

Psychological work capacity demands, according to Mini-ICF-APP-WS, on different health professionals – A naturalistic observation study

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Summary

Purposes: Capacity-oriented workplace-description is on the one hand, the basis for occupational health action, e.g. for reintegration and work adjustment. On the other hand, it is also necessary for preventive action, e.g. mental hazard analysis or job-matching. When self-ratings are used for a work description, that description must not be confused by an affective judgment about the workplace, e.g. work-satisfaction. Health professionals are especially prone for high workload and potentially a very broad spectrum of work-duties. Studying health professionals is valuable for gaining empirical insights into how these employees, in a similar environment but with different tasks, perceive their work-capacity-demands. Subjective work-perception is an important predictor of work ability.

Methods: The work capacity demands of 122 health professionals were studied, by comparing administrative staff, physicians, psychologists and co-therapists (ergotherapists, sport therapists, social workers, nurses). They all reported their work demands according to the Mini-ICF-APP-WS work demands rating.

Results: Different professional groups reported different psychological work-capacity-demands to different degrees. Correlations between the work-capacity-demands and the work condition were low to moderate, indicating discriminant validity. Also, work capacity demands are independent from work ability, which is another validity aspect.

Conclusion: The work capacity demands rating was able to differentiate between capacity demands in different professional fields, even if the workplace context was the same (employees from similar work environments). The work capacity demands rating can be a useful short rating for mental hazard analysis in health care professions. It gives a differentiated description of workplace demands, which is the basis for creating person-job-fit, by targeted work adjustment, capacity training, or combined interventions.

Keywords: work ability, work demands, work description, health care professionals, work stress, professionals

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INTRODUCTION

Mental hazard analysis and finding the right person-job fit, are important topics in all enterprises, including hospitals. When the aim is to reduce sick leave or work participation problems, a valid description of the work demands is necessary (BMJV, 2015; Hofmann, 2014; Kulik et al., 1987; Bamberg & Mohr, 2016; Oldham & Hackman, 2010; Henderson et al., 2011; Knudsen et al., 2012; Larsen et al., 2010).

Health care employees are confronted with a wide variety of capacity demands, ranging from administrative, legal and bureaucratic duties to different interactional labor demands (Wagman et al., 2017). Until now,

research on psychological work demands on health care professionals focused specific aspects such as emotion-rule dissonance, or emotional labor, or specific demands under special conditions, or work demands in specific regions (Kubicek & Korunka, 2015; Grandey & Melloy, 2017; Dunjic-Kostić et al., 2022; Hankir et al., 2017). However, more broad work demand descriptions are also important for quality assurance purposes, setting or assessing educational aims in training for health care professionals, mental hazard analysis for different health care professions, and for giving realistic job previews. In this context, a first step is to gather work demand descriptions from different health care professionals.

How can work capacity demands be measured?

Important and often discussed questions concerning work descriptions are how psychological work demands can be assessed objectively, and whether work descriptions from employees can be useful (e.g. Gablenz-Kolakovic et al., 1981; Rau, 2010). Using an employee's subjective work description requires that their work description is a description of tasks and demands, and is not distorted by an affective judgment about the workplace (such as job (dis)satisfaction).

One concept for describing work on a descriptive level, is the concept of work capacity demands. *Work capacity demands* describe which psychological capacities are required by a job and to what extent. Psychological capacity dimensions, according to ICF (WHO, 2001), which are used widely in social-medicine (description of work ability (impairment)), have been internationally operationalized and evaluated (Linden et al., 2009, 2010; Balestrieri et al., 2012; Molodynski et al., 2012; Pinna et al., 2015; Wciorka & Switaj, 2018). As employees have individual capacity profiles, work health prevention requires activities which are in line with the *person-job fit* (Edwards & van Harrison, 1993; French, 1973; Kulik et al., 1987; Zoer et al., 2012) instead of general activities, e.g. the same stress management measure for all employees. Describing psychological work capacity demands is crucial for decisions on work ability, for preventive measures to preserve working ability by finding the right person-job fit (Edwards & van Harrison, 1993; French, 1973; Kulik et al., 1987), especially in cases of work ability problems due to mental disorders. Therefore, concepts for and practical assessments of, psychological work demands (in addition to existing, person-oriented capacity assessments) are needed.

There are many instruments available for use in work design or work description (Parker et al., 2017). A description of the person's capacity level and a description of the work's capacity demands, are both needed for a mental hazard analysis, vocational reintegration, or finding the fitting workplace for an employee.

The Mini-ICF-APP concept of psychological work capacity demands

The *Mini-ICF-APP* (Linden et al., 2009, 2015; Balestrieri et al., 2012; Molodynski et al., 2012) is an internationally-evaluated instrument for the description of the person's psychological capacity level, which is established in social medicine. It covers thirteen psychological capacity dimensions which are of primary importance in the modern (working) world which places stronger demands on psychological capacities than on physical capacities. The instrument is based on the *International Classification of Functioning Disability and Health* ICF (WHO, 2001)¹ relational health concept and is used for comprehensive descriptions of working ability (DRV, 2012; SGVP, 2016). The *Mini-ICF-APP* offers an observer-rating together with a self-rating describing people's psychological (work) *capacity levels*. A Mini-ICF-APP-based instrument for the description of the work *capacity demands*, has recently been developed (Mini-ICF-APP-WS, Linden et al., 2015; Muschalla, 2018a,b). It has undergone evaluation involving people from a wide range of professions, i.e. mentally as well as physically demanding workplaces. It was found that the instrument was able to differentiate between different professions. The capacity demands were not correlated with affective aspects, such as work satisfaction and work-anxiety. This independence of the two concepts is a note on divergent validity.

