

PERSPECTIVES IN REHABILITATION

ICF and ICF-CY lessons learned: Pandora's box of personal factors

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Abstract

Purpose: The aim of this article is to examine the component of “personal factors” described as a contextual factor in the ICF and ICF-CY. **Methods:** A critical examination of the construct of “personal factors” and description of the component was made with reference to conceptual and taxonomic criteria. **Results:** The “personal factors” component in the ICF/ICF-CY is not defined, there is no taxonomy of codes, there is no explicit purpose stated for its use and no guidelines are provided for its application. In spite of these constraints, the component of “personal factors” is being applied as part of the classifications. Such uncontrolled applications constitute significant risks for the status of ICF/ICF-CY as the WHO reference classification in that: (a) the component is accepted for use by default simply by being applied; (b) component content is expanded with idiosyncratic exemplars by users; and (c) there is potential misuse of “personal factors” in documenting personal attributes, including “blaming the victim”. **Conclusion:** In the absence of formal codes, any application of the component of “personal factors” lacks the legitimacy that documentation with a scientific taxonomy should provide. Given the growing use of the ICF/ICF-CY globally, a priority for the revision process should be to determine if there is in fact need for “personal” or any other factors in the ICF/ICF-CY.

Keywords

Classification, ICF, ICF-CY, personal factors

History

Received 20 January 2014

Revised 4 February 2014

Accepted 5 February 2014

Published online 7 March 2014

► Implications for Rehabilitation

- A central contribution of the ICF/ICF-CY is the universal language of codes for the components of body structure, body function, activities and participation and Environmental Factors.
- As such the codes provide taxonomical legitimacy and power for documenting dimensions of functioning and disability in clinical and rehabilitation contexts.
- As there are no codes of “personal factors”, there is no basis for documentation of the component.
- Demographic information, if needed for identification, should be recorded in customary formats, independent of any component or codes of the ICF/ICF-CY.

Introduction

In Greek mythology, Pandora was given a box by the gods with unknown contents and cautioned not to open it because of potentially unknown consequences. Among the lessons learned since publication of the ICF [1] in 2001 and the ICF-CY [2] in 2007, one is that caution should be similarly observed with the “box” labeled Personal Factors in the ICF because it is not clear what the box contains. Specifically, the content of the component of Personal Factors is not defined, the purpose for its use is not

specified, and the consequences of its application unknown. Compared to the substantial literature on implementation of the ICF as well as the ICF-CY, particularly the components of Body Functions and Activities and Participation, a relatively small number of papers have addressed Environmental Factors and only a few have considered Personal Factors.

The fundamental problem related to Personal Factors pertains to the fact that they are contextual factors that “. . . relate to the individual, such as age, gender, social status, life experiences and so on, which are not currently classified in ICF but which users may incorporate in their applications of the classification” [1, p. 214]. Further, not only is there an absence of codes for personal factors, there is no definition with inclusion and exclusion criteria, no purpose stated for their inclusion in the classification and no guidelines are provided for how they

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should be documented. Each of these problems challenge the fundamental requirements for a taxonomy as stated in the ICF in which a classification "...should be clear about what it classifies: its universe, its scope, its units of classification, its organization, and how these elements are structured in terms of their relation to each other" [1, p. 7]. In that the component of Personal Factors in the ICF fails to meet these requirements, it negates the very purpose of a classification, namely to provide a standard, scientific language for universal documentation. Any application by users of "personal factors" as currently presented in the ICF and ICF-CY not only lacks justification from a scientific basis, but may result in unknown consequences, potentially challenging the acceptance of the classification itself as a scientific standard.

The purpose of this article is to examine the component of Personal Factors as described in the ICF and ICF-CY with specific reference to the extent to which it meets criteria defining a taxonomy. Such an examination is timely given the need for evidence of utility and efficacy of the ICF and ICF-CY as they continue to be implemented in practice, research and policy. A critical examination of the concept and content of personal factors in terms of taxonomic criteria is an essential step in the updating and revision process of the ICF and ICF-CY. In that the ICF-CY is completely derived as an expansion of the parent classification of the ICF, the issues related to personal factors discussed in this article apply identically to the ICF and ICF-CY. Therefore, as all comments apply to both classifications, reference will be made just to the ICF in this article with the understanding that it applies equally to the ICF-CY. Further, the words personal factors will be enclosed within quotation marks throughout the paper to convey the specific way in which they are used in the ICF. The aims of this article are thus to (a) examine the construct and component of "personal factors" in the ICF and (b) identify problems with the component and their implications for the classification. To this end, a critical review is made of "personal factors" as described in the ICF and in related publications that have referenced "personal factors" to gauge the extent to which the component has been perceived and implemented.

