engagement-burnout profiles to demands-resources profiles, and about the prevalence of each pattern in the adult workforce. The current study examined the intersection of intra-individual engagement-burnout profiles with demands-resources profiles in a representative sample of US employees.

1.1 Engagement and burnout: representing two motivational pathways

Work engagement includes physical, cognitive, and emotional aspects (Kahn, 1990) and is described as a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption (Schaufeli *et al.*, 2002). Engagement is part of one of two motivational pathways described by the job demands-resources model (JD-R) (Bakker and Demerouti, 2007): the engagement pathway states that job and personal resources (such as social support and autonomy) lead to engagement, which in turn predicts desired outcomes such as work performance (Halbesleben and Wheeler, 2008; Schaufeli *et al.*, 2006), business unit performance (Harter *et al.*, 2002), client satisfaction (Salanova *et al.*, 2005), and safe working behavior (Nahrgang *et al.*, 2011).

The second pathway described by the JD-R model is the strain pathway. It states that job demands (such as work pressure and emotional demands) predict burnout (defined as exhaustion, cynicism/indifference and decreased productivity). Burnout in turn predicts negative job and health consequences including turnover intentions and health impairments (Bakker and Demerouti, 2007).

1.2 Interactions between the pathways: co-occurring demands and resources

Many studies have found negative correlations between engagement and burnout and between demands and resources (e.g. González-Romá *et al.*, 2006; Schaufeli *et al.*, 2008; Demerouti, Bakker, De Jonge, Janssen, and Schaufeli, 2001). Although this suggests that overall, demands and burnout tend to be low when resources and engagement are high, and vice versa, the engagement and strain pathways are not mutually exclusive[1]: interactions between demands and resources suggest that high demands and resources may occur together and that such a pattern has a particularly strong impact on engagement. High resources also have been found to buffer against the negative effects of high demands (Bakker *et al.*, 2007; Hakanen *et al.*, 2005). What is more, not all demands have detrimental effects on engagement: a meta-analysis found that demands perceived as challenges predicted engagement, whereas demands perceived as obstructions or threats predicted burnout (Crawford *et al.*, 2010). Particularly time pressure demands predicted engagement.

Intra-individual cluster analyses of demands and resources identified four clusters: “demanding (high demands, low resources), resourceful (low demands, high resources), poor (low demands and low resources) and rich (high demands and high resources) jobs” (Van den Broeck *et al.*, 2012, p. 691). In all of these clusters, engagement was high (above the midpoint on a scale from 1 – never to 6 – always) and burnout was low

(below the midpoint of the same response scale). Nevertheless, demanding jobs were characterized by the highest burnout ranks and the lowest engagement ranks, whereas resourceful jobs were characterized by the lowest burnout and high resources. A limitation of the above study is that only z-scores (ranks), but not raw scores of demands and resources were reported, which may distort the shape and meaning of profiles in cluster analyses (Moeller, 2015). Although Van den Broeck *et al.* (2012) distinguished between three different demands and three different resources, they collapsed these facets into composite scores of overall demands and overall resources in the cluster analysis. The current study builds on their approach but distinguishes between different facets of demands and resources in the cluster analysis.

1.3 Person-oriented studies in the JD-R literature

The interactions among elements of the strain and engagement pathways suggest that beneficial and harmful work experiences co-occur in some individuals. However, it is not clear how many workers experience intra-individual engagement-burnout profiles, and how these profiles differ on work outcomes.

Commonly employed inter-individual methods only allow for conclusions at the population level (Molenaar, 2004; Reitzle, 2013). This is problematic in workplaces where there is a need for individualized feedback and support. Person-centered, intra-individual analyses can address these limitations. Existing literature using such methods has mostly addressed facets of engagement and burnout. In a longitudinal study of Finnish managers, Mäkikangas *et al.* (2012) concluded that dedication (engagement facet) and cynicism (burnout facet) represented opposites with a strong negative relationship, but vigor (another engagement facet) and exhaustion (burnout facet) may occur together. Similarly, Mäkikangas *et al.* (2014) found in a diary study on Finnish employees that moderate levels of vigor and exhaustion were experienced together on some days and by some employees. In another person-oriented study, Innanen *et al.* (2014) identified two profiles of engagement, burnout, and workaholism among Finnish university students: one beneficial profile of high engagement and relatively low burnout and workaholism, and a second, less beneficial profile of high workaholism and burnout. Despite high burnout and workaholism, the latter profile displayed moderate (above scale midpoint) levels of the engagement facet of absorption (while the other engagement facets dedication and energy were low in this profile).

The current study draws its hypotheses and methodological approach most directly from research on intra-individual profiles of engagement and burnout in high schools. Examining intra-individual profiles of engagement and burnout, Tuominen-Soini and Salmela-Aro (2014) and Salmela-Aro, Moeller, Schneider, Spicer, and Lavonen, (2016) found that between one-fourth and one-third of all students experienced high levels of both engagement and burnout. Such engaged-exhausted individuals displayed at the same time desirable and undesirable characteristics (desirable: high achievement, valuing school highly; undesirable: relatively high stress and depressive symptoms; see Tuominen-Soini and Salmela-Aro, 2014). In the long run, engaged-exhausted students were more likely to move into the disengaged group over six years than their peers who had high engagement and low burnout (Tuominen-Soini and Salmela-Aro, 2014). Both studies differed from other approaches (such as Mäkikangas *et al.*, 2012, 2014) in that they examined all three components of engagement (energy, dedication, and absorption), and all three components of burnout (affective, cognitive, and behavioral) that are often discussed in the respective literatures. The current study applied the same method and draws its assumptions (particularly *RQ3*) directly from the studies by Tuominen-Soini and Salmela-Aro (2014), as well as Salmela-Aro, Moeller, Schneider, Spicer, and Lavonen, (2016).

