

## Clinical Psychology

# ICF as a Problem Solving Tool in Transdisciplinary Teams

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## Advanced Research in Psychology

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The International Classification of Functioning, Disability and Health (ICF) (WHO, 2005) represents an international tool to address, plan, and evaluate complex psychosocial interventions. ICF represents a common metalanguage which aims to overcome conceptual profession-specific terminology and increase common understanding and coordination of complex health intervention processes. Even though strongly recommended by the WHO, UNICEF, World Bank, etc., its use is still limited due to the necessary transformations of specific constructs (e.g. in psychology) into the new meta-categories.

The paper addresses attempts to transform traditional constructs in psychology and special education into the metalanguage of ICF and provides selected empirical evidence by means of performed usability studies in Austria and Germany of these transformation processes.

### 1. WHAT IS THE ICF?

The International Classification of Functioning, Disability and Health (abbreviated as “ICF”), released in 2001 by the World Health Organization (WHO), is part of the family of classification systems of the WHO and represents a metalanguage to address complex bio-psycho-social interactions of a person with a health problem. The ICF aims to overcome the fragmentation and stigmatisation of a patient by diverse professional perspectives and specific linguistic coding systems or a pure ICD reduction on symptoms. The ICF does not classify diagnosis nor a person and cannot be used as a diagnostic tool. It classifies health components like the environment (“e”), body structures (“s”), body functions (“b”), activity and participation (“d”), or personal factors. This new system, in line with the Convention on the Rights of Persons with Disabilities (CRPD) [1] facilitates piecing together a detailed and interactive “jigsaw” of a person in his/her relevant environments, and creates a holistic picture by use of health components and 1400 classification items. It refers to any person with a health problem and strives for description, assessments, and interpretations appropriate to a concrete situation considering the uniqueness of a person with a health problem related to its contexts [2]. The ICF does not replace the ICD but can be understood as a complementary tool to focus what a person with a health problem is able to do or which help/support/therapy he or she needs to fully participate. A resulting International Classification of Health Interventions (ICHI) is currently under discussion. This will provide a sound basis for comparisons in the area of health interventions [3].

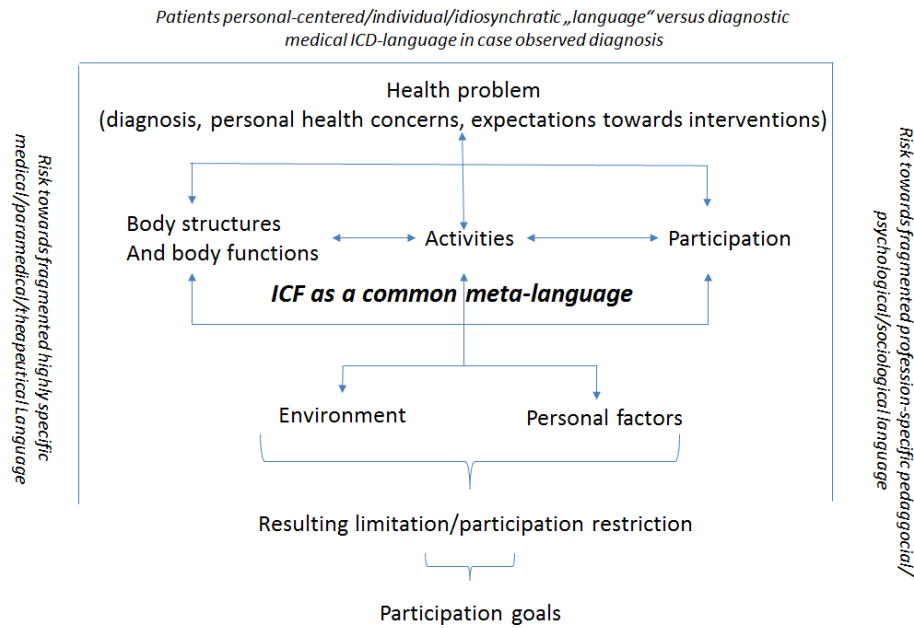
### THE NEW CLASSIFICATION PERSPECTIVE OF ICF