ICF: lessons learned

Publication of the ICF and ICF-CY offered for the first time, an expanded approach to classify disability in adults and children on the basis of human functioning. This approach represented an important advance in that the conceptualization and classification of disability were no longer defined on the basis of diagnosed pathology, but rather defined within a holistic framework of human health and functioning. Lessons learned about the ICF have been extensive, as illustrated by two summary reviews of the literature [3,4]. The recent review by Cerniauskaite et al. of 672 publications indicated that 30.8% of the papers addressed conceptual issues and 25.9% reflected practice applications [4]. A comparable review has not been published of the number of publications based on the ICF-CY, but the rate of publications with the derived version is also increasing substantially with representative cross-disciplinary applications related to policy [5], practice [6,7] and research [8]. As with the ICF, many of the publications on the ICF-CY have been conceptual in nature, but there are increasing number of studies documenting applications for assessment and intervention planning [9–11].

Whereas many of the lessons learned about the ICF have addressed conceptual features or proposed applications, lessons learned regarding implementation in practice have been limited, idiosyncratic and not well evaluated [12]. Only a few papers have identified limitations or problems in the ICF needing to be addressed for successful implementation. Although some of these

limitations were inherent in the ICF at the time of its initial publication, others have become evident with implementation. These issues include underlying constructs related to health related functioning [13,14] and inadequate representation of the elements of the "biopsychosocial" model [15]. In this regard it should be noted that the biopsychosocial model has been a well-established holistic concept of health in medical literature [16] but this fact and its features were not acknowledged in any way in the development of the ICF. With reference to another element, Masala and Petretto [17] concluded that the dynamic nature of the person–environment interaction process was not appropriately captured in the ICF. Stineman and Striem [18] proposed a biopsychological paradigm as a more inclusive model of the biopsychosocial model expanding the contribution of the physical environment to the interaction of elements defining human functioning.

Given the essential role of the universal qualifier in transforming the ICF from a classification of health and functioning to a classification of disability, it is surprising that very little attention has been given to quantitative and qualitative issues related to its application. As described in the ICF, the qualifier is scaled in ordinal steps in the direction of increments of the problem state. This does not correspond to the typical approach of scaling severity in standardized measures in which severity is framed in terms of decreasing levels of loss or limitation of normal functioning. Conceptually, severity scaling of decreasing levels of functioning assumes a state of normality as the starting point with severity of impairment or limitation indicated by ordinal or interval values for degree of deviation or loss. In this regard, significant issues pertain to the conceptualization and numerical scaling of the universal qualifier. Specifically, the descriptors for the qualifier in the ICF (i.e. normal, mild, moderate, severe or complete) are framed in terms of an increasing level/percentage of the problem state. Scaling of the qualifier in the direction of increments of a problem state is difficult to conceptualize, i.e. what constitutes 5–24, 25–49, 50–95 or 96–100% of a problem? Systematic examination of the conceptual and measurement dimensions of the ICF universal qualifier is needed. A recent review has been made in this regard with specific recommendations advanced for standardizing the application of the universal qualifier [19]. From a qualitative standpoint, Granlund et al. [20] have proposed that the need for a third qualifier to capture the dimension of the child's engagement in activity and participation.

In contrast to extensive publications on Part 1 (Functioning and Disability) of the ICF, coverage has been limited of Part 2 (Contextual Factors), describing the components of Environmental Factors and Personal Factors as "...the complete background of an individual's life and living" [1, p. 16]. Suggestions for clarifying this part of the ICF have taken the form of defining the nature of contextual factors as "scene setters" [21] as well as ways in which their roles could be to moderate, mediate and confound disability [22]. With regard to "personal factors" within the component of contextual factors, Borg et al. have proposed their role in a mechanical "friction model" as a means to measure the dynamics of interaction [23]. Other interpretations have focused on the inclusion of dimensions such as quality-of-life [7,24] and mindfulness within the component of "personal factors" [25].

