Self-rating of capacity limitations in mental disorders: The "Mini-ICF-APP-S"

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Abstract
Chronic illness must not only be described on the level of symptoms, but in respect to capacity restrictions and disability. This reflects a bio-psycho-social understanding of illness as outlined also in the ICF (WHO, 2001). For the measurement of capacities special instruments are needed, such as the Mini-ICF-APP, an internationally validated and used observer rating instrument.
Additionally, the self-rating Mini-ICF-APP-S has been developed, which covers 13 capacity dimensions, "soft skills", which are of relevance in mental disorders. Data from a clinical sample (N = 1143) and a general population survey (N = 102) are reported. Relevant differences in self-reported capacity levels are found between clinical and non-clinical samples, different diagnostic groups, patients who are unfit or fit to work, younger and older persons, males and females. For example, men perceived stronger assertiveness, while women see themselves stronger in relationships. Patients who were presently unfit for work see their overall capacity level lower than patients who were fit for work. From the patient sample, 31% reported a strong impairment in at least one psychological capacity dimension. The strongest capacity impairment was reported by patients with complex disorders (personality disorders, organic disorders), lowest impairment was perceived by patients with eating disorders or specific reactive disorders or phobias. The Mini-ICF-APP-S is an economic short rating and can support diagnostics, therapy planning, and serve as additional information within the socio-medical decision making process.

Key words
ICF, capacity, mental disorder, social medicine, participation disorder, impairment

Die Selbstbeurteilung von Fähigkeiten und Fähigkeitsbeeinträchtigungen im Kontext psychischer Erkrankungen: Das „Mini-ICF-APP-S"

Kurzfassung
Chronische Krankheiten manifestieren sich nicht nur in Krankheitssymptomen, sondern auch Krankheitsfolgen, d.h. krankheitsbedingten Fähigkeitsbeeinträchtigungen und dadurch hervorgerufenen Teilhabeproblemen, wie beispielsweise Arbeitsunfähigkeit. Dies entspricht einem bio-psycho-sozialen Krankheitsverständnis, das u.a. auch der ICF zugrunde liegt (WHO, 2001). Für die Erfassung und Quantifizierung von Fähigkeitsbeeinträchtigungen werden eigene Messinstrumente benötigt, wie beispielsweise das Mini-ICF-APP (Linden et al., 2009), das sich als Fremdratinginstrument in der sozialmedizinischen Begutachtung bei psychischen Störungen als ein Standard etabliert hat.
Parallel dazu wurde das Mini-ICF-APP-S als Selbstratinginstrument entwickelt, das 13 psychische Fähigkeiten („Soft skills") erfasst. Es werden Daten aus einer klinischen (*N* = 1143) und einer Bevölkerungsstichprobe (*N* = 102) berichtet. Es finden sich relevante Unterschiede zwischen klinischen und Bevölkerungsstichproben, unterschiedlichen Störungsgruppen, arbeitsfähigen und arbeitsunfähigen Menschen, jüngeren und älteren Personen, Männer und Frauen.
Das Mini-ICF-APP-S ist ökonomisch einsetzbar und kann in Diagnostik, Therapieplanung und auch ergänzend in der sozialmedizinischen Beurteilung Verwendung finden.

Schlüsselwörter
ICF, Fähigkeiten, psychische Erkrankung, Sozialmedizin, Teilhabeeinschränkungen, Behinderung

1. Psychological capacities and impairment

Capacities describe the abilities of a person to cope with life and to participate in different areas of life. If a person is uncapable to do what he or she wants to do, or what is expected in their environment and role, then this results in impairment or participation restrictions. If environmental requirements are not met adequately, sanctions can follow, such as layoffs or family disputes. When capacity limitations are caused by illness, patients are entitled to get assistance and protection, for example by being temporarily exempted from work by a certificate of incapacity or, in the case of long-term impairment, by support from occupational integration management or early retirement.

Chronic illness has always been described not only on the level of symptoms, but also their consequences in daily life (Linden, 2016, 2017), according to the bio-psycho-social illness concept, which is also put forward by the *International Classification of Functioning, Disability and Health* ICF (WHO, 2001; DIMDI, 2005). It discriminates between "body structures", "functions (= symptoms)", "activities / capacities", "context" and "participation". Capacities can be defined as activities that can be performed by the person under defined context conditions.