A next evaluation step has been carried out in this present study. A sample of specific interest, as in risk for work stress was investigated: health care personnel. The new aspect in the current study is that the employees come from rather similar work settings, i.e. health care professionals working in psychotherapy hospitals. The question is therefore, whether a capacity-oriented work description is also able to distinguish between different health professions (who have different capacity demands at their workplaces) but work in similar work environments.

¹ According to the ICF health concept (WHO, 2001), work health (problems) can be understood as an interaction between three aspects: a) body functions/dysfunctions, b) activities/capacities, and c) context. The potential value of the ICF concept for work and organizational psychology is discussed in a current position paper (Vornholt et al., 2018). The Mini-ICF-APP capacity concept (Linden et al., 2015) operationalizes 13 psychological capacities. It reflects aspect b) of the ICF health concept, i.e. the activities/capacities.

Work demands on health care professionals

Treatment in psychotherapy hospitals is carried out by a health care team, which comprises physicians, psychologists, co-therapists (ergotherapy, sports therapy, social workers, nurses) and administrative personnel (DRV, 2014; Körner et al., 2015). Although they work in the same environment, these different professionals have partly different profiles in terms of work demands:

Physicians perform the somatic, pharmacotherapeutic and single and group psychotherapeutic treatments, are responsible for the treatment process and coordination of treatment, give referrals for co-therapies, integrate all medical and therapeutic findings and observations and are responsible for the written medical report. They are confronted with high demands in terms of applying specific medical and psychotherapeutic competence, decision making and judgment for each patient's treatment.

Psychologists, when employed as psychotherapists, function as relational therapists (similar to physicians). They provide single- and group psychotherapeutic treatments, coordinate treatment, give referrals for co-therapies, integrate therapeutic findings and observations, and are partly responsible for the written medical report. Due to the fact that they only work psychotherapeutically and have longer patient contacts (in comparison to physicians who sometimes have rather short contacts for medical aspects and pharmacotherapy), psychologists may need to do more structuring and planning of patient contacts, and have may face more demands for building dyadic relationships.

Co-therapists perform exercise treatments, which are often provided in group settings, such as ergotherapy, crafts groups, sport groups, cooking groups, or station groups. They also report their observations to the relational therapists. They act in accordance with physicians' treatment decisions but are not responsible for medical decisions. They may work in different places (group rooms, sports rooms, creative activity rooms) and have different needs. *Administrative personnel*, including tradesmen, craftsmen, kitchen staff, reception personnel who do not have therapeutic duties, but have short patient contacts e.g. when clearing invoices or handling requests. They fulfill routine duties in the hospital setting, and therefore must be able to switch flexibly from one task to another, but do not have much latitude for decision-making in their work.

Study aim and questions

This is one of the first studies in which *work capacity demands* are explored using the same dimensions by which *mental work ability* can be described. Using the same definitions of capacities, will open a way for compatibility between work ability descriptions (*Mini-ICF-APP*, Linden et al., 2009) and work capacity demands descriptions (*Mini-ICF-APP-WS*, see Methods). Both instruments can then be used for question of work ability and person-job-fit.

Studying health care professionals is worthwhile for gaining empirical insights into how these employees, in a similar environment but with different tasks, perceive their work capacity demands. Subjective work perception is an important predictor of work ability.

Research Questions

The first research question is whether the self-rating *Mini-ICF-APP-WS* work demand description is able to differentiate between four professional groups of health care hospital personnel: administrative personnel, physicians, psychologists, and other therapists (called "co-therapists": ergotherapists, social workers, sport therapists, nurses). Although the environmental aspects (hospital setting) might be similar, differences in capacity demands occur due to the different task profiles which the employees (physicians, co-therapists, psychologists, administration personnel) have to fulfill. Administrative personnel have to perform different, changing, organizational tasks during their working day. Psychologists have to provide single and group therapies, co-therapists mostly provide group therapies with activating activities.

Secondly, discriminant validity will be tested: The work capacity demands description (*Mini-ICF-APP-WS*) must be distinguishable from working conditions or affective judgments about work. Thus, the *Mini-ICF-APP-WS* should only correlate to a small or moderate extent with a work description instrument measuring work conditions or including affective judgments of work (*Short Questionnaire for Work Analysis*, KFZA, Prümper et al., 1995). The *Mini-ICF-APP-WS* should not be correlated with perceived work ability (measured using the *Work Ability Index*, WAI, Tuomi et al., 1995), which is an important indicator of future sick leave.