Together, these studies suggest that engagement and burnout may be experienced together by some individuals. However, the relations between engagement-burnout profiles and demands-resources profiles are unclear because previous person-oriented studies either

examined engagement-burnout profiles, or demands-resources profiles, but not their possible interaction. Another limitation is that most person-oriented studies on engagement and burnout in workplaces were conducted in just two countries, Finland (Mäkikangas *et al.*, 2012, 2014; Innanen *et al.*, 2014) or the Netherlands (Demerouti Bakker, De Jonge, Janssen, and Schaufeli, 2001), and mostly in relatively small convenience samples. It is therefore unclear to what extent these profiles and their prevalence are generalizable to US participants.

1.4 *The present study*

This study employs person-oriented analyses based on the JD-R model. We tested the prevalences of engagement-burnout profiles as well as demands-resources profiles in a representative sample of the US workforce. By identifying these profiles, it becomes possible to offer a richer description of the lived experience and offer more useful information to managers as they consider new job descriptions and ways to motivate and support workers. We examined how demands-resources profiles were associated with engagement-burnout profiles, while previous studies examined either engagement-burnout profiles or demands-resources profiles, but not their intra-individual intersections.

Hypotheses

- RQ1.* Are engagement and burnout negatively correlated? We expected a negative inter-individual correlation between engagement and burnout, as reported previously (e.g. Schaufeli *et al.*, 2008; Demerouti Bakker, De Jonge, Janssen, and Schaufeli, 2001).
- RQ2.* Which intra-individual engagement-burnout profiles can be identified, and what is the prevalence of different profiles?

We expected profiles with discrepant levels of engagement and burnout (one variable high while the other is low) as well as profiles with aligned engagement and burnout (both variables high or low; Tuominen-Soini and Salmela-Aro, 2014; Salmela-Aro, Moeller, Schneider, Spicer, and Lavonen, 2016). Specifically, we expected one profile of aligned high engagement – high burnout (“engaged-exhausted”), one with high engagement – low burnout (“engaged”), one with high burnout – low engagement (“burned out”) and an “apathetic” profile (low engagement – low burnout; Kahn, 1990; Salmela-Aro, Muotka, Alho, Hakkarainen, and Lonka, 2016; Stock, 2015):

- RQ3.* How do engagement-burnout profiles differ in outcomes?

Consistent with the engagement pathway described in the J-DR model (e.g. Bakker and Demerouti, 2007; Demerouti, Bakker, Nachreiner, and Schaufeli, 2001), we hypothesized that engaged and engaged-exhausted profiles are associated with desirable job outcomes (positive emotions, skill acquisition). In contrast, based on the strain pathway (Bakker and Demerouti, 2007), we expected burnout and engaged-exhausted profiles to show high levels of undesirable job outcomes (negative emotions, turnover intentions). The “apathetic” group (low burnout – low engagement) was expected to display low positive and negative emotions and low skill acquisition:

- RQ4.* Which intra-individual profiles of demands and resources can be identified, and how frequent are different profiles?

Based on findings and labels by Van den Broeck *et al.* (2012), we expected four profiles of demands and resources: “demanding jobs” (high demands – low resources), “resourceful jobs” (low demands – high resources), “poor jobs” (low demands – low resources) and “rich jobs” (high demands – high resources) jobs:

- RQ5.* How do demands-resources profiles relate to engagement-burnout profiles?

We expected the patterns as presented in Table I.

2. Methods

2.1 Data collection procedures

Participants were recruited through the survey provider Qualtrics. To recruited a demographically representative sample, Qualtrics using quota that reflected representative distributions of gender, geographical region, race/ethnicity, and age in the US workforce, according to the US Bureau of Labor Statistics (2016). Participants completed the surveys online.

2.2 Sample

In total, 1,085 US employees were surveyed. Because the study aimed at investigating workplace experiences, only adults older than 18 years who lived in the USA and worked more than 30 hours per week were surveyed. The sample consisted of 53.6 percent male participants, 46.2 percent female and 0.3 percent reported “other” gender identities. Data were available from all 50 US states. The sample was 78.9 percent white/Caucasian, 10.6 percent black/African-American, 4.3 percent Asian/Asian-American, 1.9 percent Biracial or Multiracial, 1.0 percent American Natives or Alaska Natives, 0.5 percent Native Hawaiian or other Pacific Islanders, and 4.3 percent reported other identities (multiple answers were allowed). Furthermore, 10.8 percent identified as Hispanic. Participants were on average 40.4 years old (SD = 14.0, min = 18; max = 74). The average subjective socio-economic status rating was 6.04 (SD = 2.35); measured with a scale of 0 (worst-off) to 10 (best-off), based on Ostrove *et al.* (2000).

2.3 Measures

Engagement and burnout. Engagement, burnout, demands, and resources were assessed with self-report scales ranging from 1 (never/almost never) to 6 (always/almost always).

Engagement was assessed with items developed by Rich *et al.* (2010). Originally, the measure had three subscales: physical, cognitive, and affective engagement. We administered two items for each of these three facets, selecting items that had factor loadings of $\beta \geq 0.79$ in the two samples reported by Rich *et al.* (2010) (e.g. “I strive as hard as I can to complete my job” and “I feel energetic at my job”). A confirmatory factor analysis supported a model with three first-order factors (representing the three expected subscales of physical, cognitive and affective engagement; $\chi^2(df) = 24.295(6)$; p -value (χ^2) = 0.000; CFI = 0.996; TLI = 0.991; RMSEA = 0.054; 90% CI = 0.033-0.078; SRMR = 0.013). These first-order factors were strongly correlated ($r_{\text{phys.emo}} = 0.76$; $r_{\text{emo.cogn}} = 0.74$; $r_{\text{phys.cogn}} = 0.99$), which is why we collapsed them into one overall engagement score for the following analyses.

