Areas of worklife as predictors of occupational health – A validation study in two German samples

Sarah S. Brom [a,*], Gabriele Buruck [a,**], Irén Horváth [a], Peter Richter [a], Michael P. Leiter [b]

[a] Department of Psychology, Technische Universität Dresden, Germany
[b] Department of Psychology, Acadia University, Wolfville, NS, Canada

ABSTRACT

Background/aim: Occupational health largely depends on the perceived fit between the employee's abilities and workplace demands/factors. The Areas of Worklife Scale (AWS) specifies six areas that are particularly relevant in this respect: workload, control, reward, community, fairness, and values. The current article aimed at investigating the factorial structure and the criterion validity of the German translation of the AWS.
Methods: Data were collected in two samples. In study 1, 1455 public service workers were surveyed using the six areas of worklife and well-being. In study 2, to investigate the well-established relationship between the AWS and burnout, the scale was administered to a nursing sample ($N = 443$).
Results: High internal consistencies for all six scales were obtained in both studies. Exploratory as well as confirmatory factor analysis replicated the theoretically assumed six scale structure of the AWS. Evidence of criterion validity was found by multiple linear regression analysis with well-being as dependent measure (study 1). SEM analyses supported the hypothesized relationships between the six AWS dimensions and burnout (study 2). As predicted by Leiter and Maslach (2004, 2009), only some areas were directly associated with the health-related outcomes (well-being and burnout). In line with previous work, workload and values proved to be the most critical areas of worklife.
Conclusions: The six areas of worklife have been shown to be significant predictors of health-related outcomes. Based on the current studies, the German translation of the AWS can be proposed as a reliable and valid instrument to identify and specify critical work-related areas for occupational health.

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1. Introduction

It is debatable whether there are still "good" workplaces, or if the new challenges that arise from globalization make healthy work impossible (Beck, 2012). The highly competitive market requires cost optimization; scarce resources lead to cost cuts in particular in health care and social departments. Fewer employees have to cope with more tasks in less time (Burke & Cooper, 2008). Even though features of psychological strain (work factors such as work task, work organization and social system) have become especially important in work design, they have rarely been included in work organizational processes. Consequences of this omission become visible not only in direct costs (e.g., absence, retirement) but especially in indirect costs for the workers such as lower quality of life (Wittchen et al., 2012).

1.1. The role of resources and stressors for occupational health

Theories of occupational stress not only address the impact of stressors due to psychosocial load, they also consider the adequacy of resources to deal successfully with the work environment (Perrewe & Ganster, 2010). In this line, the activation of employees' resources is a central building block in the development of organizations. Some definitions describe resources as an independent entity. For instance Bakker and colleagues state that "Job resources refer to those physical, psychological, social, or organizational aspects of the job that are either/or: Functional in achieving work goals, reduce job demands and the associated physiological

* Corresponding author at: Department of Psychology, Technische Universität Dresden, 01062 Dresden, Germany. Tel.: +49 0351 463 33924; fax: +49 0351 463 33589.
** Corresponding author at: Department of Psychology, Technische Universität Dresden, 01062 Dresden, Germany. Tel.: +49 0351 463 36894.
E-mail addresses: Sarah.Brom@tu-dresden.de (S.S. Brom), buruck@psychologie.tu-dresden.de (G. Buruck).

and psychological costs [and] stimulate personal growth, learning, and development. Hence, resources are not only necessary to deal with job demands, but they also are important in their own right" (Bakker & Demerouti, 2007, p. 312). This corresponds with models identifying factors that contribute autonomously to healthiness, irrespective of the reduction of stressors. Examples of models that emphasize resources as predictors of work-related health outcomes are the *Conservation of Resources model* (Hobfoll, 1989), the *Stress-as-Offense-to-Self-concept* (SOS, Semmer, Jacobshagen, Meier, & Elfering, 2007), and the *Job Demands-Resources-model* (Bakker & Demerouti, 2007; Bakker, Demerouti, & Sanz-Vergel, 2014; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). According to the *Conservation of Resources model* of Hobfoll (1989), individuals seek to acquire and maintain resources, including objects, personal characteristics, conditions, and energies. In contrast, the *SOS-model*'s starting point is self-esteem, and the importance of lack of fairness and reciprocity is derived from its contribution toward people's self-esteem (Semmer, McGrath, & Beehr, 2005). Finally, the *Job Demands-Resources-model* (Bakker & Demerouti, 2007) describes that high job demands exhaust the employees' mental and physical resources and therefore lead to the depletion of energy and to health problems, referred to as health impairment process. In contrast, job resources foster employee engagement and extra-role performance. With different approaches and emphasis, all these models underline the importance of resources in the context of occupational health.

1.2. Another approach to occupational health: Person–Environment fit

Another approach that looks more closely into the relationship people develop with their workplace is provided by the *Person–Environment fit models* (P–E fit, e.g., Kristof-Brown, Zimmerman, & Johnson, 2005). The person–environment fit models describe a good match between the individual and the work environment, that is present when both share the same basic features (*supplementary fit*), or an entity provides something, that is needed by the other (*complementary fit*), or both (Boon, Den Hartog, Boselie, & Paauwe, 2011). The findings by Oh et al. (2014) in a cross-culture meta-analysis suggest that the effects of person–organization and person–job fit are (relatively) stronger in North America and, to a lesser degree, Europe than in East Asia.

Based on the P–E-fit-approach, Leiter and Maslach (2004) proposed a framework describing the interplay of resources and stressors as the *Burnout-Engagement-Continuum*. Leiter and Maslach, pioneers in the field of burnout-research, conceptualized the relationship between individuals and their work as a continuum between two poles: the negative experience of *burnout* on the one pole and the positive experience of *job engagement* on the other pole (Maslach & Leiter, 2008). The model incorporates job–person incongruity as a result of maladjustment or -adaption of the person's needs and expectations to the presented work or organizational characteristics. A subjectively experienced weak fit or congruency in one or more aspects of working life can operate as a stressor and thereby threaten employees' well-being. In relation to the continuum, the model proposes that with increasing *misfit* in relevant work characteristics, the probability of suffering from burnout symptoms increases (Leiter & Maslach, 1999). In this line, a job-person mismatch is often defined as organizational-, job- or individual-weakness (Chen, Wu, & Wei, 2012).