SUBJECTS AND METHODS

Employees working at three psychotherapy hospitals were surveyed. The employees were recruited through general information sessions for all employees (i.e. employee's meeting), with consent from management and personnel advice. The employees were asked to fill in an anonymous questionnaire. This contained ratings of work capacity demands (*Mini-ICF-APP-WS*, Muschalla, 2018b; Linden et al., 2015), work ability (*WAI*, Tuomi et al. 1995) and the short, self-rating work analysis questionnaire (*Kurzfragebogen zur Arbeitsanalyse, KFZA*, Prümper et al., 1995). The survey was carried out in 2018. The questionnaire return rate was 66-100% in the three participating hospitals.

Instruments

The *Short Questionnaire for Work Analysis* (KFZA, Prümper et al., 1995) is a 26-item questionnaire which measures working conditions. It covers established constructs (Table 2) and evaluated work description items. Some of the KFZA items are formulated descriptively (questions about interruptions or physical stressors, like climate). Other KFZA items ask about subjective perceptions of working conditions (perception of social support or over-taxation). Cronbach's alpha ranged from .505 to .787 (six dimensions $>.700$). In this study, the KFZA is used to test the Mini-ICF-APP-WS's discriminant validity. The Mini-ICF-APP-WS should provide a description of the workplace in terms of *capacity demands*.

The subjective global, physical and mental work ability was assessed using the *Work Ability Index* WAI (Tuomi et al., 1998). The WAI is an internationally-validated and widely-used, measure of work ability. Participants rated their perceived current global work ability, compared their absolute best work ability (0=completely unfit for work – 10=absolute best work ability ever), and their current work ability in respect of physical work demands and mental work demands (1=very bad, 5=very good).

The *Mini-ICF-APP-WS* (Muschalla, 2018b) is a self-rating instrument, which addresses 13 dimensions of capacity demands to which an employee can be subjected at work: adherence to regulations, structuring and planning, flexibility, applying expertise, endurance, judgment and decision making, contacts with others, group integration, assertiveness, pro-activeness, dyadic relationships, self-care, mobility. The Mini-ICF-APP-WS's capacity dimensions are identical with those of the

internationally-evaluated and translated, observer-rating for capacities Mini-ICF-APP (Linden et al., 2009). Work capacity demands should be explored using the same dimensions, such as mental work ability, in order to enable a person-job fit (Mini-ICF-APP, Linden et al., 2009). In a pilot study, a first evaluation of the Mini-ICF-APP-WS work demands self-rating was carried out with a very heterogeneous sample of professions (Muschalla, 2018b). The question in this case, was whether self-ratings of psychological work capacity demands were congruent with an interviewer-rated work description. Self-reported work capacity demands were correlated with an interviewer's (a trained, social-medicine specialist) rating of work capacity demands (Muschalla, 2018a). In addition, the different professional groups reported different degrees of different capacity demands. The Mini-ICF-APP-WS includes a short and an extended scale: The short scale (work) includes one item for each capacity dimension, i.e. 13 items, which refer to the participants' *work* (addressing the demands of work activities). The extended scale (workplace) contains 4 items per dimension (i.e. 52 items), and refers more specifically to the participants' *workplaces* (addressing the demands of the specific workplace as a concrete place with its own environmental and social complexity). It is possible to combine the scales, in this case resulting in a scale comprising of both *work* and *workplace* items (65 items) (see tables 2+3b). Each item is rated from 0 = *do not agree at all*, to 4 = *completely agree*. The scales can be used and interpreted independently (work, workplace) or in combination (work+workplace). Cronbachs alphas for the 13 dimensions (workplace, work+workplace) range from .679 to .864.

This present study is the second study of the Mini-ICF-APP-WS self-rating. Its function is to replicate the first evaluation (validity, rating's ability to differentiate) and generate initial data on the capacity demands of workplaces on health professionals.

The questionnaire also included three additional items on work demands in respect of global physical fitness, global mental fitness, and demands of adjusting to changing working times (shift work). Each item was rated from 0 = *do not agree at all*, to 4 = *completely agree*.

Participants

Most of the participants from all the professions, were women (64-82%) (Table 1). Reception personnel and physicians were the oldest (45-48 years of age), and

Tab. 1 Characteristics of health care employees. Mean (standard deviation). $N=122$. As first statistic value in each line the overall significance from ANOVA is reported, followed by the post-hoc comparisons with significant group differences (marked by the superscripts ¹⁻⁶).

Participant characteristics	1 Co-therapists (n=47)	2 Physicians (n=25)	3 Psychologists (n=28)	4 Administration, reception, craftsmen (n=22)	Significance of differences
					p
Gender (% women)	78.7%	64.0%	82.1%	72.7%	.423
Age	41.00 (10.3)	45.28 (7.7)	35.00 (8.9)	47.86 (11.1)	.000, ⁶ .067, ¹ .042, ³ .001, ⁵ .000
Years in this profession	14.15 (9.1)	10.6 (8.4)	5.3 (5.0)	16.02 (10.9)	.000, ⁶ .000, ⁵ .000
Leadership position (%)	19.1%	48.0%	0.0%	17.6.0%	.000
I find the workplace great. (rating 0-4)	3.07 (0.78)	2.91 (0.73)	2.54 (0.79)	2.95 (0.78)	.044, ⁶ .032
I feel mentally well. (rating 0-4)	3.31 (0.76)	3.25 (0.61)	3.14 (0.76)	2.77 (0.97)	.063, ¹ .053