In contrast to the ICD (World Health Organization, 1990), the ICF focuses on a dynamic interaction between a health problem of a person and his/her environment [4]. Any ICF-assessment process opens a perspective towards a functional understanding of health and disease. The ICF represents a

descriptive metalanguage to overcome the fragmentation of health/disease related terminology of diverse professional groups or sectors and is deeply connected with the work in transdisciplinary teams towards goal setting and coordination, with full participation of patients, as they are also supposed to understand and use this universal language (Figure 1). Mainly, the aspect of “participation” and its related goals focus on “involvement in a life situation” or “the lived experience” of people in the actual context in which they live [5, p. 13]. The WHO highlights that the ICF can be used as a statistical tool, a research instrument, a clinical, social policy and an educational tool. Current use mostly refers to rehabilitation settings [6]. The ICF is mainly seen as a problem solving tool to address communication in teams and the issue of clinical protocols, facilitating clinical reasoning in teams [7] and is assessed as useful in supporting analyses and communication about children’s needs [8]. The ICF also addresses the inter-rater-reliability [9] and supports search processes for explanations to problems that can arise in classroom but it also expresses need for interprofessional collaboration [10]. In epidemiological research, the ICF provides comparable data on disability or related to the interconnections between diagnosis and participation restrictions [11-14].

### THE STATE OF IMPLEMENTATION

[15] summarize the current status quo: “All Talk, No Action?”. Even though the ICF was released in 2005 by the WHO General Assembly and is supposed to be a part of the ICD 11, the implementation processes can be assessed as challenging. Historically established epidemiological approaches (medical theorizing,



**Figure 1: The ICF as a universal language to address the health situation of a person (modified after Pretis, 2020b, p. 154)**

psychological constructs, sociological models...) are supposed to accept, think, and act on the basis of one common metalanguage. The complexity of the coding system represents a further challenge, as it questions the existing modeling. Even if US publications slightly exceed European research papers on the ICF [16], the degree of implementation of the ICF in Europe can be assessed as higher than in the US. Diverse countries (Bulgaria, Germany, North Macedonia, Portugal, Switzerland) released national legislations towards implementation, e.g. in the field of education or service eligibility for all persons with disability, like Austria or Italy, concerning clinical protocols. Other countries, e.g. Australia, aim to assess eligibility criteria based on the ICF [17]. On the other hand, many grass-root initiatives are visible, focusing on practical tools (such as ICF core sets, age lists, protocols, or linkage studies). Despite the fact that German laws [18] rely on the basic principles of the ICF and foresee related assessment of service needs, the degree of concrete implementation is still weak. Simon et.al. [19] summarize that the implementation of the ICF seems to be linked to significant barriers, as the use of the ICF is also associated with higher workloads for the professionals. No wonder that Pretis [20] characterizes the situation as “wait and see”, as many professionals might not see concrete practical benefits. As long as there is a lack of concrete tools which facilitate the complex transdisciplinary work, this assessment might persist.

## THE CHALLENGES OF THE ICF

The perceived novelty, the partly difficult technocratic linguistic challenges [2], and the (mere numeric) complexity of 1400 codes present the main challenges of the ICF. Clinical practice need a “translation” of bio-medical data into the ICF codes and qualifiers. Some