1.3. The six Areas of Worklife

With the aim to specify work factors or characteristics, in which job-person incongruities are predictive of burnout, Leiter and Maslach (1999) reviewed theoretical and empirical literature

on job stress and burnout. Six areas of worklife that are considered most relevant for the relationship people develop with their work were identified: *workload*, *control*, *reward*, *community*, *fairness*, and *values*. The *workload dimension* is especially important in terms of burnout development. When job demands exceed human limits, emotional exhaustion is most likely the consequence (Leiter & Maslach, 2004). For example, Kouvonen, Toppinen-Tanner, Kivisto, Huuhtanen, & Kalimo (2005) found that specifically high workload was associated with high emotional exhaustion. The *control dimension* encompasses the perceived capacity of people to influence decisions relating to their work, to exercise personal autonomy, and to gain access to resources (e.g., social support, reward) in order to complete their work. Control has been shown to buffer high work demands (e.g., de Lange, Taris, Kompier, Houtman, & Bongers, 2003). The *reward dimension* refers to the power of reinforcement to shape behavior and points to the extent to which rewards (monetary, social and intrinsic) are consistent with the individual's expectations (e.g., Effort–Reward-Imbalance-model, Siegrist, 1996; Siegrist et al., 2004). When people perceive that they are neglected by the organization's material and social reward system, they are likely to feel out of sync with its values. The overall quality of social interaction at work is assessed by the *community dimension*. Research on issues of interpersonal conflicts, informal social support, closeness, and capacity to work as a team identifies the social context as key factor for burnout (e.g., Halbesleben, 2006). The *fairness dimension* captures the extent to which decisions and resource allocation at work are perceived as fair and equitable. Literature on equity and social justice points toward the importance of the perception of equity or reciprocity (e.g., Walster, Berscheid, & Walster, 1973). Finally, the ideals and motivation that attract people to their jobs are covered by the *values dimension*. A job–person incongruence in the values dimension (e.g., due to change/modification in values) can undermine people's engagement and even lead to counterproductive behavior. In the last decade, research discovered the value congruency to be key to engagement and burnout, respectively (e.g., Dylag, Jaworek, Karwowski, Kozusznik, & Marek, 2013; Schaufeli, Leiter, & Maslach, 2009; Siegall & McDonald, 2004). However, a work setting where the employee perceives a match in all other dimensions is most likely to be consistent with the personal values.

Early models on job characteristics already identified aspects of the areas of worklife as key to health outcomes at work, e.g., the first two areas are key factors in the well-established Job–Demand-Control model (Johnson & Hall, 1988; Karasek, 1979). Interestingly, even though labeled differently, conceptually the six areas are already included in the five core characteristics of the Job Characteristics model by Hackman and Oldham (1980): autonomy represents control, feedback is an aspect of community, skill variety and task identity refer to workload, task significance points toward the importance of values at work. The mediating critical psychological states underline the importance of values and control, whereas the moderator "context satisfaction" reflects aspects of reward, social support, and fairness. Also Schaufeli and Buunk (2002) in their summary of 25 years of burnout research pointed out the following job characteristics as possible reasons for job burnout: quantitative job demands, role problems, lack of social support, lack of self-regulatory activity, and client-related demands. In sum, theoretical and empirical research underpins the importance of the six dimensions identified by Leiter and Maslach (1999). These six dimensions are assessed with the Areas of Worklife Scale (AWS, Leiter & Maslach, 1999) and have been shown to be reliable and valid for samples in the US, Canada, Finland, and Italy (Leiter & Maslach, 2004). Confirmatory and criterion validity of the Areas of Worklife Scale were also confirmed for the Spanish translation (Gascón et al., 2013).

Leiter and Maslach (2004), not only identified relevant aspects of worklife for burnout development, but also established a structural model specifying the interrelationships among the six work areas and their overall relationships with the three facets of burnout (i.e., emotional exhaustion, cynicism, and professional efficacy; see Fig. 1). First, the standard pathways between the three facets of burnout are proposed: exhaustion predicts cynicism, which negatively predicts efficacy. Second, from a conceptual perspective, it is proposed that not all six work characteristics relate to the three burnout facets directly, but that there is rather a complex interaction: Workload is expected to have a direct relation to exhaustion; control is predicted to relate to workload, reward, fairness, and community; values is hypothesized to mediate the relationships of all areas (except workload) with the three burnout facets. The rationale for the central role of control lies in the assumption that employees shape their worklife (i.e., all other dimensions) to the extent that they can participate in important decisions and exercise professional autonomy. As the values dimension reflects the overall consistency in the other areas of worklife, it is assigned an integrative/mediation role between the six areas of worklife and burnout. The model was tested and predominantly confirmed in several validation studies (Gascón et al., 2013; Leiter & Maslach, 2004, 2009; Leiter & Shaughnessy, 2006).

1.4. The present research

Up to now, no validation study for the authorized German translation exists. Therefore, the current article pursues two research aims. First, we aimed to investigate the psychometric properties of the German version of the AWS by analyzing the internal consistency (reliability) and the factorial structure of its scales/dimensions (construct validity). Second, we focused on testing the relationship of the six dimensions of the AWS with health-related constructs (well-being and burnout, criterion validity). In order to extensively answer both questions, we conducted two studies. Study 1 used a public service sample to obtain psychometric scale properties and criterion validity in regard to subjective well-being. In addition, to investigate the well-established relationship of the AWS with burnout, we performed a second study in a nursing sample.

2. Study 1 (public service study)

2.1. Methods

2.1.1. Participants and procedure

Data were collected in 10 public service institutions as a cross-sectional survey. The questionnaire was completed by 1543 employees (response rate of 72.8%).[1] Subjects with missing values on two or more items for the Areas of Worklife Scales[2] and/or well-being were excluded. After eliminating these cases, the sample included 1455 employees (1131 female) aged between 19 and 64 years (*mean* = 42.63, *SD* = 9.7). Regarding the highest level of education the participants reported the following: 576 persons had a university degree, 486 subjects had a polytechnic degree and 345 were skilled employees. Average job tenure ranged from 2 to 5 years. One thousand twenty-three subjects worked in a full-time-job and 406 were part-time workers.