Note: Significant differences (.10, 2-tailed) between the respective professional groups are reported. Comparison of groups: ¹Co-therapists versus reception/craftsmen/administration, ²Co-therapists versus physicians, ³Psychologist versus physicians, ⁴Physicians versus reception/craftsmen/administration, ⁵Psychologists versus reception/craftsmen/administration, ⁶Co-therapists versus psychologists

psychologists the youngest (35 years of age). The hospitals' core staff, i.e. administrative personnel and co-therapists, had the longest experience in their professions (14-16 years) and psychologists the shortest (5 years). This may be due to the fact that hospitals function as training centers for the psychotherapy professionals, i.e. physicians and, especially, psychologists, therefore these colleagues were younger, in terms of professional age. There were no systemic differences between the three hospitals' employees.

and thus are not delivering redundant but additional information. There are some dimensions of KFZA and Mini-ICF-APP-WS in which the participants see a closer relationship: E.g. scope of action and the work demands for structuring and planning ($r>.41$), interruption and the demand for flexibility ($r>.58$), quantitative stress and the demand for endurance (partly $r>.58$), variability and the demand for proactivity ($r=.36-.50$). There are no significant correlations between work ability and the Mini-ICF-APP-WS work capacity demands². The KFZA dimensions qualitative and quantitative stress and interruptions, are partly correlated with physical and mental work ability.

RESULTS

Relationship between work perception in KFZA and work demands in Mini-ICF-APP-WS

The correlation pattern between the KFZA and Mini-ICF-APP-WS dimensions shows some moderate correlations, but hardly any above .400 (Table 2). This shows that the two instruments reflect different aspects of work

Perceived work demands in the different professions

There were differences between the professional groups in six out of the eleven KFZA dimensions (Table 3a). There were no differences between the professions in the perceived scope of action, variability, perception of the job in its entirety (holistic job), social support, and need for cooperation. Administrative personnel have the

2 One single exception is the correlation between mental work ability (WAI) and capacity demand for group integration ($r=.180^*$), which must be interpreted with caution due to the possibility of random effects which may occur in multiple testing.

Tab. 2 Work description according to Short Questionnaire for Work Analysis (KFZA) and Mini-ICF-APP-WS “work” rating (line 1), Mini-ICF-APP-WS “workplace” rating (line 2), Mini-ICF-APP-WS “work+workplace” rating (line 3). Pearson-Correlation. (N = 122)

Short Questionnaire for Work Analysis (KFZA) Mini-ICF-APP-WS self-rating	Mini-ICF-APP short and long	Scope of Action	Variability	Holistic Job	Social Support	Need for cooperation	Qualitative Stress	Quantitative Stress	Interruption	Environmental stress	Information and participation	Benefits	Work ability WAI global	Work ability WAI physical	Work ability WAI mental
Adherence to regulations	.460**	-.133	.030	.095	-.005	.056	.002	.048	-.038	-.091	.151	-.038	.018	-.091	-.024
Structuring and planning of tasks	.561**	.475**	.197*	.234**	-.023	-.051	.169	.058	.275**	.154	.129	.143	-.068	-.107	-.078
Flexibility	.658**	.417**	.275**	.213*	.145	.151	.251**	.155	.252**	-.032	.207*	.186*	.057	-.160	.054
Decision making and judgement	.687**	.471**	.278**	.237**	.126	.111	.253**	.143	.280**	.013	.205*	.192*	.031	-.159	.025
Endurance	.283**	.256**	.054	.094	-.150	-.041	.168	.215*	.669**	.343**	.013	.064	.009	-.061	-.046
Contact with others	.443**	.261**	.275**	.153	-.054	.092	.288**	.343**	.589**	.139	.032	.147	.049	-.092	.027
Assertiveness	.472**	.278**	.237**	.149	-.082	.063	.277**	.334**	.651**	.202**	.030	.036	.042	-.091	.010
Group integration	.369**	.357**	.330**	.124	.063	.157	.337**	.246**	.232**	-.034	.179*	.323**	-.025	.032	.093
Mobility	.627**	.305**	.438**	.240**	.068	.100	.321**	.245**	.265**	.029	.106	.259**	.028	-.032	.086
		.339**	.438**	.224*	.071	.122	.345**	.260**	.273**	.014	.132	.293**	.016	-.016	.094
		.053	.214**	.174	.123	.187*	-.004	.098	.114	-.062	.031	.033	.132	.136	.167
		.121	.193	.118	-.039	-.073	.313**	.613**	.274**	-.072	.028	.064	-.029	-.067	-.047
		.122	.174	.146	-.009	-.026	.287**	.584**	.276**	-.079	.032	.066	.001	-.031	-.006
		.131	.219*	.075	.206*	.211	.094	.167	.060	-.001	-.004	.076	-.002	-.109	-.038
		.043	.313	.126	.212*	.259**	.138	.109	-.004	.070	.026	.100	-.069	-.012	.095
		.075	.325**	.127	.238**	.278**	.143	.140	.014	.058	.020	.106	-.058	-.043	.067
		.234**	.385**	.254**	.284**	.397**	.258**	.201*	.097	-.102	.140	.244**	.121	.124	.077
		.211*	.300**	.014	.042	.061	.293**	.348**	.253**	.020	.057	.138	-.052	-.023	.006
		.233**	.350**	.071	.104	.147	.311**	.347**	.240**	-.012	.081	.174	-.011	.015	.028
		.185*	.137	.031	.245**	.133	.140	-.059	-.012	.120	.074	.030	.037	.036	.093
		.035	.119	-.084	.215*	.164	.174	.181*	-.170	-.020	-.012	.130	.025	.072	.176
		.068	.137	-.070	.241**	.179	.185*	.155	-.157	.001	.000	.124	.028	.076	.180*
		-.018	.154	.150	-.124	.126	.021	.064	.199*	.169	.107	.171	-.166	-.077	-.163
		.000	.076	.127	-.211*	-.056	.204*	.143	.335**	.289**	-.085	-.028	-.139	-.007	-.158
		-.005	.106	.146	-.199	-.003	.163	.128	.321**	.276**	-.028	.032	-.160	-.029	-.176