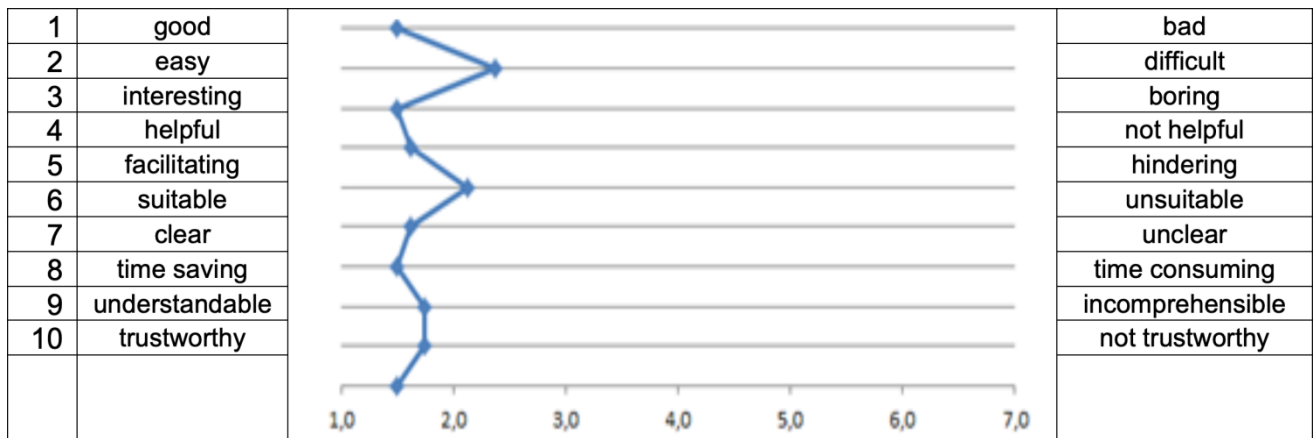
efforts can be identified to link diagnostic tools with the ICF.

[21] linked the Carolina Curriculum for Preschoolers with Special Needs [22, 23] and the Early Development Instrument [24]. However, the lack of research results tends to limit the usability of ICF, mainly in the psychological and partly in the medical field. Following challenges towards a full implementation of the ICF can be identified:

- a) Transfer subjective experience and daily life language into the ICF common classification terms for patients or persons with a health problem
- b) Transfer highly sophisticated and specific medical terminology into a common language for medical doctors or paramedical professionals
- c) Transfer educational and sociological terminology towards ICF-health components for educators and social workers
- d) Transfer of functional understanding towards participation for therapists
- e) Transfer “traditional psychological constructs” into the WHO metalanguage for psychologists

## 2. RESEARCH QUESTIONS

- 1: Do joint assessment processes with patients/parents using ICF make a difference?
- 2: Can the usability of the ICF be increased based on linguistic simplification?
- 3: Does the use of the ICF make a difference concerning inclusive thinking?
- 4: How accepted is the ICF as a common language in transdisciplinary teams?
- 5: How is a transfer of psychological constructs and tests into the ICF-meta language possible?



**Figure 2: Polarity profile “Using ICF during assessment processes of my child was ...”**

## 2. METHODOLOGY AND RESULTS

### STUDY 1: JOINT ICF ASSESSMENT PROCESSES WITH PARENTS

Eight (8) parents of children with developmental difficulties (3 male, 5 female; age 2.5 - 6 years) were included in the sample. All families were attended by a home-visiting service in Northern Germany. The following ICF-based instruments were applied: a) an electronic tool ([www.icfcmusedu.eu](http://www.icfcmusedu.eu)) to link family narratives with ICF and evaluate goal setting, b) a 7-point polarity profile (Osgood et al., 1957) using 10 adjectives describing how parents felt about the ICF, and c) a collection of parents' utterances about the ICF. During home visiting services, the parents obtained basic information about the ICF and linked intervention relevant information to the ICF.

Figure 2 shows the 7-point polarity profile answers (1=very positive, 7= very negative). The most “negative” value ( $x=2.8$ ) refers to perceived the difficulty of the ICF. The open-ended free questions emphasize high perceived involvement: parents felt being taken seriously (5x) and a holistic picture of their child (6x) was provided. Assessing the environment of the child, parents perceived themselves in all cases as facilitators (8x).

### STUDY 2: LINGUISTIC SIMPLIFICATION OF THE ICF

This study examines to what extent an “easy-reading” linguistic transfer of the complex ICF-structure is possible into clinical practice, and how to ensure a high-quality content match to the original, without losing information during this “translation process”. The sample comprised professionals in early intervention trainings and teachers in Austria and Germany ( $n=112$ ; female = 75%, male = 22.32%, mean age = 25.07 years,  $SD = 7.18$ ). Using a 4-point rating scale, 267 level 2-items of the ICF were evaluated based on online and paper pencil question- naires:

- To what extent family-friendly ICF items match se- mantically to the original items;
- To what extent these items follow the “easy reading” concept.