2.1.2. Measures

In order to evaluate working conditions, we used an authorized German translation of the *Areas of Worklife Scale* (AWS, Leiter & Maslach, 1999). The German version of Schulze (2012); Schulze, Leiter, & Riedel-Heller (2013) was provided by the Centre of Organizational Research and Development (Canada). In accordance to the original English version, the German translation comprises 29 items in six scales: workload (6 items), control (3 items), reward (4 items), community (5 items), fairness (6 items), and values (5 items). All items are phrased as statements of perceived congruence or incongruence between oneself and the workplace. Each subscale includes positively and negatively worded items. Subjects are supposed to indicate their agreement/disagreement on a 5-point Likert-scale (1 = *strongly disagree* to 5 = *strongly agree*). Negatively worded items are inverted. A high score indicates a high degree of perceived alignment between the working conditions and the respondent's preference (i.e., a good fit). In order to measure subjective well-being, the *Well-being-Index* (WHO-5, Brähler, Mühlan, Albani, & Schmidt, 2007) was applied. It consists of five items, which have to be answered on a 6-point frequency rating scale (0 = *at no time* to 5 = *all of the time*). Items outline aspects of general well-being, such as positive mood (good spirits, relaxation/rest), vitality (being active and waking up fresh and rested), and interest in things and activities. The ratings are summarized to an overall score ranging from 0 to 25. High scores indicate distinctive well-being. A score below 13 is interpreted as poor well-being. Demographic variables were collected to control for possible confounding variables (e.g., age, sex, education, job tenure, position).

2.1.3. Statistical analysis

To confirm the six-factor structure of the AWS (*construct validity*), an exploratory factor analysis (principal components analysis, varimax rotation) was performed using SPSS 21.0. Established criterions, Kaiser's eigenvalue criterion and scree plot test, were used to determine the factor structure (Fabrigar & Wegener, 2012). The Kaiser's eigenvalue criterion considers factors with an eigenvalue greater than one as common factors. In the scree plot the explained variance of each factor is shown arranged according to size (beginning with the largest). When the explained variance in the scree plot is strongly reducing, a so-called elbow is created. The number of factors from the elbow to the left corresponds to the number of relevant factors.

To assess *criterion validity*, we conducted a hierarchical multiple linear regression analysis with well-being as dependent variable using SPSS 21.0. We controlled for age, education, gender, institution and employment status (full- vs. part-time) in the first step, and added all six AWS dimensions as independent variables in the second model.

2.2. Results

2.2.1. Psychometric properties: Item and reliability analysis

Item and reliability analyses revealed two items that correlated below *r* < .30 with their corresponding scale (fairness and values). These items showed high means and low standard deviations (*mean* > 3.7, *SD* < 1.0), suggesting that participants' answers did not widely differ and, thus, their additional explanation to the scale is relatively low. Therefore, we excluded these two items as the predictive value of the scales was not diminished. Internal consistency for all scales was considered satisfactory, with Cronbach's α above .70 (range α = .71–.83) (Field, 2013). Means, standard deviations, internal consistency for each AWS dimension, and inter-scale-correlations are presented in Table 1.

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[1] A subsample (1101 participants) was used in a study by Pohling, Buruck, Jungbauer, and Leiter (under review) to answer a more complex research question: "Work-related Factors of Presenteeism: The Mediating Role of Mental and Physical Health".

[2] Because the control dimension only consisted of 3 items, all subjects with missing values were excluded.

Table 1
Means, SDs, Cronbach's α, and correlations for AWS scales (public service sample).

Scale	Mean (SD)	α	Variables indicated by numbers					
			2	3	4	5	6	7
1. Workload[c]	2.87 (.78)	.80	.36	.33	.14	.25	.29	.52
2. Control	3.03 (.83)	.72		.34	.11	.29	.26	.29
3. Reward	2.81 (.78)	.81			.31	.45	.32	.30
4. Community	3.34 (.81)	.83				.26	.18	.16
5. Fairness	2.54 (.67)	.72					.53	.26
6. Values	3.15 (.69)	.71						.31
7. Well-being	11.97 (5.23)	.87						

Note.
[a] N = 1430–1455.
[b] All correlations significant with p < .01.
[c] Workload = manageable workload.

Table 2
Principal components factor analysis (public service sample).

	Workload	Community	Reward	Fairness	Values	Control
Workload2	**.75**	−.03	.00	.08	.09	.14
Workload3	**.73**	.06	.18	.05	.06	.01
Workload1	**.74**	−.01	.04	−.02	.18	.12
Workload4	**.74**	.07	.22	.02	.06	.01
Workload5	**.66**	.00	.06	.05	.15	.15
Workload6	**.50**	.15	.07	.17	−.13	.17
Community3	.04	**.90**	.08	.07	.03	.03
Community4	.04	**.84**	.12	.06	.00	.06
Community2	.02	**.79**	.13	.03	.05	−.04
Community5	.02	**.64**	.19	.03	.02	.02
Community1	.08	**.60**	−.04	.22	.13	.05
Reward1	.08	.16	**.79**	.13	.09	.18
Reward3	.18	.11	**.79**	.12	.05	.08
Reward2	.08	.12	**.77**	.17	.16	.15
Reward4	.18	.12	**.59**	.19	.06	.05
Fairness3	−.04	.08	.06	**.70**	.13	.00
Fairness5	.03	.12	.17	**.68**	.14	.07
Fairness1	.17	.06	−.02	**.60**	.21	.24
Fairness6	.08	.08	.31	**.57**	.22	−.02
Fairness4	.13	.06	.28	**.55**	.15	.11
Values1	.08	.04	.07	.15	**.76**	.09
Values5	.23	.05	.10	.12	**.73**	.12
Values3	−.01	.08	.20	.25	**.63**	.13
Values4	.11	.07	.02	.29	**.58**	−.07
Control3	.14	.03	.07	.09	.10	**.77**
Control1	.17	.04	.14	.06	.09	**.76**
Control2	.16	.01	.18	.12	.04	**.74**
Variance explained (%)	23.0	10.4	8.1	6.2	5.2	3.8

Note.
[a] N = 1455.
[b] Varimax rotation was applied.