The ICF is a classification, but no assessment instrument. It explicitly states that other instruments are needed to measure it's dimensions (Linden et al., 2015). Dysfunctions / symptoms can be detected and quantified by symptom rating scales such as the Hamilton Depression Rating Scale. There are also well known scales for the assessment of capacities such as the ADL scales (activities of daily living), the IADL scales (instrumental activities of daily living), the SOFAS (Social and Occupational Functioning Assessment Scale, Morosini et al., 2000), the PSP (Personal and Social Performance Rating, Schaub & Juckel, 2011), or the WHODAS (WHO Disability Assessment Schedule, Üstün et al., 2010).

There are special problems in the definition and assessment of capacity limitations in connection with mental illness. These are "soft skills" which are of particular importance in the modern working world. They are listed in the ICF in very different items and with more or less specification. For example, for "communication skills" there are detailed items such as "starting (d3500), maintaining (d3501) and ending a conversation (d3502)", but also very broad and global items such as "acquiring, keeping and terminating a job, including participation in a job interview (d845)".

An instrument to measure and quantify soft skills in a clinically feasible way, is the Mini-ICF-APP (Mini-ICF rating for activity and participation disorders in mental illness) (Linden et al., 2009, 2015). It has become a standard in guidelines for socio-medical expert assessments (DRV, 2012; SGVP, 2012). It is an observer-rating instrument with good inter-rater reliability of $r = .92$ and proven validity in the sense of correlations with the ability to work and a sensitivity to change (Linden et al., 2015). There are 13 capacity dimensions, for which detailed descriptions are given by "anchor definitions". These are the capacity to: 1) adjust to rules and routines, (2) plan and structure tasks, (3) be flexible, (4) apply knowledge, (5) make decisions, (6) be proactive, (7) be enduring, (8) be assertive, (8) interact with other persons, (10) integrate in groups, (11) build dyadic relations, (12) care for oneself, and (13) move around.

The assessment of incapacities and impairment in a socio-medical context must be based on expert rating as self-ratings may be distorted because of the interests of the persons to be assessed. Nevertheless, important information can also be obtained from self-ratings of capacities regarding the self-image of patients and aggravation tendencies. Therefore, the Mini-ICF-APP-S was developed parallel to the Mini-ICF-APP as a self-rating scale. In this paper we report findings with the Mini-ICF-APP-S from empirical surveys in samples of the general population and patients from a department of behavioral medicine.

2. Method

The Mini-ICF-APP-S (Table 1) covers the same capacity dimensions as the Mini-ICF-APP. Detailed descriptions of the dimensions are given and then the ratings are described on a behavioral level. While a unipolar rating is made in the Mini-ICF-APP, starting from "(0) no problem" to "(4) complete problem", the self-rating allows a bipolar rating from "(0) this is definitely a strength of mine" to "(3) this is somehow possible ", "(4) this does not always work" to "(7) I am fully unfit to do this ". This prevents a bias towards aggravation.

Data are coming from a survey in the Berlin City Railway with a sample of 102 randomly selected passengers (CR Group). Also a convenience sample of 1143 patients was available, as in the Department of Behavioral Medicine (BM group). The Mini-ICF-APP-S is part of the routine assessment to guide treatment (AWMF, 1996; Muschalla, 2014). For

these patients also sociodemographic and clinical data, including a standardized intelligence assessment with the ISA (Intelligence Structure Analysis, Gittler, 2001), were available. Descriptive data are reported and correlations with sociodemographic data, diagnoses and work ability are examined.