Demands-resources profiles	Engagement-burnout profiles			
	High engagement – low burnout (“engaged”)	High engagement – high burnout (“engaged-exhausted”)	Low engagement – high burnout (“burned-out”)	Low engagement – low burnout (“apathetic”)
Low demands – high resources (resourceful jobs)	+		–	–
High demands – high resources (rich jobs)		+		
High demands – low resources (demanding jobs)	–		+	
Low demands – low resources (poor jobs)	–	–		+

Table I. Expected most frequent combinations (+) and least frequent combinations (–) of demands-resources profiles (rows) by engagement-burnout profiles (columns)

Burnout was assessed with the ten-item short version of the burnout measure (Malach-Pines, 2005; e.g. How often do you experience the following at work?: “Disappointed with people,” “Physically weak/sickly”). The CFA showed multiple residual correlations in line with previous findings (Malach-Pines, 2005) and an acceptable fit after including these residual correlations in the model ($\chi^2(df)=190.654(28)$; p -value (χ^2)=0.000; CFI=0.984; TLI=0.974; RMSEA=0.076; 90% CI=0.066-0.086; SRMR=0.018).

Demands and resources. Since a recent meta-analysis found that challenging task-related demands correlated with engagement, while demands hindering the workflow correlated with burnout (Crawford *et al.*, 2010), we aimed to capture diverse demands: workload (general demand), information processing demand (task-related, potentially challenging), and cumbersome bureaucracy (task-hindering demand). Items were created for the purpose of this study, based on a review of measures for demands, resources, and workplace climate (e.g. Rothmann *et al.*, 2006; Kirby *et al.*, 2003; Clark *et al.*, 2000).

Workload was assessed with three items (e.g. “I have too much work to do;” response scale 1 = strongly disagree-6 = strongly agree). Information processing demands were assessed with four items (e.g. “I have to concentrate all the time to watch for things going wrong;” response scale 1 = never/almost never-6 = always/almost always), adapted from Morgeson and Humphrey (2006). Cumbersome bureaucracy was assessed with three items (e.g. “Paperwork slows me down;” response scale 1 = never/almost never-6 = always/almost always).

We aimed to assess diverse resources: rewards and recognitions (general work resource), supervisor support (inter-personal resource), and self-efficacy (intra-personal resource). Supervisor support was assessed with four items (e.g. “My supervisor provides me the support I need to do my job well;” response scale: 1 = never/almost never-6 = always/almost always). Rewards and recognition were measured with three items asking about compensation, opportunities to get raises, and general recognition for success (e.g. “I am compensated well for my work;” response scale 1 = strongly disagree-6 = strongly agree). Self-efficacy was assessed with three items (e.g. “I have the skills I need to do my job well;” response scale 1 = never/almost never-6 = always/almost always).

Outcomes. As work outcomes, we assessed positive and negative emotions, skill acquisition, and turnover intentions.

Positive and negative emotions were assessed with 11 items from the positive and negative affect schedule (PANAS-X) (Watson and Clark, 1999). Positive emotions were measured with the items confident, enthusiastic, happy, inspired, interested, and proud. Negative emotions were assessed with the items afraid, angry, tired, guilty, and disgusted. Participants were asked to rate how often they experienced these emotions at work on a scale from 0 (never) to 100 (always).

Skill acquisition was assessed with the items “How many skills have you acquired at this job that you could put on your resume?” and “How many accomplishments did you have in this job that you could put on your resume (e.g. developed products, publications, etc.)?” (response scale: 0 = none to 4 = four or more).

Turnover intentions were measured with six items adapted from scales by Colarelli (1984) and Wayne *et al.* (1997), e.g., “If an opportunity presented itself, I would pursue another job;” response scale: 1 = strongly disagree to 6 = strongly agree.

3. Analyses and results

To facilitate comparisons of mean scores across measures, all measures were brought to the same metric by transformation to a scale ranging from 0 to 1, using the proportion of maximum scaling method (see Little, 2013). Table II shows means, standard deviations, and internal consistencies for all applied measures.

Table II.
Descriptives

	<i>M</i>	<i>SD</i>	<i>α</i>
Engagement	0.72	0.231	0.92
Burnout	0.37	0.278	0.96
<i>Demands</i>			
Workload	0.55	0.265	0.70
Information processing demands	0.68	0.231	0.85
Cumbersome bureaucracy	0.45	0.278	0.84
<i>Resources</i>			
Supervisor support	0.63	0.296	0.95
Rewards and recognition	0.61	0.269	0.83
Self-efficacy	0.77	0.216	0.85
<i>Outcomes</i>			
Positive emotions	0.63	0.254	0.92
Negative emotions	0.36	0.242	0.83
Skill acquisition	0.62	0.308	0.77
Turnover intentions	0.43	0.281	0.87

3.1 Are engagement and burnout negatively correlated? (RQ1)

As in previous studies (e.g. Schaufeli *et al.*, 2008), engagement and burnout were negatively correlated across individuals ($r = -0.13^*$). However, the scatterplot (Figure 1) shows that high engagement occurs often in combination with high burnout, but also often with low burnout (Table III).

3.2 Which intra-individual engagement-burnout profiles are experienced in the US workforce, and how often? (RQ2)

To identify groups of individuals with distinct engagement-burnout profiles, latent profile analyses (LPA) were conducted, using Mplus and the robust estimator MLR. The indicators in these LPA were engagement and burnout (entered as manifest variables). Models with two, three, four, five, and six profiles were estimated and compared with each other based on