Tab. 2 Cont.

Short Questionnaire for Work Analysis (KFZA) Mini-ICF-APP-WS self-rating	Mini-ICF-APP short and long	Scope of Action	Variability	Holistic Job	Social Support	Need for cooperation	Qualitative Stress	Quantitative Stress	Interruption	Environmental stress	Information and participation	Benefits	Work ability WAI global	Work ability WAI physical	Work ability WAI mental
Expertise and competency	.518**	.210*	.356**	.244**	.368**	.310**	.065	.151	.155	-.012	.076	.059	.152	.095	.063
	.007	.311**	.198*	.126	.155	.096	.249**	.041	-.098	.095	.025	.095	.021	.018	
	.053	.349**	.226*	.190*	.203*	.098	.249**	.071	-.088	.099	.035	.116	.030	.030	
Proactivity	.437**	.325**	.362**	.273**	.139	.207*	.199*	.213*	.120	-.058	.272**	.225*	.106	.036	.152
	.376**	.476**	.283**	.199**	.175	.299**	.226*	.198*	.192	.092	.294**	.337**	.044	-.074	-.015
	.403**	.500**	.308**	.206*	.199*	.307**	.244*	.200*	.070	.317**	.346**	.061	-.059	.018	
Self-care	.630**	.118	.314**	.166	.160	.152	-.030	-.079	.033	.108	.079	.092	-.131	-.139	-.026
	-.010	.213*	.157	.157	.155	.143	-.040	.011	.103	.102	.066	.040	-.039	-.089	-.008
	.018	.252**	.171	.171	.168	.156	-.041	-.010	.094	.110	.073	.055	-.062	-.107	-.012
Dyadic relations	.467**	.085	.151	-.042	.084	.022	.109	.124	-.090	.031	-.147	.038	-.065	-.027	-.033
	.034	.200*	.089	.089	.096	.199	.240**	.306**	.024	-.110	.021	.216*	-.140	-.138	-.158
	.048	.208*	.070	.070	.102	.109	.235**	.297**	.002	-.091	-.012	.198*	-.138	-.128	-.147
Often changing working times (shift work, week-end services)	.137	-.041	.033	-.108	-.108	-.146	.191*	.064	.363**	.286**	.019	.061	-.054	.017	-.081
Physical fitness	.052	.182*	.315**	-.089	.073	.079	.115	.158	.124	.193	.214*	-.020	-.153	-.120	
Mental resilience	.003	.201*	.167	.004	.133	.141	.181*	.017	-.100	.166	.040	-.003	-.004	.073	
Work ability WAI global	.014	-.068	.090	.160	.065	-.150	-.106	-.158	-.147	.146	.006				
Work ability WAI physical	-.042	-.018	-.109	.102	.086	-.229*	-.216*	-.199*	-.076	-.058	.007				
Work ability WAI mental	-.031	.076	-.024	.126	.073	-.192*	-.244**	-.246**	-.186*	.053	.082				

* $p < .05$, ** $p < .01$

Tab. 3a Differences in workplace perception (KFZA) of health care employees. Mean (standard deviation). $N=122$. As first value in the statistics column the overall significance in ANOVA is reported, followed by the post-hoc comparisons with significant group differences (marked by the superscripts ¹⁻⁶).

Short Questionnaire for Work Analysis (KFZA)	1 Co-therapists (n=47)	2 Physicians (n=25)	3 Psychologists (n=28)	4 Administration, reception, craftsmen (n=22)	Significance of differences
					p Overall significance (first value in each line) and post-hoc tests (marked by superscripts)
Scope of action	2.10 (0.99)	2.21 (0.73)	1.95 (0.68)	2.47 (0.77)	.176
Variability	2.96 (0.69)	2.93 (0.73)	3.19 (0.40)	3.17 (0.75)	.305
Holistic job	2.13 (1.11)	2.18 (0.91)	2.23 (0.98)	2.95 (0.99)	.016, ¹ .014
Social support	3.16 (0.78)	3.25 (0.61)	3.38 (0.57)	3.11 (0.90)	.527
Cooperation	2.93 (0.62)	3.01 (0.67)	3.13 (0.50)	2.94 (0.84)	.598
Qualitative stress	1.04 (0.95)	1.70 (0.98)	1.41 (0.79)	1.48 (0.98)	.033, ² .033
Quantitative stress	1.98 (1.09)	2.46 (0.97)	2.48 (1.02)	2.43 (1.08)	.115
Interruption	1.58 (0.92)	1.78 (0.99)	1.07 (0.74)	2.57 (0.76)	.000, ¹ .000, ³ .023, ⁴ .015, ⁵ .000
Environmental stress	1.73 (1.24)	1.10 (0.98)	0.84 (1.03)	1.45 (1.13)	.008, ⁶ .008
Information and Participation	2.50 (0.77)	2.49 (0.86)	2.14 (0.79)	2.77 (0.74)	.046, ⁶ .035
Benefits	1.79 (0.92)	2.52 (0.80)	1.82 (0.80)	2.11 (0.92)	.006, ² .006, ³ .025