Table 1

Mini-ICF-APP-S capacity self rating

In the following you find some statements and questions. Please make a rating on how you can cope with the respective requirements. Please tick the box that best reflects how you see yourself.		This is clearly a strength of mine	I am better than many others	I can do this well	This is somehow possible	This does not always work	I have problems with this	I need help in this regard	I am fully unfit
1.	**Adherence to regulations** How well can you stick to rules, e.g. comply with given work procedures and official requirements, come in time to appointments, comply with agreements?								
2.	**Planning and structuring of tasks** How good are you at planning things, to organize your daily routine, to determine what you have to do in a week, which tasks have priority? Can you organize adequate time for everything?								
3.	**Flexibility and ability to adapt to changes** How well do you manage to cope with changes, e.g. change of work processes, new office, new colleague, new computer programs or techniques? How do you react to short-term changes in appointments, or if you suddenly have to go somewhere else? How do you feel about being interrupted by something (the phone)?								
4.	**Competency and application of knowledge** Can you apply your knowledge and experience when asked, for example, to do things at work as your education or your actual expertise requires?								
5.	**Ability to make decisions and judgments** How well can you rely on your assessments, your advice or your decisions? Do you usually come to conclusions based on existing information that others consider useful and convincing?								
6.	**Proactivity and spontaneous activity** How well do you manage to get yourself going, to take your own initiatives, to initiate and start things on your own, such as spontaneous appointments, leisure activities, at home or at work? How good are you in seeing on your own what must be done?								
7.	**Endurance and perseverance** How good are you to stay in the line or withstand stress, such as holding a working day, not being struck by adversity, or continuing activities when things get tough?								
8.	**Assertiveness** How good can you express your opinion or defend you position without making inappropriate remarks? Can you make others do what you want?								
9.	**Contact with others and small talk** How easy is it for you to approach other persns, to engage in a conversation, make smalltalk and give others the impression that you are a good dialogue partner?								
10.	**Group integration** How well do you get along in groups, in work teams, in private cliques or among friends? Can you engage in group discussions, but also withhold yourself and promote group cohesion?								
11.	**Dyadic or close relations** How well do you manage to build and maintain close, confidential relationships with other people? How are you in a partnership or when you are close to your family? Are you a family person, someone on whom close friends and relatives and rely can trust?								
12.	**Self-care** How well are you in paying attention to yourself and your appearance, in dressing according to the season and the occasion, to eat a balanced diet? How well do you manage to get enough recreation, to exercise, to take care of your health?								
13.	**Mobility** Can you move around as you want, to bent, climb stairs, go for a walk? Can you go where you need to go, shop without any problems, and use all means of transportation such as cars, busses or trains?								

3. Results

In the BM group, 69% were women, the average age was 50, 55% were married, 26% had a college degree, 56% were mid-level employees, 47% worked full-time and 22% part-time. The average duration of inability to work before admission was 32 weeks.
In the RB group, 57% were women. The average age was 39 years, 21% were self-employed, 46% employees / civil servants, 71% had a college degree.
The total score of the scale is 2.61 (± 1.19, range 0-6.69) in the BM group and 1.61 (± 0.79, range 0-3.92) in the CR group. Figure 1 shows the ratings for each item in the two groups. All items differ highly significant. The majority of participants in both samples classify themselves as more competent than not. The strongest impairment is seen in the BM sample for the dimensions planning and structuring of tasks, flexibility, proactivity, endurance, contact and mobility. The least impairment is given for adherence to regulations, competency, judgement, and dyadic relations. The figure shows that at about 90% in the CR group consider themselves to be sufficiently competent in all dimensions, while more than one third of the BM group considers sees capacity limitations across all dimensions.
There are in the BM group 31% of patients who report at least one serious impairment (6 = others have to help me or 7 = I am fully unfit to do this). Five and more serious impairments are reported by 5% of patients.
Between the dimensions there are moderate correlations, as $r = .25$ between adherence to regulations and contact, $r = .68$ between judgement and proactivity, or $r = .69$ between communication and group integration.
In the BM group, an analysis of variance with Oblim-rotation resulted in a one-factorial solution explaining 50.9% of variance. In the CR population there were four factors with an eigenvalue >1. The main factor includes all items except two, each of which has its own factor, i.e. "adherence to regulations " (10.6% of variance) and "mobility" (8.0% of variance). "Endurance" loads on the main factor, but at the same time also forms its own factor (9.9% of variance). Cronbach's alpha is 0.92 in the BM group and 0.86 in the CR group.
When comparing the sexes, there were no significant differences in the total score in both groups (BM-W: 2.65 ± 1.18, BM-M: 2.52 ± 1.23, $p = 0.08$, CR-W: 1.72 ± 0.75, CR-M: 1.48 ± 0.82, $p = 0.13$), but significantly better values in the BM group for men in terms of competency (BM-W: 2.22 ± 1.51, BM-M: 1.95 ± 1.58, $p < 0.01$), judgement (BM-W: 2.35 ± 1.48, BM-M: 1.99 ± 1.47, $p < 0.001$), endurance (BM-W: 3.48 ± 1.80, BM-M: 3.22 ± 1.92, $p = 0.03$), assertiveness (BM-W: 3.52 ± 1.81 BM-M: 2.90 ± 1.78, p <0.001), mobility (BM-W: 2.55 ± 1.79, BM-M: 2.31 ± 1.79, $p = 0.04$) and for women regarding dyadic relations (BM-W: 1.70 ± 1.56, BM-M: 2.15 ± 1.79, $p < 0.001$). In the