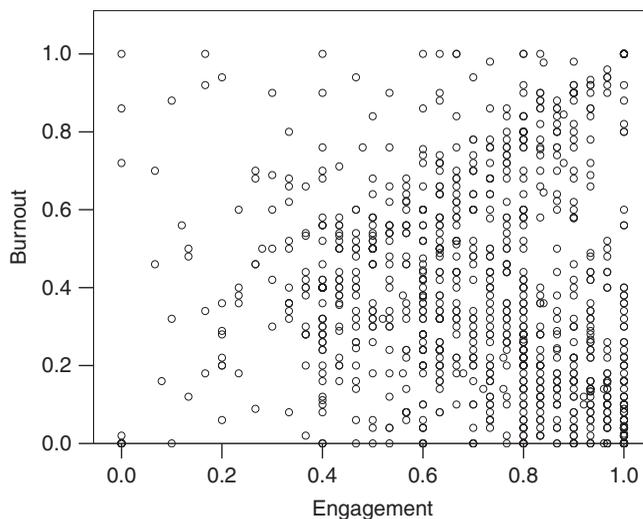


Figure 1.
Scatter plot of
engagement and
burnout scores

	2	3	4	5	6	7	8	9	10	11	12
1. Engagement	-0.13**	0.21**	0.54**	0.12**	0.47**	0.45**	0.57**	0.47**	-0.19**	0.44**	-0.07*
2. Burnout		0.29**	0.11**	0.47**	-0.21**	-0.17**	-0.11**	-0.28**	0.56**	-0.06*	0.56**
<i>Demands</i>											
3. Workload			0.48**	0.50**	0.21**	0.38**	0.10**	0.18**	0.15**	0.17**	0.33*
4. Information processing demands				0.33**	0.34**	0.35**	0.42**	0.29**	0.05	0.41**	0.13**
5. Cumbersome bureaucracy					0.10**	0.15**	-0.03	0.03	0.28**	0.08**	0.44**
<i>Resources</i>											
6. Supervisor support						0.66**	0.39**	0.55**	-0.22**	0.32**	-0.19**
7. Rewards and recognition							0.33**	0.52**	-0.24**	0.33**	-0.13**
8. Self-efficacy								0.29**	-0.12**	0.36**	-0.01
<i>Work outcomes</i>											
9. Positive emotions									-0.16**	0.33**	-0.23**
10. Negative emotions										-0.09**	0.38**
11. Skill acquisition											-0.08*
12. Turnover intentions											

Notes: * $p < 0.05$; ** $p < 0.01$

Table III.
Zero-order correlations
among all
study variables

criteria of interpretability, parsimony, and problem-free estimation. The final model was chosen using the following criteria: replicated log likelihood; models with smaller AIC, BIC, CAIC, and AWE (model fit and parsimony indicators) were preferred over models with larger values; and the Bayes factor and correct model probability (see Masyn, 2013) were used to identify the best model among the set of estimated models. Finally, a model was considered the most parsimonious if models with more profiles did not change any of the conclusions. The Lo-Mendell-Rubin likelihood ratio test and the bootstrapped likelihood ratio test were used to discard models that did not fit the data better than a more parsimonious model.

The model fit indices were somewhat inconclusive because different indices supported different models as the best fitting solution. The AIC, BIC, and BIC-based fit indices (CAIC, AWE, correct model probability) supported the model with the highest number of profiles. The Bayes factor supported none of these models. In contrast, the indicators of parsimony (VLMR and LRT test) supported the models with three and five profiles. We chose the five-profile model as final solution for the three following reasons: it replicated the expected profiles shown in studies on engagement and burnout profiles among high school students (Salmela-Aro, Moeller, Schneider, Spicer, and Lavonen, 2016; Tuominen-Soini and Salmela-Aro, 2014), it was one of the two models supported by the VLMR and LRT tests, and within this pair, it was the only model that showed the expected and theoretically interesting but small profile of individuals with low scores of engagement and burnout (profile 4), and it was the model with the highest entropy, meaning the overall classification quality of individuals to profiles was best for this model (Table IV).

The final five-profile model included two profiles with strong differences between the engagement and burnout scores (the engaged and the burned-out profile 43.3 percent of individuals), and three profiles with aligned engagement and burnout (both low, moderate, or high; 56.7 percent of individuals).

The most frequent profile (41.1 percent of individuals) represented employees with high engagement and low burnout (engaged profile). The opposite profile of low

Table IV.
Latent profile analysis
fit indices for
engagement and
burnout

No. of profiles	Log L	AIC	BIC	Bayes factor	Correct model probability	CAIC
2	-3,443.796	6,901.592	6,936.381	2.1E-42	1.1E-85	6,915.78
3	-3,337.384	6,694.768	6,744.465	1.2E-22	5.2E-44	6,715.04
4	-3,276.43	6,578.861	6,643.468	2.8E-16	4.5E-22	6,605.21
5	-3,230.154	6,492.307	6,571.824	1.6E-06	1.6E-06	6,524.74
6	-3,206.357	6,450.715	6,545.141	3.5E-10	0.999998394	6,489.23

No. of profiles	AWE	VLMR test	LRT test	Parametric bootstrapped likelihood ratio test	Entropy	Profile sizes
2	6,950.97	0.000	0.000	0.000	0.727	68.5%; 31.5%
3	6,765.31	0.000	0.000	0.000	0.753	47.1%; 32.3%; 20.6%
4	6,670.56	0.152	0.161	0.000	0.828	41.1%; 37.7%; 17.3%; 3.9%
5	6,605.17	0.000	0.000	0.000	0.855	41.4%; 35.5%; 18.8%; 2.4%; 1.8%
6	6,584.74	0.051	0.058	0.000	0.807	41.7%; 23.2%; 18.0%; 12.8%; 2.6%; 1.6%

engagement and high burnout (burned-out profile) was very rare (1.8 percent of the sample). A third group experienced high levels of both engagement and burnout (highly engaged-exhausted profile; 18.8 percent), while another group reported moderate levels of engagement and burnout (moderately engaged-exhausted profile; 35.5 percent). There also was a small group with very low levels of both engagement and burnout (apathetic profile, 2.4 percent) (Figure 2).

3.3 How do engagement-burnout profiles differ in distal outcomes? (RQ3)

The groups of individuals with distinct engagement-burnout profiles differed in their average levels of positive and negative emotions, skill acquisition and turnover intentions. The omnibus tests for overall differences among these groups (between-subjects effects) were all significant with large effect sizes (see Table V).