These translations excluded body structures, as the majority of the German names of these items are self-explanatory [25, p. 142] and focus on individualization and active participation of the child, considering the child as actor of his/her development [26]. Guidelines, rules, and principles of easy-reading language [27,28], e.g. use of everyday terms, avoidance of negations and foreign words, and formulation of short sentences, were applied. Lower bounds of the CI greater/equal to “3” (“moderate” on the applied 4-point scale) were evaluated as sufficiently matching. Items not meeting this criterion were subject to additional discursive review within an expert group [29].

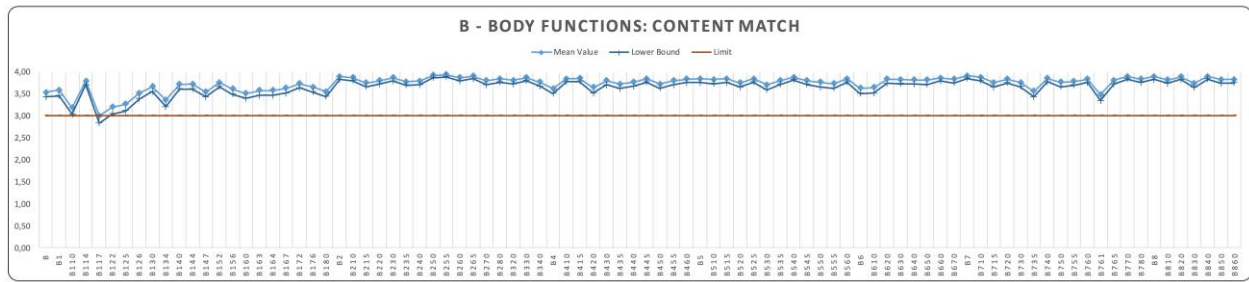
Results show that:

- Linguistic comprehensibility of all 267 level 2-items transferred into easy reading were evaluated as “moderate” or “high”,
- Semantic matching (Figure 3) showed that 266 out of 267 “translated” items were evaluated as “moderate” or “high” corresponding with the original. Only item b117 had lower bound of the CI = 2.84

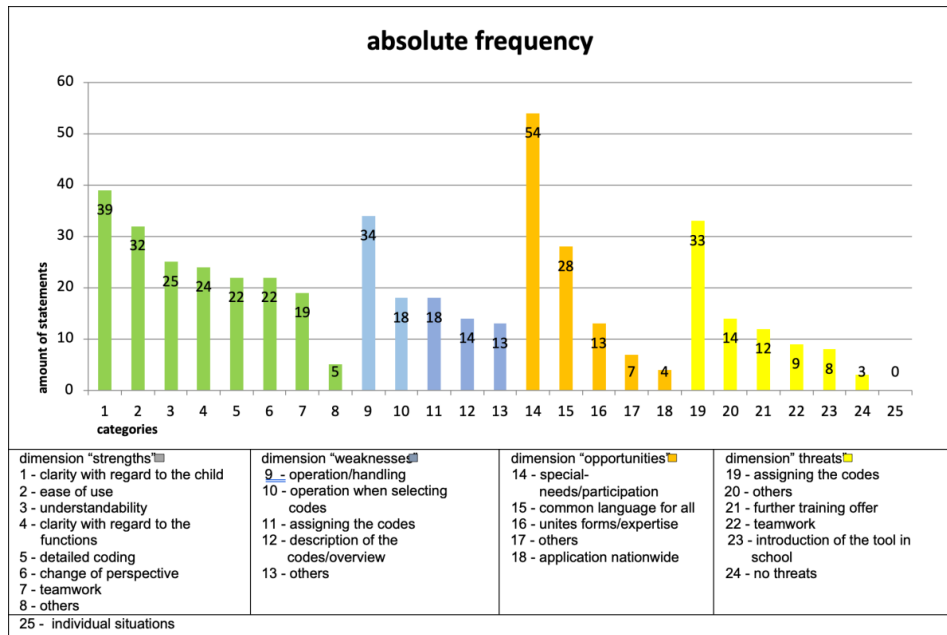
Four subsequent semantic alternatives (“intelligence”, “to act intelligently”, “to act sensibly”, “to recognize, understand and act on the world”) were consensually validated and discussed within a focal group, deciding to “translate” “b117 intellectual functions” with “intelligence”.