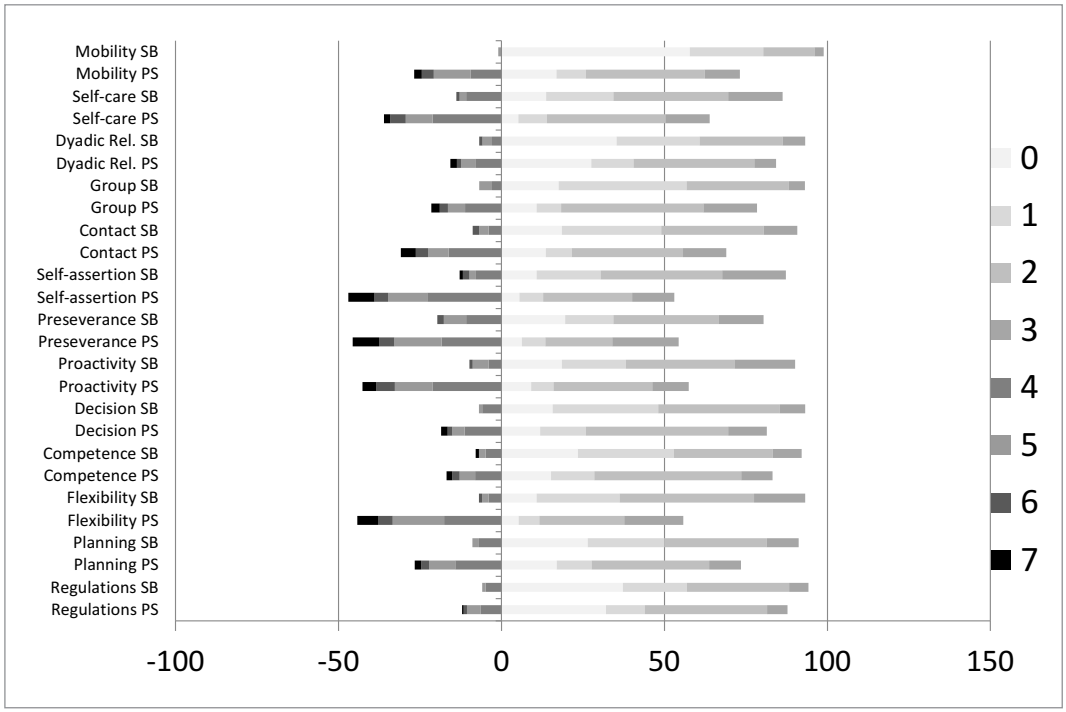

Figure 1

Ratings per item in the BM and CR group

CR group, there were significant differences in flexibility (CR-W: 2.10 ± 1.03, CR-M: 1.55 ± 1.23, $p = 0.02$), judgement (CR-W: 1 , 79 ± 1.09, CR-M: 1.31 ± 1.05, $p = 0.03$), endurance (CR-W: 2.39 ± 1.29, CR-M: 1.70 ± 1, 53, $p = 0.03$) and assertiveness (CR-W: 2.36 ± 1.29, CR-M: 1.81 ± 1.42, $p = 0.046$) with worse scores for females.

In the BM group, there are significant negative correlations with age for the dimensions of planning, proactivity, endurance, assertiveness, dyadic relations, self-care, and the total score. This means that the capacities are better rated with older age. There are consistently significant positive correlations with the SCL-90. This means that the subjective rating of capacities is worse with higher symptom ratings. Finally, there are also significant negative correlations with the IQ for the dimensions of structuring, flexibility, competency, judgement, proactivity, endurance, assertiveness, group integration, mobility, and the total score. This means with a higher IQ is associated with better capacity ratings.

Table 2 shows which diagnostic groups show the highest and lowest capacity ratings. Organic brain disorders and personality disorders are consistently associated with the lowest capacity ratings while eating disorders or phobic-reactive disorders show the highest scores.

In the BM group, physicians were asked at the end of treatment as to whether the patient was able to work again. Figure 2 shows that there is a significant difference across all dimensions depending on the discharge status: Patients who have been unfit for work have systematically lower ratings of their capacities.