Engaged individuals: individuals in the engaged group reported the highest average levels of positive emotions and the highest skill acquisition. In contrast, negative emotions and turnover intentions were rather low for these individuals.

Burned-out individuals were the opposite of the engaged individuals, as they reported the highest levels of negative emotions, high turnover intentions, the lowest levels of positive emotions, and low skill acquisition.

Engaged-exhausted individuals: the moderately engaged-exhausted individuals reported moderate levels of demands, resources, positive and negative emotions,

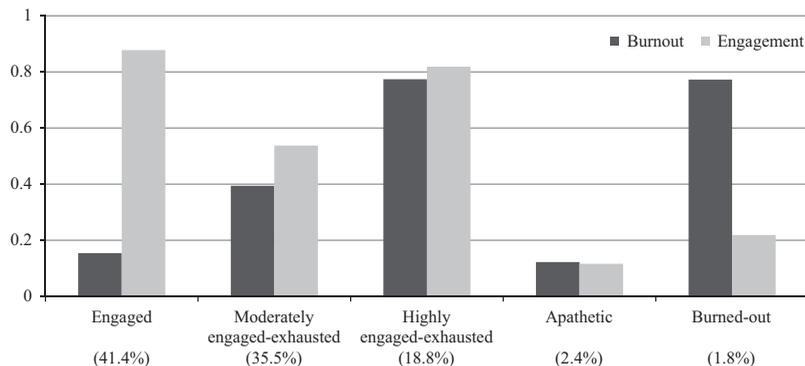


Figure 2.
Mean scores of
engagement and
burnout by profile
in the final model
(profiles ordered
by size)

	M(SD)					MANOVA	
	Profile 1 engaged (41.4%)	Profile 2 moderately engaged-exhausted (35.5%)	Profile 3 highly engaged-exhausted (18.8%)	Profile 4 apathetic (2.4%)	Profile 5 burned-out (1.8%)	F	η^2
Engagement	0.88 (0.11)	0.53 (0.12)	0.82 (0.12)	0.10 (0.10)	0.19 (0.13)	719.581	0.754
Burnout	0.15 (0.13)	0.39 (0.16)	0.78 (0.14)	0.12 (0.14)	0.78 (0.17)	648.170	0.734
<i>Outcomes</i>							
Positive emotions	0.75 (0.20)	0.52 (0.23)	0.62 (0.27)	0.53 (0.27)	0.33 (0.30)	60.740	0.192
Negative emotions	0.24 (0.20)	0.38 (0.19)	0.55 (0.26)	0.49 (0.27)	0.58 (0.29)	78.198	0.235
Skill acquisition	0.72 (0.29)	0.54 (0.29)	0.66 (0.28)	0.22 (0.26)	0.38 (0.32)	31.228	0.118
Turnover intentions	0.30 (0.28)	0.46 (0.21)	0.69 (0.20)	0.27 (0.22)	0.62 (0.30)	84.388	0.265

Notes: For pairwise comparisons, see Table A1. All tests for between subjects effects were significant $p < 0.000$; $df_{\text{between}} = 4$; $df_{\text{within}} = 937$

Table V. Differences between profiles in distal outcomes (M, SD, and MANOVA)

skill acquisition, and turnover intentions. The highly engaged-exhausted individuals experienced high levels of all these variables.

Apathetic individuals reported moderate levels of positive and negative emotions. The interpretation of this profile as apathetic individuals was supported by these individuals' very low levels of skill acquisition. Turnover intentions were also low in this profile.

3.4 What combinations of demands and resources are observed within individuals? (RQ4)

In the LPA on demands and resources, a model with three profiles fitted the data best, according to the parsimony criterion, VLMR test and LRT test (see Table VI and Figure 4). The indicators based on the log likelihood would have supported models with more profiles, but a four-profile model only added yet another profile with aligned (low) levels of demands and resources, which did not contribute novel insights beyond the information conveyed by the three-profile model.

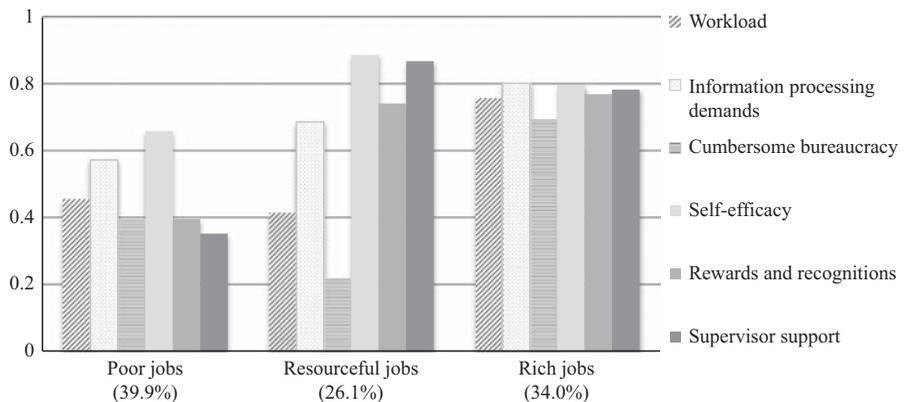
To interpret the profiles, we kept the labels suggested by Van den Broeck *et al.* (2012). As Figure 3 shows, the first of these profiles (39.9 percent) was characterized by the lowest demands and lowest resources among all profiles, although information processing demands and self-efficacy resources were still above the scale midpoint. This resembled the group called "poor jobs" by Van den Broeck *et al.* (2012).