### STUDY 3: TRANSFERRING ICF INTO PEDAGOGICAL- SOCIOLOGICAL THINKING: THE IMPACT ON PROFESSIONAL ATTITUDES

This study examined to which extend ICF-trainings (between March and September 2019) contributed to increasing the inclusive thinking and attitudes of the professionals. A total of 39 German and 114 Austrian professionals (70.6% teachers, 12.4% “others”, 5.9% special educators, 5.2% therapists, 0.7% school psychologists, with mean professional working experience of 4.09 years ( $SD=5.88$ ) participated in one-day training events (79.1% female; 17% male; mean age=25.07 years,  $SD=7.67$ ); 5.2% no data.



**Figure 3: Content match between the original and the easy-reading description of the items, on the example of health component: b – body functions**



**Figure 4: Distribution of categories within the SWOT analysis**

The German version (Paulus, 2013) of the “My Thinking about Inclusion” (MTAI) questionnaire [30] was used in its 19-item version at two measurement points: before and after the ICF training events. Inclusive thinking was rated on a 5-point rating scale (1 = strongly disagree and 5 = strongly agree). Results show only one effect in favour of the hypothesis that the ICF increases inclusive thinking: after the training, the entitlement of students with special needs to be educated in the same classroom as typically developing students was assessed higher than before (pre=4.44, post=4.60;  $p=.002$ ;  $t=-3.093$ ). On the other hand, effects by trend against the hypothesis indicate that ICF might also increase skepticism towards beneficial (pre=4.42, post=4.32;  $p=.096$ ;  $t=1.677$ ) and performance aspects (pre=3.98, post=3.86;  $p=.060$ ;  $t=1.892$ ). In general, pre/post differences did not reach statistical significance.

#### STUDY 4: ANALYSIS OF THE GENERAL USABILITY AND ACCEPTABILITY OF THE ICF

A SWOT study [31] focused on 3 days inservice-teacher training ( $n=40$ ) between 6.1. and 10.5.2020 in Austria). Written utterances were processed through a qualitative content analysis using category systems based on Mayring [32]: a) defining categories, b) identifying anchors, and c) applying coding rules following Mayring [33]. The analysis lead to 8 (sub)categories in the dimension of