2.2.2. Psychometric properties: Construct validity

A principal components analysis provided evidence supporting the six factor structure of the AWS. Kaiser's eigenvalue criterion (eigenvalue > 1) and scree plot analysis revealed six factors with the following eigenvalues: 6.22, 2.80, 2.18, 1.67, 1.41, 1.04. The six factor structure assigned all items to the appropriate factor (see Table 2). No item had loadings less than I.50I on their primary factor. Only one item had a second highest loading of more than I.30I: Fairness5 loaded on Reward with .31.[3]

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[3] Confirmatory factor analysis also revealed a better fit of the six factor structure as compared to a one or two factor model ($\chi^2_{(309)} = 1805.717$, $p < .001$, $\chi^2/df = 5.84$, CFI = .888, RMSEA = .058 vs. $\chi^2_{(324)} = 7683.27$, $p < .001$, $\chi^2/df = 23.71$, CFI = .449, RMSEA = .125 vs. $\chi^2_{(323)} = 6137.37$, $p < .001$, $\chi^2/df = 19.00$, CFI = .564, RMSEA = .111). A slightly modified six factor model (error variances between workload1/workload2, workload3/workload4, reward3/reward4 freed) showed an improved and good fit: $\chi^2_{(306)} = 1108.61$, $p < .001$; $\chi^2/df = 3.62$, CFI = .940, RMSEA = .043. The six-factor model structure also produced a good to excellent fit for male and female as well as full- and

2.2.3. Criterion validity

Multiple regression analyses confirmed the relationship between the six working conditions and subjective well-being. Controlling for age, gender, education, and employment status in the first regression step, five of the six areas of worklife (except fairness: $t(1354) = .74$, $p = .46$, $\beta = .02$) made a distinct contribution to explain a significant proportion of variance in subjective well-being ($\Delta R^2 = .30$, $\Delta F (6, 1354) = 101.20$, $p < .001$, see Table 3).

2.3. Summary

Results of study 1 revealed good psychometric scale properties for the German translation of the AWS. Due to psychometrics and conceptual considerations, two items (one from the fairness

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part-time employees (ΔCFI < .01 between unconstrained models and the models with constrained factor loadings, intercepts and covariance).

and one from the values scale) were excluded. Thereafter, all items and scales showed good to excellent internal consistency ($\alpha > .70$). Exploratory factor analysis revealed a six factor structure with each item corresponding to the hypothesized scale. In sum, analyses suggest six distinctive scales for the German translation of the AWS: workload, control, reward, community, fairness, and values. For criterion validity, regression analyses revealed that the six areas of worklife explain a significant amount of variance for subjective well-being. Thus, perceived misfits in working conditions seem to play a vital part with regard to subjective well-being for public service workers. To confirm the results with respect to the psychometric scale properties and in order to investigate the relationship of the six AWS dimensions with another common health-related outcome (burnout), we performed a second study in a nursing sample.

3. Study 2 (nursing study)

3.1. Methods

3.1.1. Participants and procedure

In study 2, we used data from 512 employees working in 20 nursing homes. The sample represents a 44% response rate. After eliminating employees with missing values in the AWS, analogous to the public service sample, the sample comprised 443 employees (379 female). The sample composed 195 skilled care employees, 62 skilled care assistants, 66 unskilled employees, and 119 employees in non-nursing professions, for example, administration. The mean age was 37.75 ($SD = 12.06$). Of the participants, 91 (20.5%) had worked at their current institution for less than a year; 179 (40.5%) had worked at their institution for 1–5 years, 75 (16.9%) had worked 5–10 years, 77 (17.4%) had worked 10–20 years, and 20 (4.5%) had worked over 20 years at their present institution. One hundred seventy-five subjects worked in a full-time-job (40 h per week) and 257 indicated that they were part time employees (<40 h per week, $mean = 31.13$, $SD = 3.86$).

3.1.2. Measures

We applied the same measure as in study 1 to assess the six areas of worklife (AWS). The *Maslach Burnout Inventory*-General Survey (MBI-GS, Schaufeli, Leiter, Maslach, & Jackson, 1996) was used to assess feelings of burnout in three subscales: emotional exhaustion (5 items), cynicism (5 items), and professional efficacy (6 items). All items are evaluated on a 7-point frequency rating scale (1 = *never* to 7 = *every day*). High values in exhaustion and cynicism and low values in professional efficacy are indicators for burnout. Demographic variables were obtained as well.

3.1.3. Statistical analysis

Statistical analyses were performed using SPSS 21.0 and Amos 21.0. To assess *psychometric scale properties*, the following procedure was applied: After identifying item and scale properties, we conducted confirmatory factor analysis (CFA) using structural equation modeling (SEM) in AMOS 21.0 to confirm the six factor model for the AWS.

To investigate the relationship of the six AWS dimensions with the three burnout facets (*criterion validity*), the proposed structural model from Leiter and Maslach (2004, 2009) was tested using structural equation modeling (SEM) as well. The six AWS dimensions and the three MBI facets were entered as latent variables. Following the procedure by Leiter and Maslach (2004, 2009) and Leiter and Shaughnessy (2006), the analysis included only the three items for each variable that have been shown to have relatively low error correlations (see Table A.1 for selected items and R^2). The constructs based on the 3-item subset correlated very strongly with their full-scale counterparts, ranging from $r = .89$ (efficacy) and $r = .96$ (reward, cynicism), indicating a close correspondence between the two item sets. This analysis has the advantage to emphasize the structural relationships among constructs rather than the factor analytic component, thereby retaining its original factor structure, but assigning it a secondary role. The direct paths of the model were defined as specified by previous studies (Leiter & Maslach, 2004, 2009; Leiter & Shaughnessy, 2006; see also Fig. 1).

For all SEM analyses the maximum likelihood algorithm was used to assess the fit of the model. Kurtosis for all items was below the value of 7, suggesting adequate normality (Byrne, Allen, Lampard, Dove, & Fursland, 2010). Several fit indices were calculated to assess the model fit: Chi square/degrees of freedom (χ^2/df), root mean square error of approximation (RMSEA), and comparative fit index (CFI). χ^2/df below 2.5 is considered acceptable; RMSEA values of .05 or less and CFI values of .90 and greater indicate a good fit of the model (Bentler, 1992; Homburg & Baumgartner, 1995). For the structural model, to correct for multinomial distribution in small samples, the Bollen–Stine-Bootstrap-method was used and Bootstrap standardized estimates and 90% CIs were reported. To test for between group invariance the automated procedure in AMOS was used. Due to the small sample size, we base our decision on the CFI differences rather than on $\Delta\chi^2$. ΔCFI < .01 suggests equivalence of the causal structure (Cheung & Rensvold, 2002).