The second profile (26.1 percent) was characterized by high levels of all resources, relatively low workload and low cumbersome bureaucracy, but moderate information

No. of profiles	Log L	AIC	BIC	Bayes factor	Correct model probability	CAIC
2	89.162	-140.324	-45.898	0.00	8.2137E-221	-101.81
3	285.395	-518.79	-389.575	0.00	3.4918E-146	-466.09
4	481.351	-896.702	-732.699	0.00	1.12585E-71	-829.81
5	669.11	-1258.22	-1059.429	0.00	1.00	-1177.14
No. of profiles	AWE	VLMR test	LRT test	Parametric bootstrapped likelihood ratio test	Entropy	Profile sizes
2	-6.3	0.0000	0.0000	0.0000	0.786	38.1%; 61.9%
3	-335.39	0.0000	0.0000	0.0000	0.770	39.9%; 26.1%; 34.0%
4	-663.92	0.0620	0.0647	0.0000	0.812	23.2%; 6.0%; 25.2%; 45.6%
5	-976.06	0.0053	0.0057	0.0000	0.857	3.9%; 10.9%; 21.5%; 22.9%, 40.7%

Table VI. Latent profile analysis fit indices for the demands-resources profiles

Figure 3.
Profiles of demands
and resources



processing demands. Thus, it seems that information processing demands act more like the resources and less like the other demands (workload and cumbersome bureaucracy). This suggests that it is crucial to distinguish between different facets of demands when examining the links between demands and engagement (see Crawford *et al.*, 2010). This profile resembled the group called “resourceful jobs” by Van den Broeck *et al.* (2012).

In the third profile (34.0 percent), all demands and resources were relatively high (resembling the “rich jobs” profile described by Van den Broeck *et al.*, 2012).

3.5 How do demands-resources profiles relate to engagement-burnout profiles? (RQ5)

In a next step, we examined associations of the demands-resources profiles with the previously described engagement-burnout profiles. For this purpose, we compared the proportions of the three demands-resources profiles in each engagement-burnout profile and used a configural frequency analysis (ConFA) (see Lienert, 1969; von Eye, 1990) to test whether each profile combination was more (or less) frequent than would be expected if there was no relation between the engagement-burnout and the demands-resources profiles. The ConFA was conducted in R (RStudio, version 1.0.136, package “cfa,” Mair and Funke, 2017). The results are displayed in Figure 4 and Table AII.

The frequencies of the three demands-resources profiles differed strongly between the engagement-burnout groups (see Figure 4). Most strikingly, 100 percent of the apathetic individuals belonged to the “poor job” profile (low demands – low resources except for moderate self-efficacy). This constellation was a “type” according to the ConFA, meaning it was significantly more frequent than expected if there was no relation between these profile groups.

Similarly, 84.2 percent workers in the burned-out group displayed a “poor job” profile (low demands – low resources, except for moderate self-efficacy), and 15.8 percent belonged to the “rich jobs” group (high demands – high resources).

In contrast, 64.0 percent of the highly engaged-exhausted individuals reported a “demanding jobs” profile (high demands – low resources). This constellation was a “type,” meaning more frequent than we would expect if there was no relation between the two groups, according to the ConFA. In total, 32.0 percent of the highly engaged-exhausted individuals belonged to the “poor” group (low demands – low resources, but moderate self-efficacy), and this combination was an “antitype,” i.e., less frequent than expected by chance. In total, 4 percent of the engaged-exhausted individuals belonged to the “resourceful jobs” profile (low demands, except for moderate information processing demands – high resources).

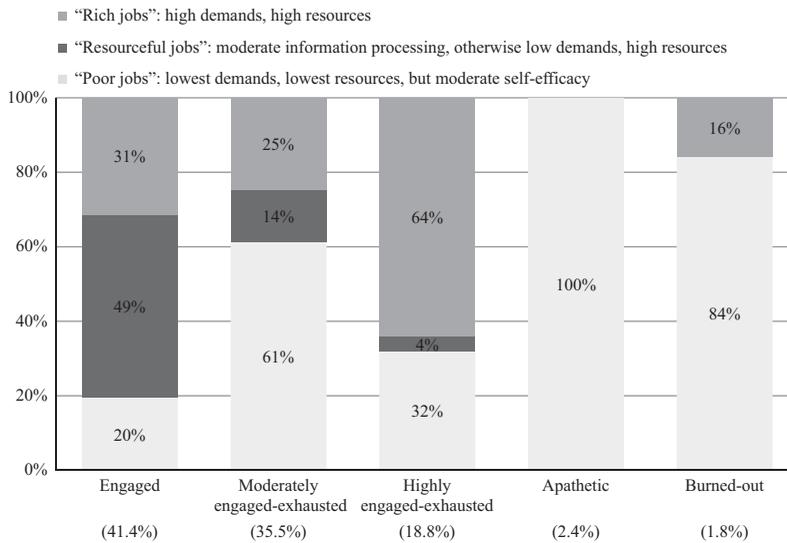


Figure 4.
Proportions of
demands-resources
profiles (y-axis) within
engagement-burnout
profiles (x-axis)

Among the moderately engaged-exhausted individuals, a relatively large number of individuals reported a profile of “poor jobs” (low demands – low resources but moderate self-efficacy; 61.4 percent), a “type,” according to the ConFA. The other moderately engaged-exhausted individuals reported either “resourceful jobs” (high demand – resources; 24.6 percent), or “resourceful jobs” (low demands but moderate information processing demands – high resources; 14.0 percent).

A particular characteristic of the engaged group was the high proportion of individuals who reported experiencing a “resourceful job” (low demands except for moderate information processing demands – high resources; 49.2 percent), which was a “type,” meaning a constellation significantly more frequent than expected by chance, according to the ConFA. Another 31.3 percent of individuals in the engaged group reported “rich jobs” (high demands – high resources), and 19.5 percent reported “poor jobs” (low demands – low resources, but moderate self-efficacy), which was an “antitype,” significantly less frequent than we would expect if there was no relation between these groups.

4. Discussion

This study investigated intra-individual profiles of work engagement and burnout, as well as profiles of demands and resources, in a representative sample of 1,085 US workers. Although engagement and burnout were negatively correlated across individuals (*RQ1*), they were also aligned (both high, moderate, or low) in more than half the sample (*RQ2*). Almost one out of five workers reported high levels of both engagement and burnout, and these engaged-exhausted workers also reported co-occurring high levels of positive and negative emotions, as well as strong turnover intentions combined with high skill acquisition (*RQ3*).