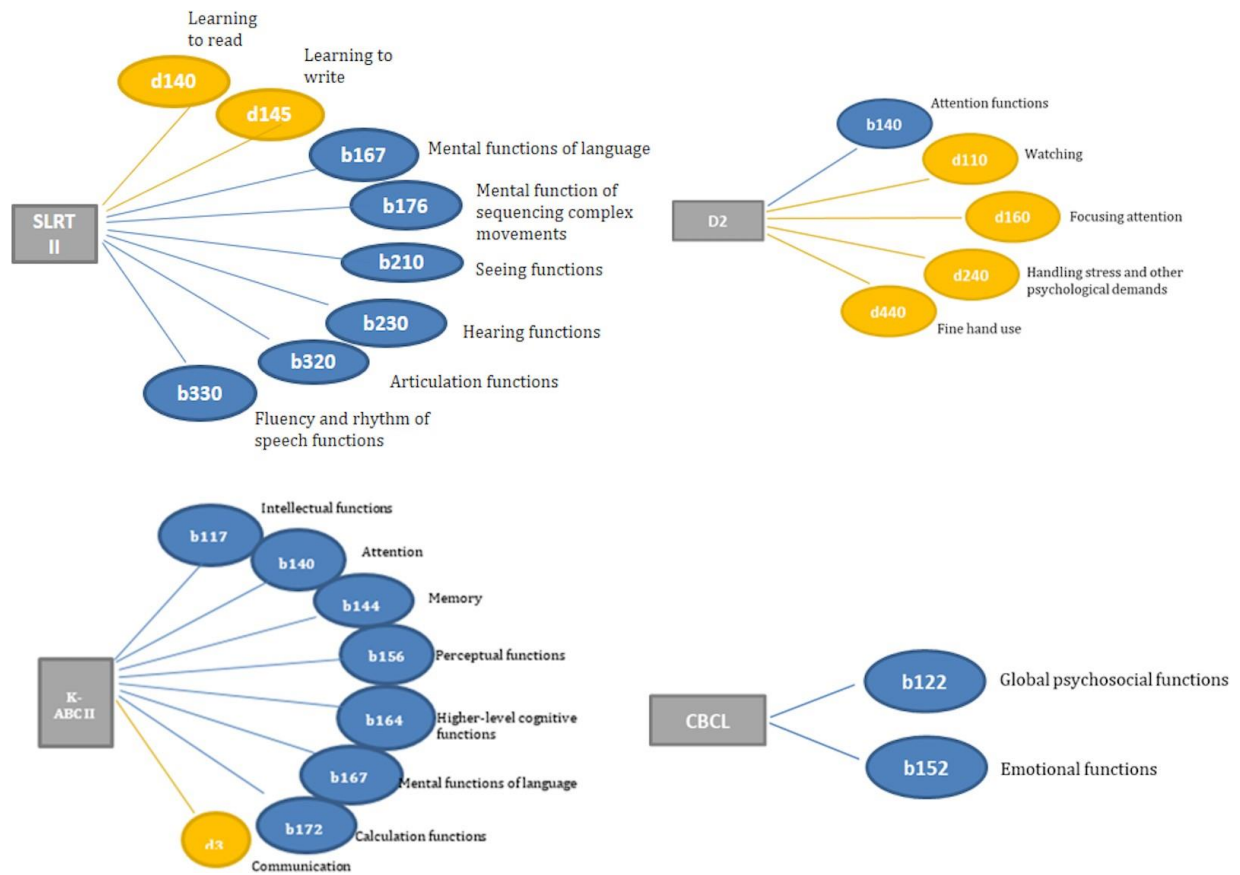
Strengths (188 answers), 5 (sub)categories in the Weaknesses (97 answers), 5 (sub)categories in the

Opportunities (106 answers), and 6 sub(categories) in the Threats (79 answers) (see Figure 4). The three most frequent “strengths” subcategories related to: “(ICF) provides clarity ...” ( $n=39$ ), followed by “the ease of use” ( $n=32$ ) and “understandability” ( $n=25$ ). Most frequent “weaknesses” addressed the “operation/handling” ( $n=34$ ), followed by “operation when selecting codes” ( $n=18$ ) and “assigning the codes” ( $n=18$ ). Most frequent “opportunities” highlighted “specialneeds/participation” ( $n=54$ ) and “common language for all” ( $n=28$ ). Most frequent “threats” focused on “assigning the codes” ( $n=33$ ) followed by the “others” ( $n=14$ ) and “further training needs” ( $n=12$ ). Overall, the focus of the ICF on “special-needs and participation” ( $n=54$ ) is the most frequented category over all dimensions.

#### STUDY 5: LINK OF PSYCHOLOGICAL TESTS (CONSTRUCTS) WITH ICF-ITEMS

The “linking” of psychological tests (constructs) with the metalanguage of the ICF is addressed; it was carried





**Figure 5: Linking Results**

out independently by two experts, to be able to ensure interrater-reliability. Four tests (widely used in school psychology practice, popular in German-speaking countries) were selected: SLRT II [34], the K-ABC 2 [35], the D2 [36], and the CBCL [37]. Methodologically, linking rules were based on [21] and [38] and were adapted. In contrast to previous studies, in the present study the linking took place at the testconstruct level. Additionally, a validating online survey was carried out to check whether other professionals ( $n=16$ ) agreed with the proposed linking. The results showed [39] that the proposed linking was confirmed; however further ICF-items were linked to K-ABC II and the CBCL. Figure 5 shows the linking results. The results show that 70% of the links between the selected psychological tests and the ICF-items refer to body functions. Only the results related to the d2-Test [36] showed clear linking tendency towards the health component “participation”.