Note: Significant differences (.10, 2-tailed) between the respective professional groups are reported. Comparison of groups: ¹Co-therapists versus reception/craftsmen/administration, ²Co-therapists versus physicians, ³Psychologist versus physicians, ⁴Physicians versus reception/craftsmen/administration, ⁵Psychologists versus reception/craftsmen/administration, ⁶Co-therapists versus psychologists

comparatively highest perception of a holistic job, and the highest perception of interruptions. Qualitative stress is perceived more by physicians than by co-therapists, while quantitative stress is perceived to the same extent in all the professions. Environmental stress is highest for co-therapists and lowest for psychologists. Co-therapists feel best informed and physicians perceive the highest benefits.

Differences in perceived work demands were found in nine out of the eleven *Mini-ICF-APP-WS* dimensions (Table 3b). All four professional groups perceive the demands for adherence to regulations and for structuring and planning, to a similar degree.

Co-therapists and psychologists perceived significantly lower demands for flexibility than did administrative, reception personnel and craftsmen.

Physicians as well as co-therapists, perceived significantly higher demands for expertise and competency, than administrative personnel.

Physicians perceived the highest demands, comparatively, for decision making and judgment, e.g. they perceived this capacity demand significantly higher than co-therapists and administrative personnel.

There were only a few differences in assertiveness (physicians higher, co-therapists lower demands) and mobility (co-therapists highest, psychologists lowest demands), and no differences between the professions in perceived demands for pro-activeness, endurance and self-care.

Strong and consistent differences could be seen in the interactional capacity demands, i.e. contacts with others, group integration and dyadic relationships:

First, all the therapeutic groups (physicians, psychologists, co-therapists) perceived significantly higher demands for group integration than administrative personnel did.

Demands for contacts with others were perceived most highly by psychologists. Co-therapists and psychologists perceived their demands for contacts significantly higher than administration personnel.

Demands for dyadic relationships were perceived most highly by psychologists. The psychologists' ratings were significantly higher than those of the co-therapists, but comparable to the physicians' ratings.

Demands for flexibility in biorhythm (due to changing working times) were particularly perceived by physicians and co-therapists, whereas these were lowest for psychologists (Tab. 4). All four professions perceived

Tab. 3b Differences in perceived work demands (Mini-ICF-APP-WS) of health care employees. $N=122$. First line: short version “work”, second line: long version “workplace”, third line: combined version “work+workplace”. As first value in each line the overall significance in ANOVA is reported, followed by the post-hoc comparisons (marked by the superscripts ¹⁻⁶).