Three demands-resources profiles were identified (*RQ4*) and associated with engagement-burnout profiles (*RQ5*). Interestingly, information processing demands were relatively high in all profiles, even when other demands such as workload and cumbersome bureaucracy were low, in line with Crawford *et al.*'s (2010) distinction between engaging and hindering demands. Low demands and resources were typical for the apathetic and burned-out engagement-burnout profiles, while high demands and low resources were more

frequent in the engaged profile. The engaged-exhausted profile (high levels of engagement and burnout) also showed frequent co-occurrences of high demands and resources (RQ5).

These results indicate that high work engagement can be a double-edged sword for some employees, as it is associated with beneficial experiences and outcomes when burnout symptoms are low, but with mixed feelings and combinations of desired and undesired outcomes when burnout symptoms are high. Workers who experienced high engagement together with high burnout were particularly likely to experience a combination of high demands and high resources (RQ5). This is in line with the interaction effects that have been reported in inter-individual studies on engagement, where high demands fostered engagement as long as resources were high, while high resources buffered against the negative effects of job demands (Bakker *et al.*, 2005, 2007; Hakanen *et al.*, 2005).

4.1 Theoretical implications

Previous studies have emphasized the negative association between engagement and burnout (Byrne *et al.*, 2016) and some studies even concluded that engagement and burnout were – at least in part – opposite poles of a joint dimension (González-Romá *et al.*, 2006; Demerouti *et al.*, 2010, for a critical discussion see Byrne *et al.*, 2016 and the recent special issue by Schaufeli and De Witte, 2017). In contrast, our findings suggest that the structure of engagement and burnout differs between individuals, meaning there are groups of individuals accounting for negative correlations (e.g. the “engaged” and the “burned out” groups), and other individuals driving a positive correlation (e.g. the “apathetic” and the “engaged-exhausted” groups). That the relation between engagement and burnout can differ between individuals is in line with the findings by Mäkikangas *et al.* (2012, 2014). Highly engaged workers are not necessarily the employees managers do not need to worry about, because engagement might not be the purely desirable form of motivation as which it is sometimes portrayed (Bakker and Schaufeli, 2008). Since this “darker side” of engagement is not visible unless intra-individual co-occurrences with burnout are examined, future studies should assess engagement and burnout jointly and combine the classic inter-individual analyses with intra-individual approaches.

This study points to potential downsides of attributes generally considered beneficial or positive, similar to recent research on the dark side of motivation and positive emotions (Gruber *et al.*, 2011; Kashdan and Biswas-Diener, 2014; Moeller *et al.*, 2015, under review; Oettingen, 2015; Pekrun *et al.*, 2002; Vallerand *et al.*, 2003). For example, the motivational construct of passion, which is similar to engagement, has been found to have both positive (harmonious) and negative (obsessive) components (Vallerand *et al.*, 2003), which can co-occur within individuals (Moeller *et al.*, 2015). Likewise, positive emotions such as interest and happiness were found to co-occur with negative experiences such as stress and anxiety (Gruber *et al.*, 2011; Moeller *et al.*, 2018; Pekrun *et al.*, 2002). Together, these findings suggest that the beneficial and potentially harmful motivational and emotional processes are often intertwined within individuals, which makes it necessary to assess both sides in joint intra-individual frameworks.

Intra-individual profile analysis also revealed that workload, cumbersome bureaucracy, and information processing demands differed in their relationship to resources and engagement (see Figures 3, 4, and Table III), which is in line with a previous (inter-individual) meta-analysis (Crawford *et al.*, 2010). However, unlike in previous inter-individual studies, it was not the time pressure or workload that accounted for this association between demands and engagement, but the requirements to fully concentrate on the task at hand, direct undivided attention to the task, and think quickly in order to prevent problems from arising (i.e. the aspects of information processing demands). There is a need for replications and systematic comparisons of different demands and their intra-individual associations with resources and engagement in future studies.

Due to the representative sample of this study in terms of gender, age, region, industry and ethnicity in the US workforce, the prevalences of profiles described in this study may be generalizable for the working US population. Fortunately, a large group of US workers (41.4 percent of our participants) is mainly engaged and not burned-out. The small numbers of burned-out individuals and apathetic individuals (together 3.2 percent) also are comforting. Concerning, however, is the finding that many engaged employees suffer of stress and burnout symptoms, which may be the beginning of pathway leading into disengagement (Tuominen-Soini and Salmela-Aro, 2014).

4.2 Limitations

A limitation is the rather exploratory nature of LPA, which bears the risk of sample-specific findings. There is a need for systematic replications to support the generalizability of these findings across demographics and other factors that might influence the results. Although we examined a large and demographically representative sample of employees in the US workforce, we cannot conclude that the same shape and prevalence of profiles could be expected for all domains. For instance, there might be more engaged-exhausted employees in highly competitive work environments where workers do not receive or do not dare to use opportunities to recover or maintain their resources. Since domains already differ in their average engagement and burnout rates (e.g. Carod-Artal and Vázquez-Cabrera, 2013), it would be interesting to find out whether they also differ in regard to the shape and prevalences of engagement-burnout profiles.

Since two profiles (the burned-out and the apathetic groups) were rather small, the findings related to these groups need to be replicated in a larger sample. We included these small profiles in our final model because we had expected to find these groups, they showed the expected outcomes, and previous research shows that burnout is a highly relevant and worrisome problem for those few who experience it (Hapke *et al.*, 2012). Not including this profile in the final model, therefore, would have left out important information about the most vulnerable workers.

Although the presented results of aligned levels of engagement and burnout are similar to those observed in educational studies, it is possible that they might have been affected by an acquiescence response style. Future research should apply validation scales (“lie scales”) that would help to control for such response styles.