#### 4. DISCUSSION

Despite the high commitment by the WHO, the use of the ICF as an ability-based bio-psycho-social description tool to address complex health concerns is still assessed as challenging. Some countries follow top-down strategies towards implementation, while other are still in a waiting position [20]. Research underline the participatory power of the ICF taking into account the basic rules of inclusive research: “It is conceived as research with, by or sometimes for them [40], and in contrast to research on

them” [41 p. 3]. Following this policy and facing the challenge of “inclusion” of children with complex developmental difficulties, 5 multicentre studies were performed to assess the problemsolving power of the ICF. They represent a thematic mix of correlative studies within the context of a European Erasmus+ research project. Neither are the samples representative, nor experimental designs have been employed. However, they reveal the potential of the ICF (full participation by parents, valid easy-reading version, and slight changes in inclusive thinking and link to psychological tests). They also reveal open challenges and existing ambiguities: beneficiaries assess the ICF helpful within planning and assessment processes if basic information is provided. In this condition, parents perceive themselves as equal experts in transdisciplinary teams and feel fully involved in assessment processes of their child if the level of linguistic difficulty is addressed (if the ICF is “transferred” into a daily life language of families). With an “easy-reading version” of the ICF, the participatory power of the ICF is highlighted. De Bock & Philippi [42] also underline possible economic aspects, as higher participation of parents might decrease costs for health and social systems. Compared to professionals, parents identify themselves with a unique (daily life) expertise referring to their child. Sometimes, their cooperation might be assessed as highly ambivalent and ambiguous [43, p. 430]: they take responsibility for family cohesion and delimitation to others; on the other hand, they need to demonstrate openness to take advantage of support. There is a risk of undue influence from outside as well as external determination by experts. Parents confirm a high level of

information expenditure [44, p. 102]. The ICF invites them to become part of the team around the family and to take over an active role. Widely unreflected “ruling relations” (Smith, 2005, as cited in [45, p. 222]) turn into effective teams around a family – empowered parents and experts communicate on an equal level and appreciating the expertise of each other. Transdisciplinary ICF-training (together with parents) might represent a helpful possibility to learn from each other [62]. To clear the pathway of linguistic barriers, the analysed easy-reading version showed sufficient semantic and linguistic validity towards daily practice. However, Philippi [46] highlights that further tools like handouts, ICF-gadgets, etc. might be necessary in cooperation with parents. The ICF is understood as a tool towards inclusion [62], and professional attitudes are seen as crucial variables for the extent and quality of inclusive acting, e.g. in schools [47]. It is supposed that the ICF has the potential to change this aspect, mainly as disability is understood as a significant interaction between a person (with a health problem) and the relevant environment, including attitudes [5]. Inclusion relates rather to the quality of the (environmental) system [48] than to the quality of the person. As the ICF focuses on this interaction [49], it was hypothesized that higher awareness of the ICF might trigger a higher degree of inclusive thinking. However, the findings show very mild single effects on the general inclusive perspective, and data also showed reverse outcomes. Eagly and Chaiken [50] highlight that “strong attitudes do not readily change” [50, p. 413] and “to the extent that an attitude is grounded extensively in prior experience (...) any new input has proportionally smaller impact” [50, p. 418]. The short duration of the trainings might contribute to the small effects: changing attitudes might need more time, although there is a positive change on a very general level. Also, more (evidence-based) information about the impact of inclusion might be necessary as teachers tend to minimize the effect compared to parents (Pretis, 2015). The ICF’s complex classification, which is challenging at first glance [49] requires an extensive effort to spread the knowledge and the confidence in the use to all partners involved [51]. The SWOT analysis data highlight the challenges, but also its inherent potentials: the ICF is seen as a powerful description tool towards a strengths-focus. The main challenge might be that it is mostly considered as an assessment instrument [52], mainly for clinical practice. Pernambuco et al. [53] observed that 82% of users believe that the ICF is only clinically applicable. The ICF’s holistic approach (overcoming a mere deficit-symptom orientation) leads to a joint assessment of life areas without problems, but also of restrictions in participation and to meaningful participation goals in interaction with relevant environments. This perspective might facilitate the implementation of the ICF in the education and social sector as it is in line with the “next generation” of the WHO classification systems, the International Classification of Health Intervention [3]. Developmental difficulties usually require complex intervention pathways. It might be necessary to embrace that “it takes a whole village to raise a child” [54].