Table 2

Capacity limitations and capacity strengths depending on diagnosis

Mini-ICF-APP-S-Dimensions		F-Diagnosis	greatest capacity problems	F-Diagnosis	lowest capacity problems
1.	**adherence to regulations**	F 8, F 9 minimal cerebral dysfunctions	M=2,67	F 5 eating disorders	M=1,41
		F 6 personality disorders	M=2,03	F 4 phobic and reactive disorders	M=1,53
2.	**structuring of tasks**	F 0 organic mental disorders	M=3,33	F 2 schizophrenia	M=1,86
		F 8, F 9 minimal cerebral dysfunctions	M=3,22	F 5 eating disorders	M=2,13
3.	**flexibility**	F 0 organic mental disorders	M=4,93	F 5 eating disorders	M=3,27
		F 6 personality disorders	M=3,77	F 1 substance abuse	M=3,30
4.	**competency**	F 0 organic mental disorders	M=3,27	F 4 phobic and reactive disorders	M=2,11
		F 8, F 9 minimal cerebral dysfunctions	M=2,73	F 5 eating disorders	M=2,00
5.	**judgements**	F 2 schizophrenia	M=3,29	F 5 eating disorders	M=2,06
		F 0 organic mental disorders	M=3,20	F 8, F 9 minimal cerebral dysfunctions	M=2,00
6.	**proactivity**	F 0 organic mental disorders	M=4,27	F 4 phobic and reactive disorders	M=2,96
		F 8, F 9 minimal cerebral dysfunctions	M=3,92	F 5 eating disorders	M=2,73
7.	**endurance**	F 8, F 9 minimal cerebral dysfunctions	M=4,32	F 4 phobic and reactive disorders	M=3,36
		F 0 organic mental disorders	M=4,07	F 5 eating disorders	M=3,34
8.	**assertiveness**	F 8, F 9 minimal cerebral dysfunctions	M=4,35	F 4 phobic and reactive disorders	M=3,29
		F 6 personality disorders	M=3,83	F 5 eating disorders	M=3,12
9.	**contact with others**	F 0 organic mental disorders	M=3,20	F 5 eating disorders	M=2,49
		F 6 personality disorders	M=3,11	F 4 phobic and reactive disorders	M=2,62
10.	**group integration**	F 8, F 9 minimal cerebral dysfunctions	M=3,49	F 4 phobic and reactive disorders	M=2,46
		F 0 organic mental disorders	M=3,27	F 5 eating disorders	M=2,31
11.	**dyadic relations**	F 0 organic mental disorders	M=2,33	F 4 phobic and reactive disorders	M=1,75
		F 8, F 9 minimal cerebral dysfunctions	M=2,22	F 5 eating disorders	M=1,58
12.	**self-care**	F 0 organic mental disorders	M=3,73	F 4 phobic and reactive disorders	M=2,85
		F 8, F 9 minimal cerebral dysfunctions	M=3,72	F 5 eating disorders	M=2,84
13.	**mobility**	F 0 organic mental disorders	M=3,80	F 3 depression	M=2,52
		F 8, F 9 minimal cerebral dysfunctions	M=3,03	F 5 eating disorders	M=2,31
total		F 0 organic mental disorders	M=3,45	F 4 phobic and reactive disorders	M=2,57
		F 8, F 9 minimal cerebral dysfunctions	M=3,37	F 5 eating disorders	M=2,43