4.3 Directions for future research

Many new questions arise from the present study: What are the short- and long-term consequences of experiencing high levels of engagement and burnout together? Do engaged-exhausted workers feel the beneficial and aversive aspects of motivation and strain in the same situations, or one after another during the day? How sustainable is exhausting motivation in the long run? How many engaged-exhausted workers transit into a more manifest burnout group or back into the mainly engaged group? What can be done to prevent further burnout manifestation for these workers at risk?

To answer these questions, future studies should employ situational measures of engagement and burnout, as they have been suggested in the work literature (Bakker and Bal, 2010; Petrou *et al.*, 2012), as well as in the education literature (Moeller *et al.*, 2017; Salmela-Aro, Moeller, Schneider, Spicer, and Lavonen, 2016). Such situational assessments can now be administered through participants’ phones and then combined with information collected by the phones’ sensors, such as location, movement/physical activity, recovery/night inactivity, etc. Using this technology for the study of situational fluctuation in engagement and work stress would give exciting new directions to further studies.

Another question for future studies is why engagement and burnout co-occurred in some individuals but not in others. While demands-resources profiles seem to play a role, a part of

the engaged and the engaged-exhausted workers experienced similar demands-resources profiles (e.g. high demands – high resources). More research is needed to understand why the same demands-resources experiences lead to different engagement-burnout constellations for different individuals, and which other factors predict co-occurrences among beneficial and harmful work experiences. Particularly important are the questions of how the engaged-exhausted profile develops and what kind of support workers need to prevent the transitions into burnout, depression, and turnover like those found in the high school context (Tuominen-Soini and Salmela-Aro, 2014). Longitudinal studies of workers' transitions between profiles of engagement and burnout are needed to answer these questions. These longitudinal studies should apply repeated in-the-moment measures of demands, resources, engagement and exhaustion (experience sampling), assessed in multiple waves (e.g. during one week at T1 and another week six months later at T2), to provide information on both the moment-to-moment fluctuation, long-term stability, and prospective predictions of outcomes by preceding engagement-burnout profiles.

Furthermore, intervention studies could help to determine how organizations, managers, and colleagues can support employees to maintain and renew their resources in ways that allow them to cope with the stress and exhaustion that even the most motivated individuals tend to experience after long periods of hard work.

In summary, this study points at crucial challenges for supervisors and organizations. Nearly half of all employees were moderately to highly engaged in their work but also exhausted and ready to leave their organizations. This should give managers much to think about. Meeting the needs of these employees can support employees' well-being, as well as organizational productivity. Understanding the profiles of engagement and burnout may help supervisors and organizational leaders to identify employees who are motivated but also at risk for burnout and turnover, and in turn address these employees' needs to make sure they continue to thrive and contribute to their organization's productivity.

Note

1. For a detailed discussion about the dependence vs independence of engagement with burnout, see the recent special issue "Burnout and work engagement: dual unity?" by Schaufeli and DeWitte (2017).

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Further reading

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Appendix

	Profile 1 vs 2	Profile 1 vs 3	Profile 1 vs 4	Profile 1 vs 5	Profile 2 vs 3	Profile 2 vs 4	Profile 2 vs 5	Profile 3 vs 4	Profile 3 vs 5	Profile 4 vs 5
<i>Resources</i>										
Rewards and recognitions	0.000	0.000	0.000	0.000	0.000	0.039	0.000	0.000	0.000	0.282
Supervisor support	0.000	0.000	0.000	0.000	0.000	0.027	0.000	0.000	0.000	0.290
Self-efficacy	0.000	0.000	0.000	0.000	0.000	0.880	0.000	0.018	0.000	0.000
<i>Demands</i>										
Workload	0.133	0.000	0.373	0.000	0.000	0.608	0.000	0.002	0.000	0.043
Cumbersome bureaucracy	0.001	0.000	0.753	0.000	0.000	0.192	0.000	0.000	0.000	0.035
Information processing demands	0.000	0.011	0.001	0.000	0.000	0.285	0.000	0.000	0.000	0.001
<i>Work outcomes</i>										
PANAS positive	0.000	0.000	0.000	0.000	0.000	0.022	0.526	0.000	0.129	0.024
PANAS negative	0.000	0.000	0.000	0.000	0.000	0.004	0.049	0.679	0.276	0.306
Skill acquisition	0.000	0.013	0.000	0.000	0.000	0.068	0.000	0.000	0.000	0.090
Turnover intentions	0.000	0.000	0.000	0.394	0.000	0.013	0.000	0.473	0.000	0.000

Table A1.
p-values for pairwise comparisons between engagement-burnout profiles in distal outcomes

Notes: Profile 1 = engaged; profile 2 = moderately engaged-exhausted; profile 3 = highly engaged-exhausted; profile 4 = disengaged; profile 5 = burned-out
Source: BCH method; Asparouhov and Muthén (2014)

Table A2.
Frequencies
of demands-resources
profiles within
engagement-burnout
profiles

Demands-resources profiles	Engagement-burnout profiles				
	Engaged	Moderately engaged-exhausted	Highly engaged- exhausted	Disengaged	Burned-out
Low demands – low resources	86 (19.5%) (Antitype)	232 (61.4%) (Type)	64 (32.0%)	26 (100%) (Type)	16 (84.2%)
Low demands – high resources	217 (49.2%) (Type)	53 (14.0%)	8 (4.0%) (Antitype)	0 (0.0%)	0 (0.0%)
High demands – high resources	138 (31.3%)	93 (24.6%)	128 (64.0%) (Type)	0 (0.0%)	3 (15.8%)

Notes: “Type” means that the cell was significantly more frequent than we would expect if there was no relationship between the two profiles, according to the ConFa; “Antitype” means that the cell was significantly less frequent than we would expect if there was no relationship between the two profiles. Absolute frequencies, percentages within columns, and results of the configural frequency analysis

Corresponding author

Julia Moeller can be contacted at: julia.moeller@uni-leipzig.de