3.2. Results

3.2.1. Psychometric properties: Reliability analysis and construct validity

Analyses showed that one item correlated below $r < .10$ with the corresponding scale (fairness). This item showed an average mean and a rather low standard deviation ($mean = 2.83$, $SD = .95$). This suggests that participants' answers were rather indecisive, i.e., they neither agreed nor disagreed with this statement. Exclusion of this item led to an increased internal consistency for the fairness scale from .64 to .73. Thus, internal consistency for all scales was satisfactory ($\alpha = .73–.84$). Means, standard deviations, internal consistency for each AWS scale, and correlations are given in Table 4.

Using the dimensions defined by the reliability analysis, confirmatory factor analysis revealed a better fit of the six factor

Table 3
Regression analysis global well-being (public service sample).

Variable	Model 2[c]		
	B	SE B	β
Age	.03	.01	.06[*]
Education	−.25	.12	−.05[*]
Gender	.43	.30	.03
Institution	−.09	.05	−.05[*]
Employment status	−.30	.28	−.03
Workload[b]	2.78	.17	.41[***]
Control	.44	.16	.07[**]
Reward	.51	.18	.08[**]
Community	.45	.16	.07[**]
Fairness	.17	.22	.02
Values	.87	.21	.12[***]
R^2		.32	
ΔR^2		.30	
F for changes in R^2		101.20[***]	

Note.
[a] $N = 1366$.
[b] Workload = manageable workload.
[c] ΔR^2 adjusted for age, education, gender institution and employment status (Model 1).
[*] $p < .05$.
[**] $p < .01$.
[***] $p < .001$.

Table 4
Means, SDs, Cronbach's α and correlations for the AWS dimensions in the nursing sample.

Scale	Mean (SD)	α	Variables indicated by numbers								
			2	3	4	5	6	7	8	9
1. Workload[c]	2.84 (.77)	.79	.39	.41	.26	.45	.36	−.59	−.39	.18
2. Control	2.94 (.80)	.74		.39	.31	.47	.41	−.36	−.34	.14
3. Reward	3.22 (.74)	.77			.46	.58	.52	−.41	−.48	.27
4. Community	3.41 (.74)	.84				.47	.42	−.25	−.32	.17
5. Fairness	3.28 (.68)	.73					.63	−.37	−.46	.28
6. Values	3.49 (.71)	.79						−.38	−.53	.31
7. Exhaustion	3.92 (1.40)	.87							.60	−.26
8. Cynicism	2.48 (1.32)	.84								−.36
9. Efficacy	5.71 (.89)	.78								

Note.
[a] $N = 423–443$.
[b] All correlations significant with $p < .01$.
[c] Workload = manageable workload.

structure as compared to a one factor model assigning all items to a single factor ($\chi^2_{(335)} = 1018.43$, $p < .001$; $\chi^2/df = 3.22$, CFI = .864, RMSEA = .068, vs. $\chi^2_{(350)} = 2405.40$, $p < .001$; $\chi^2/df = 6.87$, CFI = .590, RMSEA = .115). A two factor model (Factor 1: workload; Factor 2: other areas) showed an improved fit compared to the one factor model but still fell short of the six factor model $\chi^2_{(349)} = 1997.07$, $p < .001$; $\chi^2/df = 5.72$, CFI = .672, RMSEA = .103). For the hypothesized six factor model, all paths between items and assigned factors were significant. In a modified model, we freed 4 item error correlations within the scales, which had very high modification indices (>40): workload1/workload2, workload3/workload4, reward3/reward4, fairness5/fairness6. We justify this procedure because we assume systematic, rather than random, measurement error due to a high degree of similarity in the item content (see also, Byrne et al., 2010). The modified six factor model showed an improved and good fit: $\chi^2_{(331)} = 820.40$, $p < .001$; $\chi^2/df = 2.47$, CFI = .902, RMSEA = .058. The model using the 3-item subset for

each construct had a good fit with the data as well ($\chi^2_{(120)} = 221.90$, $p < .001$; $\chi^2/df = 1.85$, CFI = .961, RMSEA = .044).

Testing for multi-group invariance between part- and full-time workers, separate analyses revealed an adequate to good fit for the modified six factor model in each group ($\chi^2_{(331)} = 554.36$, $p < .001$; $\chi^2/df = 1.68$, CFI = .926, RMSEA = .051; $\chi^2_{(331)} = 577.99$, $p < .001$; $\chi^2/df = 1.75$, CFI = .882, RMSEA = .065) and multi-group comparison suggests factorial equivalence (ΔCFI < .01; see Table A.3).

3.2.2. Criterion validity

Leiter and Maslach (2004) hypothesized that not all areas of worklife directly predict burnout, but that there is rather a complex interplay between the six aspects. The present study aimed to investigate the proposed model structure (see Fig. 1). The SEM model produced a good fit ($\chi^2_{(311)} = 624.89$, $p < .001$; $\chi^2/df = 2.01$, CFI = .925, RMSEA = .048). Only three paths did not
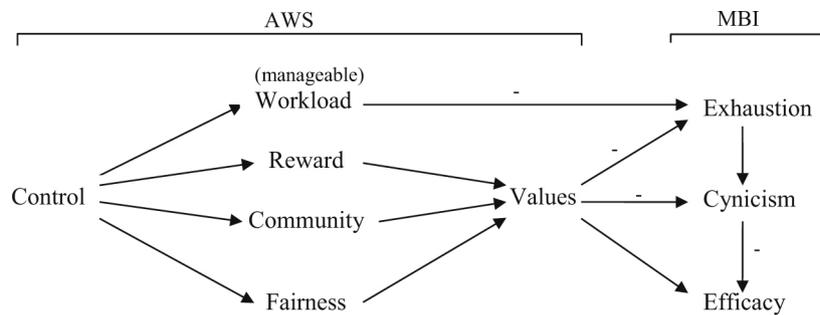