Mini-ICF-APP-WS self-rating	Cronbachs alphas	1 Co-the-rapists (n=47)	2 Physicians (n=25)	3 Psycholo-gists (n=28)	4 Administration, reception, craftsmen (n=22)	Significance of differences
						p
Work	-1					Overall significance (first value in each line) and post-hoc tests (marked by superscripts)
Workplace	Workplace					
Work+workplace	Work+ workplace					
Adherence to regulations	.787	3.55 (0.62)	3.32 (0.56)	3.29 (0.60)	3.27 (0.94)	.227
	.793	2.85 (0.74)	2.61 (0.90)	2.55 (0.54)	2.79 (0.82)	.339
		2.99 (0.67)	2.75 (0.79)	2.70 (0.49)	2.88 (0.74)	.276
Structuring and planning of tasks	.728	2.77 (1.13)	2.76 (0.83)	2.41 (0.69)	3.09 (0.81)	.091, ⁵ .071
	.781	2.48 (0.87)	2.63 (0.73)	2.60 (0.59)	2.79 (0.78)	.491
		2.54 (0.85)	2.66 (0.69)	2.56 (0.56)	2.85 (0.72)	.407
Flexibility	.853	2.51 (1.40)	2.64 (1.22)	2.00 (1.12)	3.41 (0.85)	.001, ¹ .030, ⁵ .001
	.864	2.07 (0.95)	2.54 (1.03)	2.03 (0.98)	2.84 (0.90)	.005, ¹ .015, ⁵ .022
		2.16 (0.96)	2.56 (1.03)	2.02 (0.92)	2.95 (0.83)	.002, ¹ .009, ⁵ .004
Expertise and competency	.837	3.21 (0.95)	3.40 (0.76)	3.04 (0.64)	3.09 (0.92)	.427
	.843	3.10 (0.62)	3.35 (0.69)	2.94 (0.57)	2.48 (1.12)	.001, ¹ .009, ⁴ .004
		3.12 (0.59)	3.36 (0.66)	2.96 (0.54)	2.60 (1.03)	.003, ¹ .028, ⁴ .002
Decision making and judgement	.747	2.26 (1.26)	3.24 (1.01)	2.82 (1.02)	2.55 (1.34)	.008, ² .060
	.800	1.78 (0.80)	2.58 (0.83)	2.06 (0.67)	1.84 (0.80)	.001, ² .001, ⁴ .014
		1.88 (0.91)	2.71 (0.78)	2.21 (0.67)	1.98 (0.86)	.001, ² .000, ⁴ .018
Proactivity	.789	3.09 (0.78)	3.36 (0.70)	3.04 (0.74)	3.18 (0.80)	.404
	.793	2.70 (0.88)	2.92 (0.88)	2.92 (0.75)	2.92 (0.91)	.573
		2.77 (0.79)	3.01 (0.77)	2.94 (0.68)	2.97 (0.81)	.553
Endurance	.798	3.19 (0.95)	3.52 (0.95)	3.39 (0.82)	3.36 (0.90)	.506
	.768	1.79 (0.87)	2.21 (1.08)	1.85 (0.89)	1.69 (1.03)	.238
		2.07 (0.71)	2.47 (0.97)	2.16 (0.82)	2.03 (0.87)	.201
Assertiveness	.796	2.72 (0.91)	3.44 (0.65)	3.11 (0.79)	2.86 (1.24)	.013, ² .010
	.803	1.98 (0.70)	1.98 (0.70)	2.39 (0.91)	2.37 (0.87)	.116
		2.12 (0.63)	2.60 (0.80)	2.51 (0.76)	2.27 (0.87)	.036, ² .064
Contact with others	.679	3.43 (0.72)	3.32 (0.75)	3.50 (0.75)	3.23 (0.92)	.603
	.747	3.37 (0.52)	3.35 (0.50)	3.52 (0.46)	3.00 (0.62)	.007, ¹ .045, ⁵ .004
		3.37 (0.47)	3.34 (0.46)	3.51 (0.45)	3.05 (0.63)	.012, ¹ .066, ⁵ .008
Group integration	.732	3.65 (0.74)	3.76 (0.44)	3.61 (0.57)	3.33 (0.80)	.000, ¹ .000, ⁴ .000,
	.766	2.95 (0.75)	3.42 (0.73)	3.29 (0.52)	2.13 (0.78)	⁵ .000, ² .060
		3.09 (0.67)	3.49 (0.61)	3.36 (0.49)	2.36 (0.67)	.000, ¹ .000, ⁴ .000,
Dyadic relationships	.838					⁵ .000, ² .060
	.853	3.38 (0.92)	3.80 (0.41)	3.93 (0.26)	2.73 (1.12)	.000, ⁶ .024, ¹ .009,
		2.55 (1.01)	3.03 (0.66)	3.24 (0.63)	2.27 (0.82)	⁴ .000, ⁵ .000
Self care	.780	2.72 (0.89)	3.18 (0.57)	3.38 (0.52)	2.36 (0.78)	.000, ⁶ .005, ⁴ .014, ⁵ .000
	.832	3.24 (0.82)	3.08 (0.70)	2.89 (0.74)	2.73 (1.12)	.096
		2.86 (0.72)	2.81 (0.75)	2.71 (0.64)	2.65 (1.02)	.720
Mobility	.708	2.93 (0.68)	2.86 (0.71)	2.75 (0.59)	2.67 (0.99)	.496
	.785	2.20 (1.19)	1.64 (1.04)	1.21 (0.89)	1.95 (1.50)	.005, ⁶ .004
		1.12 (0.61)	1.19 (0.71)	0.76 (0.45)	0.92 (0.95)	.084
		1.33 (0.65)	1.28 (0.80)	0.85 (0.44)	1.13 (1.02)	.034, ⁶ .039

Note: * There is no Cronbach’s alpha for the Mini-ICF-APP-WS work scale, because there is only one item per dimension. Significant difference (.10, 2-tailed) between the respective professional groups are reported. Comparison of groups: ¹Therapists versus reception/craftsmen/administration, ²Co-therapists versus physicians, ³Psychologist versus physicians, ⁴Physicians versus reception/craftsmen/administration, ⁵Psychologists versus reception/craftsmen/administration, ⁶Co-therapists versus psychologists.

Tab. 4 Differences in additional work demands and in perceived work ability in health care employees. Significance of difference: As first value in each line the overall significance in ANOVA is reported, followed by the post-hoc comparisons (marked by the superscripts ¹⁻⁶).