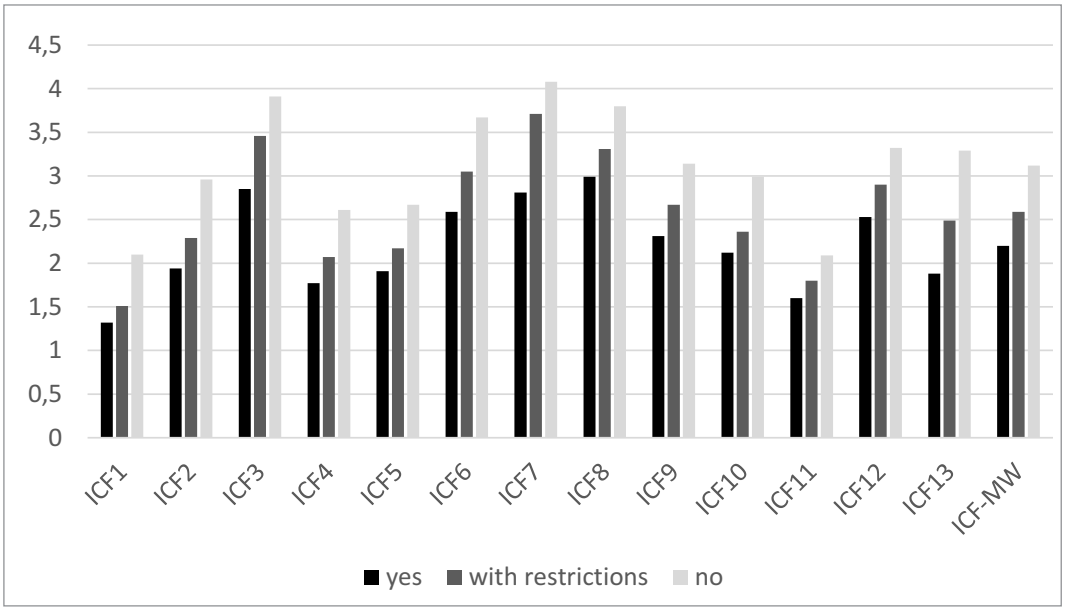

Figure 2

Self-rating of the overall capacity level at admission, in relation to the medical judgement on the ability to work (yes, with restrictions, no) at discharge from the hospital

4. Discussion

The Mini-ICF APP has become a standard in socio-medical assessments and is recommended in respective guidelines (DRV, 2012; SGVP, 2012). It is an observer-rating instrument, which requires an expert to make a judgment independent of or even in contradiction to the subjective complaints of the examined person. This is done through a description of activities, which are, for example, performed at the workplace and any problems with the fulfillment of these performance requirements. The expert concludes from this, which skills are missing, and also decides, whether this is caused by an illness, or just other professional inabilities. Such judgments require an expert knowledge.

The self-rating of skills, on the other hand, follows the psychological principle of global self attribution (Schwarz, 1988). It remains unclear which standard is the reference and why the person thinks he or she is good or bad regarding a certain capacity. How would a person answer when asked about his intelligence or physical strength? There are comparisons with the environment, other persons, the level of aspiration, or past experiences. In summary, self rating of capacities is by and large a satisfaction rating, rather than an objective description of capacities.

Nevertheless, self-assessment is clinically of interest because it provides information as to where a person is experiencing problems, or whether they see any problems at all. Also of importance are positive ratings which describe subjective resources. The global score can be interpreted as a subjective personality rating. A self-rating with the Mini-ICF-APP-S is an important supplement in the clinical or personality assessment.

Our data on the Mini-ICF-APP-S show that the subjective assessment of one's own abilities has some validity. First of all, there is a normal distribution for the overall score, as expected for personality dimensions. Persons give a global judgment as to whether they see themselves as capable or impaired.

Nevertheless, there are clear differences between patients and person in the railway and also a significant correlation with the general psychological status according to the SCL. The data suggest that an illness related capacity restriction is recorded.

There are also interesting results in regard to other person variables, which at the same time shows that a differentiation between the individual dimensions of the Mini-ICF-APP-S is useful. There are differences between women and men such that men consider themselves to be more competent, endurant, decisive, or assertive than females, while these see themselves as more communicative and better in dyadic relations, which corresponds very much with classical role models (Swanson & Lease, 1990; Jackson et al., 1994).

Regarding the diagnoses it is of interest that the highest capacity limitations are reported by patients who suffer from brain mental disorders or minimal cerebral disorders (Linden & Vilain, 2011; Linden & Weddigen, 2016; Linden et al., 2017). These disorders are accompanied by mild cognitive and emotional impairment, which can have an immediate negative impact on many capacities and par-

ticipation in life. These findings add validity to the concept of minimal cerebral dysfunction which should adequate attention by therapists.

Very important is that patients who are able to work or not at discharge from the hospital according to the judgment of their therapists are already showing clear differences in their capacity ratings at the time of intake. Similarly, in a study of the Mini-ICF-APP-S disabled soldiers rated their skill level in nine out of 13 capacity dimensions worse than unimpaired soldiers (Muschalla et al., 2017). Further studies will have to clarify whether such information is useful for therapists (Linden & Noack, 2017).

Interesting are the data on age, according to which older patients rate themselves as better than younger ones, for example in structuring of tasks, proactivity, endurance, or assertiveness. The average age of our sample is 50 years, so they are the so-called "older" workers. The data correspond to the general notion, that more mature persons are better organized, proactive, enduring, and have better social skills than younger people. Such findings are important for the discussion on the working ability of older persons.

In summary, the Mini-ICF-APP-S is an instrument with which, in analogy to the Mini-ICF-APP, a self-rating of soft skills can be made. It is easy to use and provides interesting results for diagnosis and treatment of patients and also socio-medical expert assessments.

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