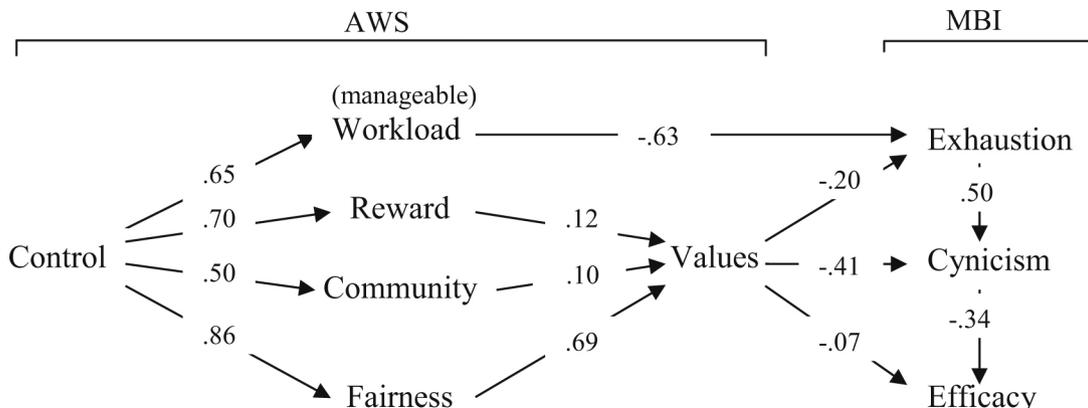**Fig. 1.** Hypothesized structural model – areas of worklife (AWS) and burnout (MBI).

Fig. 2. Structural model – path coefficients in nursing sample.

reach significance: reward to values ($p = .21$), community to values ($p = .21$), and values to efficacy ($p = .41$, see Fig. 2). However, modification indices did not indicate any additional structural path that would substantially improve the model. Total direct and indirect effects within the model are displayed in Table A.2. Separate SEM analyses showed a slightly better fit of the model for part-time compared to full-time employees ($\chi^2_{(311)} = 523.27$, $p < .001$; $\chi^2/df = 1.68$, CFI $= .915$, RMSEA $= .052$ vs. $\chi^2_{(311)} = 502.55$, $p < .001$; $\chi^2/df = 1.62$, CFI $= .894$, RMSEA $= .059$). However, multi-group comparison suggests invariance between the two groups (unconstrained vs. structural model: ΔCFI $= .007$, see Table A.4).

3.3. Summary

Study 2 confirmed the good psychometric scale properties for the German translation of the AWS: reliability analysis and confirmatory factor analysis support the six factor structure. Importantly, SEM analysis showed a good to excellent fit for the structure model proposed by Leiter and Maslach (2004, 2009), proving that the six areas of worklife significantly predict the three facets of burnout. However, three paths fell short of significance. No model modifications were necessary to reach a good to excellent fit. Thus, analyses confirmed that not all AWS dimensions are directly associated with one of the three burnout facets. The interplay of the six areas of worklife in regard to burnout development can be predicted by the proposed model, workload and values being the key mediation variables.

4. General discussion

This article aimed at investigating the psychometric properties and the predictive criterion validity of the German translation of the Areas of Worklife Scale (AWS). Considering reliability, in both studies all AWS dimensions showed good to excellent internal consistency. In study 1, exploratory factor analysis showed a good correspondence of the AWS items and the six hypothesized scales, pointing to good construct validity. Regarding criterion validity, in study 1 regression analyses revealed that the AWS dimensions explained a significant amount of variance for subjective well-being. In this line, study 2 found an association between the six areas of worklife and the three dimensions of the MBI. SEM supports the assumption by Leiter and Maslach (2004, 2009) that not all AWS dimensions have direct relationships with each aspect of burnout, but that there is rather a more complex interplay between the six areas of worklife. Taken together, this article found substantial evidence for the reliability and validity of the German version of the AWS.

4.1. Psychometric properties

Examining the item and scale properties of the German translation of the AWS more closely, in both studies some items did not relate to their corresponding scale very well (fairness and values). Moreover, psychometric values (*mean*, *SD*) indicated that answers did not spread across the rating scale, with most participants answering either in the same direction (study 1) or were undecided (study 2). There are two possible explanations. Either the participants did not comprehend the item information, or item content did not differ among the participants. The first explanation seems somewhat unlikely, because the item content is rather simple and there were no translation issues regarding the meaning. It seems more likely that there are cultural differences regarding working life. Research showed that especially work-related values differ among countries (e.g., House, Javidan, & Dorfman, 2001; Schwartz, 1992). Perceived fairness originates from comparison

with other employees and is therefore influenced by opportunities and restrictions of the occupational and organizational context. Thus, occupation or organizational culture can influence appropriateness of items (e.g., Semmer et al., 2007). Here, in study 1, one excluded item asked whether decisions are independent of favoritism or bribery. In the German public sector, workers have to sign a corruption declaration which sensitizes workers and states significant fines and consequences when violated. In study 2, the excluded item asked whether career opportunities are based on merit. However, in nursing there is a very flat hierarchy with basically only two positions for trained nurses (team member or team leader). Thus, there is no direct career path. In both cases, the occupational backgrounds explain the rather bad psychometric data for these items and, from our point of view, justify exclusion in our studies, since we used differing samples. Unequal career opportunities and favoritism are vital facets of the fairness scale, as experiencing either can lead to a feeling of unfairness and produce a mismatch in that dimension. Therefore, we do not recommend general exclusion of these items, but rather to take organizational and occupational culture into account when administering the AWS.

Overall, in both studies reliability and construct validity analyses confirmed the six factor structure for the German translation of the AWS. In line with previous research (Gascón et al., 2013; Leiter & Maslach, 2004; Maslach & Leiter, 2008), we found internal consistency above $\alpha = .70$ for all scales which is considered acceptable for psychological constructs (Field, 2013). Hence, as in the original version, the translated items of each dimension measure the same construct. In study 1, principal component analysis (exploratory factor analysis) showed that each item loaded on the factor representing their corresponding scale. Only one item had a noteworthy second loading, which is still smaller than .4 and also found in the original version by Leiter and Maslach (2004, see also Spanish translation, Gascón et al., 2013). In addition, confirmatory factor analyses in study 2 support this finding by showing that the six factor model fits the data best and showed acceptable fit indexes. Taken together, results in both studies revealed good psychometric scale properties for the German translation of the AWS.

4.2. Criterion validity

Criterion validity was assessed by investigating the association between the six AWS dimensions and subjective well-being (study 1) and burnout (study 2), respectively. Consecutively, we discuss the findings for both studies individually.