Additional work demands and work ability	1 Co-therapists (n=47)	2 Physicians (n=25)	3 Psychologists (n=28)	4 Administration, reception, craftsmen (n=22)	Significance of differences
					p Overall significance (first value in each line) and post-hoc tests (marked by superscripts)
Demand for flexibility in biorhythm	1.15 (1.55)	1.76 (1.20)	0.04 (0.19)	0.36 (0.73)	.000, ⁶ .001, ¹ .057, ³ .000, ⁴ .000
Demand for physical fitness	1.89 (1.46)	1.16 (0.99)	0.46 (0.74)	1.59 (1.60)	.000, ⁶ .000, ⁵ .030
Demand for psychological fitness	3.53 (0.55)	3.32 (0.85)	3.68 (0.61)	3.41 (0.91)	.278
Work ability WAI global	8.26 (1.80)	8.61 (1.44)	8.12 (1.20)	8.35 (1.50)	.744
Work ability WAI physical	4.31 (0.82)	4.68 (0.56)	4.39 (0.79)	4.14 (0.56)	.070, ⁴ .067
Work ability WAI mental	4.20 (0.79)	4.24 (0.83)	4.15 (0.72)	3.95 (0.79)	.596

Note: Significant differences (.10, 2-tailed) between the respective professional groups are reported. Comparison of groups: ¹Co-therapists versus reception/craftsmen/administration, ²Co-therapists versus physicians, ³Psychologist versus physicians, ⁴Physicians versus reception/craftsmen/administration, ⁵Psychologists versus reception/craftsmen/administration, ⁶Co-therapists versus psychologists

the demands for psychological fitness to a similar degree, and there were no differences in work ability perception.

2018) are usually accompanied by work ability: For example, skill discretion was associated with work ability in a cross-national survey of health care employees (McGonagle et al., 2012).

DISCUSSION

The results show that work capacity demands, as measured with the Mini-ICF-APP-WS, are partly independent of the work description including affective judgments (moderate but not strong correlation of the Mini-ICF-APP-WS with the KFZA).

The data also show that even if people work in a similar environment (here three psychotherapy hospitals of the same type), the professional groups still report different work demand profiles for their specific jobs, e.g. reception staff perceive high flexibility demands, physicians perceive high demands for decision making and judgment, psychologists report high demands for contacts with others and dyadic relationships, and co-therapists report that a comparatively high degree of mobility is demanded.

Work ability was independent from work demands. This is further evidence of the validity of the work capacity demands concept, in the sense that work ability is not confused with work demands. Considering the person-job fit-idea, no specific work demand or characteristic is linearly associated with a better or worse work ability, but work ability is a relational product of the interaction between a person's capacities and work demands. Work demands which fit the employees' resources (Yang et al.,

Implications for research and practice

The Mini-ICF-APP-WS can distinguish between different professional groups' capacity demand profiles. Thus, it can be a useful tool in research and social-medicine practice in respect of person-job fit questions: The Mini-ICF-APP-WS supports by providing a differentiated capacity demand profile for a workplace, which then can be compared with the person's capacity level (Linden et al., 2009). In this sense, the Mini-ICF-APP-WS provides the information necessary in the context, according to ICF (WHO, 2001), whereas the Mini-ICF-APP provides information about the person's capacity and activity resources.

The thirteen items which globally address work demand capacities (work items) could be used for screening. These could be used for people who are currently unemployed, but may in future work in a certain professional framework.

The longer version of the questionnaire (including the "workplace" items, 4 items per sub-scale) can be used when an existing workplace needs to be described in more detail. Finally, both parts of the Mini-ICF-APP-WS can be combined and the interview version (Mini-ICF-APP-WI), can also be added (Muschalla, 2018a).

Limitations

This study on the capacity-oriented description of workplaces by self-rating, focused on health care personnel. In this setting, this approach is presented as a pilot study. To date, no data from other professional fields, e.g. industrial workers, physically demanding professions, health care professionals from acute hospitals, or employees who regularly work shifts, are available for comparison. Further research should collect representative data from different professional groups for comparative purposes.

Due to the naturalistic setting, it may be that there are slight differences in personnel characteristics of the three hospitals, in characteristics we did not assess. However, the professional groups have very circumscribed roles in rehabilitation hospitals, thus the work demands of each professional group should be comparable over the different clinics.

CONCLUSION

This is the second study with the Mini-ICF-APP-WS, and the first involving health care professionals. This study using a non-clinical sample, has shown that work capacity demands can be explored in a differentiated manner for different professional groups of health care employees. Furthermore, work capacity demands can be described by self-rating and do not overlap with affective judgments of work (only low correlations between the Mini-ICF-APP-WS ($r < .4$) and most dimensions of

KFZA). Thus, in occupational practice, the exploration of work capacity demands in health care settings, can be supported by the employees' self-ratings.

It is essential to ask which work activities and capacities are demanded by the job (What do you have to do at work? Which capacities do you need at work?) instead of asking about affective judgments (How do you feel with your work? Or, How do you like your work?).

This present research is of twofold importance: For the first time, a concept is offered for work demands descriptions on the level of capacity demands. Thereby the self-rating method seems to be able to differentiate between the different professions and thus their different demand profiles. This is a new and important topic, as differential descriptions of employees' capacity demands play a role in health care quality assurance, mental hazard analysis, personnel acquisition and job matching in health care. The concept of work capacity demands may also be used for diagnostics in individual-oriented participative workplace interventions (van Oostrom et al., 2009).

Ethical Considerations: Does this study include human subjects? YES

Authors confirmed the compliance with all relevant ethical regulations.

Conflict of interest: no conflicts of interest

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Authors Contributions: BM and ML designed the study; JA, BL, VK collected the data; BM analyzed the data and wrote the initial draft of the paper; JA, BL, VK, ML provided comments and suggested revisions.

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