This “village” consists of diverse professionals, including the parents. Transdisciplinary cooperation also triggers threads (about professional roles and identities). Teaching how to use the ICF does not mean substituting specific professional skills; rather, it means supplementing well-established methods with new ones [55]. Therefore, it is an important requirement to consider the existing professional

experience while preparing for a new understanding. Study 4 shows that the ICF as a metalanguage in transdisciplinary cooperation can include all areas of a child’s life at the same time. These perspectives are already mentioned by the WHO [5]. Martinuzzi et al. [56] discussed this need to encourage teamwork and the need to change the established roles. The weaknesses of the ICF mainly refer to the available tools. There are clearly some difficulties in the handling, which primarily relate to the coding. However, there is no need for an immediate coding [61]: Adolfsen et al. [8] spotlight that professionals should be able to decide on the implementation of ICF-CY, according to their own situation. It is important to consider the motivation of the professionals for new practices to change their routine. The use and handling of the ICF might be (beside other barriers) time-consuming. Pechstädt and Svaton [57] emphasise that a joint assessment process within a transdisciplinary team – based on the ICF – might take more than 2 hours. The most important principle using the ICF are the BIG 6 (health concerns and 5 health components in their interactions). Starting to use the ICF means to start to think in these categories and their interactions and to differentiate observation and assessment processes [61]. Thus, institutional support is an important factor in the ICF applications, when care models or clinical protocols are adapted. Experienced mentors might need to assist with the ICF implementation [58]. Basic ICF trainings and implementations are effective and lead to a significant improvement in skills when conducted under a leadership [59]. To overcome weaknesses, it is important to get support from group leaders to facilitate the implementation of new skills and knowledge [8], primarily for first-time users. Since experienced professionals often constitute the core group to affect change, their attitudes are important [60]. Methodologically, psychologists might face major implementation restrictions as the ICF proposes a different (meta-linguistic) terminology from the well-established psychological constructs: psychologists might not easily find “gross motor or fine motor development” in the ICF, as the ICF differentiates between “body functions” (e.g. coordination of voluntary movements) and “participation” (in terms of mobility or handling objects). On the one hand, psychological tests measuring “participation” are still rare [61]. It can be supposed that the existing psychological tests which tend to measure functional aspects will still be used to address issues of “participation”. On the other hand, linking (standardised) psychological test results ( $z$ -,  $T$ -,  $IQ$ -values etc.) with the ordinal WHO-qualifiers (.0=no problem to .4=total problem) might represent another important requirement. The link between (test) statistical parameters and WHO-qualifiers, however, is in an experimental phase [49] even if the WHO already 2001 in its first edition of the ICF addressed this need towards further necessary epidemiological research. Furthermore, Castro et al. [21,23] highlight that experience in the use of the ICF and knowledge of the underlying psychological theories are important preconditions for the linking processes.

To conclude, the presented usability studies emphasise the practical use of the ICF on participatory and emancipatory processes in the “team around a family”. To turn the high commitment by WHO into action, bottom-up-strategies indicate a more essential role in daily life implementation than mere top-down-recommendations to overcome the existing “waiting positions” (Pretis 2018). Parts of these necessary synergies are joint assessment processes based on

an increased usability focus of the complex ICF structure. Easy-language versions, ready to take and practice-oriented training modules, and practical barrier-free implementation tools will be helpful. The increase in gaining knowledge of the ICF and in debating equality and empowerment during trainings stands in contrast to the superficial increase of inclusive thinking of the involved professionals and an increased scepticism when confronted with inclusive potentials suggested by the “new” definition of disability in the ICF. The results demonstrate a clear tendency to accept the ICF as a common language in transdisciplinary teams - even comprising psychological constructs. This potential of the ICF as a common language should be based on connectable prior information and favoured by the use of easy training and implementation tools. Whether the presented bottom-up elements in implementing the ICF will succeed is subject to future investigation.

## 5. CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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