To our knowledge, study 1 investigated the singular relationship between the AWS and subjective well-being for the first time. A multiple linear regression analysis revealed that a substantial amount of variance in well-being was explained by the six aspects of worklife. All scales except fairness were significantly associated with subjective well-being. In detail, workload was the strongest predictor. In line with the Job Demand-Control-Support-model (Johnson & Hall, 1988; Karasek, 1979), control and community (social support) have also been revealed as significant predictors. Support of this finding comes, for example, from de Lange et al. (2003), who found in their meta-analytic review the influence of workload, job control and social support on well-being. In contrast, no significant relation between fairness and well-being was found. However, results show a medium-sized correlation between the two constructs. In line with previous studies, there is a high inter-correlation between fairness and values which could account for the non-significant result in the regression model, i.e., the variance is already explained by values. As pointed out by Leiter and Maslach (2004) in their structural model, values have a central role when it comes to explaining health-related outcomes; e.g., they mediate the relationship between fairness and burnout. In this line, the values scale had – next to workload – the strongest influence

on well-being. Leadership research underlines the importance of congruent values for employees' well-being. Studies indicated that employees' perception of their work characteristics mediates the relationship between transformational leadership style and psychological well-being (Arnold, Turner, Barling, Kelloway, & McKee, 2007; Nielsen, Randall, Yarker, & Brenner, 2008; Zwingmann et al., 2014). Hence, a higher match between individual and work values enhances not only well-being but also other job-related factors (e.g., fairness). In sum, congruent values may be essential for subjective well-being, but perhaps only if effective interventions reduce work-overload as the most prominent predictor. Thus, results of study 1 point toward the importance of the AWS dimensions for subjective well-being.

As predicted, study 2 supports the assumption of a specific pattern of relationships among the six areas of worklife and the three aspects of burnout (Alarcon, 2011; Leiter & Maslach, 2004; Leiter & Shaughnessy, 2006; Maslach & Leiter, 2008; Maslach, Schaufeli, & Leiter, 2001). Testing the proposed structural interplay (see Fig. 1), SEM analysis revealed a good to excellent fit. Modification indices showed no indication for any additional direct path. However, three paths fell short of significance: the influence of reward and community to values and values to efficacy. However, for later constructs, correlation analysis showed a direct relation/shared variance. Gascón et al. (2013) also obtained the weakest coefficient for this path. It could be assumed that the relationship between values and efficacy is mediated by cynicism. Thus, the effect of values on efficacy is already explained through the influence of values on cynicism. In their study, Leiter and Shaughnessy (2006) did not confirm significant paths from community and reward to values either. Nevertheless, the medium- to large-sized zero-order correlations between reward and values and community and values, as well as the correlations between the two areas and the three facets of burnout prove that these areas should not be neglected. Occupational health research shows the importance of community and reward to health-related outcomes. Both areas have a broad theoretical and empirical foundation. Perceived insufficient monetary and social reward can lead to feelings of inefficacy and may reduce intrinsic motivation and, thus, increases the vulnerability for burnout (Maslach & Leiter, 2008; Effort-Reward Imbalance model, Siegrist, 1996; Siegrist et al., 2004). The Job Demand-Control-Support-model (Johnson & Hall, 1988; Karasek, 1979) points to community as an important buffer against feelings of inequity at work. However, conflicts with others on the job are most destructive and produce stress, frustration and hostility which again increase the likelihood of burnout (Leiter & Maslach, 2004). On this basis, how can our findings be explained? Considering the third component that influences values in the structural model, the large-sized correlations for fairness with community and reward suggest that fairness explains the common variance of reward and community in values. Fairness is surely an important aspect in the rating of social relations as well as in the evaluation of reward and might serve as a buffer. People are willing to accept inadequate reward and unbalanced relationships when it is perceived as fair, e.g., by transparent information policy or participation (procedural and interactional fairness, Ambrose & Schminke, 2003). In relation to the person–environment approach, studies (e.g., Kristof-Brown et al., 2005; Oh et al., 2014) showed that individuals are able to compartmentalize their reactions to different work-related outcomes, i.e., the fit/misfit in different areas of worklife relates more strongly to specific outcomes. Person–job fit (in our study: e.g., workload, control) played an important role for job satisfaction whereas organizational commitment was most strongly influenced by person–organization fit (in our study: fairness, values) (see meta-analysis Kristof-Brown et al., 2005). In regard to the tested structural model, it can be suggested that the influence of the specific area of worklife might change with different outcomes (Leiter

& Shaughnessy, 2006). So far studies only assessed turnover or change as outcome variables (Gascón et al., 2013; Leiter & Maslach, 2004, 2009; Leiter & Shaughnessy, 2006). To our knowledge, our study was the first to test the model with no additional outcome variable. Thus, for burnout development the influence from fairness to values seems to be more important than from reward or community. Testing the structure model in regard to different work-related outcomes (e.g., commitment, job satisfaction, performance) could be an additional research question in future studies.

In summary, results from previous studies could be replicated and confirmed for the German translation of the Areas of Worklife Scale in the current article. Our findings in both studies underpin the importance of the AWS for health-related outcomes and, thus, suggest high criterion validity. Hence, perceived incongruence between oneself and the six working conditions contributes significantly to diminished well-being and feelings of burnout (e.g., emotional exhaustion). Assessing and identifying these misfits in terms of the environment-fit models seems to be a relevant and successful feature of the AWS. Although all six areas of worklife play a vital part, high workload and value conflicts seem to be the most important constraints for good and healthy workplaces.

4.3. Limitation

Several limitations must be kept in mind regarding the results of the analyses presented here. First, the cross-sectional design restricts the validity of the results. However, our studies confirmed results from previous work using the same design (Gascón et al., 2013; Leiter & Maslach, 2004, 2009). Moreover, longitudinal analyses are in line with the present findings in regard to criterion validity (de Lange et al., 2003; Leiter & Maslach, 2004). Second, the sample was limited to public service employees and nursing staff from one region of Germany. Both employment sectors are characterized by a high percentage of female workers (Statistical Office Saxony, 2014a, 2014b). The elderly care is described by high physical, emotional and psychological demands; interactions with clients/residents are key to accomplishing the work task (Nübling et al., 2010). Mental work is the main task for employees in the public service, social interaction with clients are not predominant. Thus, it can be argued that the findings are not representative for the entire country and all occupations. However, the samples had a wide range in age, education, and professions and lead to similar results as in the normative sample (Leiter & Maslach, 2004). Moreover, both samples confirmed the AWS as a valid measure and their relevance to health-related conditions. Nevertheless, the homogeneity of the samples could be a reason why some items had no association with their corresponding scales (fairness, values). Future studies should aim at determining whether specific statements are more or less relevant across occupations and whether the AWS structure generalizes in an employment sector that is characterized by a high percentage of male workers and physical demands.

4.4. Practical implications/conclusions

The AWS defines a psychological environment in which people perceive and experience the world of work. Rather than proposing an ideal job or the ideal employee, the model accepts a wide range of functional job environments and inclinations shaping the way people work. In addition to the overall themes of the model, the AWS provides the capacity to assess specific work settings with regard to the six areas of worklife. In general, workload and control are key issues in work design (de Lange et al., 2003). However, a specific work setting may reveal greater difficulties in the recognition of excellent performance (reward), the internal processes for promotion (fairness), or the level of social conflicts

within the workplace (community). Hence, the AWS is a reliable and valid instrument to identify and specify whether and where work related problems occur. This function is important, because these difficulties have implications for employees' relationship with their workplace; mismatches might have negative long-term effects for the employees' well-being and the organization.

When interpreting the AWS, factors specific to the occupational background and organizational culture ought to be considered, as these could have an effect on the general sample response to certain items. A high overall agreement to an item due to a context factor (e.g., due to a declaration everyone has to sign) might lead to an artificially elevated overall scale mean. Thus, a perceived mismatch or problem in an area of worklife - suggested by the answers to the other items - could be overshadowed. Therefore, in specific samples, inapplicable items should be excluded as they might distort results and mislead conclusions. Thus, assessments of the six areas of worklife may inform effective personal, organizational, and participative interventions. Focusing on collegial relationships, the CREW-intervention (Civility, Respect, and Engagement at Work, Leiter, Laschinger, Day, & Oore, 2011) provides a successful example. Health circles targeting the work environment with the main focus on burnout prevention also show promising results (Bourbonnais, Brisson, & Vezina, 2011; Bourbonnais, Brisson, Vinet, Vezina, & Lower, 2006). In sum, with the German translation of the AWS a valid assessment is provided that offers managers information necessary to identify specific critical areas in their organization and implement specific strategies to ensure healthy workers and workplaces.

5. Conflict of interest statement

The authors declare that there are no conflicts of interest.

Acknowledgements

Appendix A.

See Tables A.1–A.4.

Table A.1
Factor loadings and R^2 values for the hypothesized structural model (SEM method).

Item	Coefficient	90% CI	Construct	R^2
MBI-GS 3[a]	.76	[.71, .81]	Exhaustion	.58
MBI-GS 4	.74	[.69, .79]	Exhaustion	.55
MBI-GS 6	.77	[.73, .82]	Exhaustion	.60
MBI-GS 9	.80	[.73, .85]	Cynicism	.64
MBI-GS 10	.67	[.56, .77]	Efficacy	.45
MBI-GS 11	.90	[.82, .98]	Efficacy	.82
MBI-GS 12	.61	[.51, .70]	Efficacy	.38
MBI-GS 13	.54	[.47, .61]	Cynicism	.44
MBI-GS 15	.66	[.57, .73]	Cynicism	.29
Workload2[b]	.66	[.59, .72]	Workload	.43
Workload4[b]	.69	[.63, .76]	Workload	.48
Workload6	.44	[.35, .53]	Workload	.20
Control1	.54	[.44, .62]	Control	.30
Control2	.64	[.55, .71]	Control	.42
Control3	.63	[.55, .70]	Control	.40
Reward1	.88	[.84, .92]	Reward	.77
Reward2	.89	[.85, .93]	Reward	.80
Reward3	.47	[.38, .56]	Reward	.23
Community2	.84	[.79, .89]	Community	.71
Community3	.83	[.78, .89]	Community	.69
Community5[b]	.50	[.41, .59]	Community	.26
Fairness1	.66	[.59, .72]	Fairness	.44
Fairness3	.63	[.55, .70]	Fairness	.40
Fairness6[b]	.50	[.37, .60]	Fairness	.25
Values1	.78	[.72, .84]	Values	.61
Values2	.50	[.41, .59]	Values	.26
Values3	.75	[.69, .81]	Values	.56
Exhaustion				.56
Efficacy				.62
Cynicism				.10
Workload[c]				.43
Reward				.48
Community				.25
Fairness				.75
Values				.67

Note.
[a] Underlined items were fixed at 1.00 to set the scale in the SEM.
[b] Workload2, Workload4, Reward3, Community5 and Fairness6 were inverted.
[c] Workload = manageable workload.
[d] Standard regression weights, bias-corrected CIs and R^2 reported according to boot-strapping method results.

Table A.2
Total direct and indirect effects for the hypothesized structural model (SEM method).

	Workload	Control	Reward	Community	Fairness	Values	Exhaustion	Cynicism
Exhaustion	−.63***	−.55***	−.02	−.02	−.14**	−.20**		
Cynicism	−.31***	−.58***	−.06	−.05	−.35***	−.51***	.50***	
Efficacy	.11***	.15**	.01	.01	.08	.11	−.17***	−.34***
Workload[a]		.65***						
Reward		.70***						
Community		.50***						
Fairness		.87***						
Values		.73***	.12	.10	.69***			

Note.
[a] Workload = manageable workload.
[b] Significance reported based on bootstrap approximation obtained by contrasting two-sided bias-corrected CIs.
** $p < .01$.
*** $p < .001$.

Table A.3
Six factor AWS-model: goodness-of-fit statistics for tests of multi-group invariance in employment status (nursing sample).

Model description	χ^2	df	CFI	$\triangle$CFI	RMSEA
1. Configural model; no equality constraints imposed	1132.57	662	.908	–	.041
2. Measurement model; invariant factor loadings	1159.16	684	.907	.001	.040
3. Structural model; invariant factor covariance	1236.39	733	.901	.007	.040

Table A.4
Structural model: goodness-of-fit statistics for tests of multi-group invariance in employment status (nursing sample).

Model description	χ^2	df	CFI	$\triangle$CFI	RMSEA
1. Configural model; no equality constraints imposed	1025.99	622	.906	–	.039
2. Measurement model; invariant factor loadings	1051.51	640	.905	.001	.039
3. Structural model; invariant regression paths	1115.98	680	.899	.007	.039

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