These papers however, have not addressed the fundamental fact that there is no classification of codes in the "personal factors" component. This fact and related problems, namely the lack of a definition and stated purpose for the component have not been addressed in the literature. In contrast, existing literature appears to reflect an unqualified acceptance of "personal factors" as an established component in the classification [26,27]. In that

Table 1. Classification requirements with reference to problems with the component labeled “personal factors” in the ICF.

Classification requirements	Problem with “Personal Factors”
Phenomena to be classified need to be defined.	No formal definition of the component. No inclusion or exclusion criteria.
Phenomena must be defined in a list of specific taxons/codes.	No taxonomy of codes; only exemplars. Documentation of personal factors becomes idiosyncratic to user Ambiguity of construct resulting in continuing expansion of “personal factors”.
Purpose for classifying phenomena must be specified. Conditions for classification of phenomena must be specified.	No stated purpose for documentation of personal factors. Users invited to incorporate personal factors in application of the ICF without guidelines.
Component phenomena must be independent and non-overlapping relative to other components.	Construct of personal factors is not independent of other “person” characteristics in other components of BF, BS and A&P. Contradiction of identifying personal factors as health conditions that are not part of a health condition. Overlap of personal factors with content in other components. Characteristics that are intrinsic to the individual are posited as external influences on functioning. Identification as a contextual factor assigns implied role of personal factors in qualifying functioning and disability.

“personal factors” are presented as one of four components in the ICF manual, supports the premise that “personal factors” are appropriate to document. This premise is reinforced by the statement in the manual that “personal factors”... “are not currently classified in ICF, but which users may incorporate in their applications of the classification” [1, p. 214] Any application of “personal factors” in the absence of codes fails to provide not only the taxonomical elements of other ICF components but also precludes the use the universal qualifier to assign significance to indicators of disability. Thus, as currently described in the ICF, the component of “personal factors” should not be applied as it lacks the legitimacy that codes provide, namely the universal and standard language of codes. This article will thus to examine the component of “personal factors” with reference to the following four questions relating to requirements of a taxonomy. Specifically, is the component defined, is there a taxonomy of codes, is there a stated purpose for its use and is content specific to the component? These classification requirements and the issues raised by their examination are summarized in Table 1 and are reviewed in the following sections of this article.

Component definition

A clear definition of components is a fundamental requirement for scientific application of any taxonomy. Reference is made to the component of “Personal factors” 11 times in the introduction of the ICF and in other places in the manual. As presented in the ICF manual, the component of “personal factors” shares placement with Environmental Factors as one of two contextual factors which are described jointly as “... the complete background of an individual’s life and living. They include two components: Environmental Factors and Personal Factors, which may have an impact on the individual with a health condition and that individual’s health and health-related states” [1, p. 16]. Further, as one of the two components of contextual factors, “personal factors” are described as follows: “... an individual’s functioning in a specific component is an interaction or complex relationship between the health condition and contextual factors (i.e. environmental and “personal factors”)” [1, p. 19].

However, a formal definition is not found in the table of definitions on page 10 of the manual in which each of the other components in the classification (Body Functions, Body Structures, Activities and Participation, Environmental Factors) is defined. In the absence of a formal definition, “personal factors”

are referenced by way of exemplars in various places in the manual. In examining these descriptive exemplars within the component of “personal factors”, it should be noted that content in the broader scope of ICF is referenced as encompassing “... all aspects of human health and some health-relevant components of well-being” [1, p. 7]. A more detailed reference to “personal factors”, describes them as “... the particular background of an individual’s life and living, and comprise features of an individual that are not part of a health condition or health states. These factors may include gender, race, age or other health conditions, fitness, lifestyle, habits, upbringing, coping styles, social background, education, profession, past and current experience (past life events and concurrent events), overall behavior pattern and character style, individual psychological assets and other characteristics, all or any of which may play a role in disability at any level” [1, p. 17].

The above list of exemplars encompasses demographic, behavioral, experiential, historical and undefined (e.g. other characteristics) variables with the assertion that they impact the health related states of the individual. An examination of these and other descriptions, however fails to yield a clear, unambiguous definition of the construct of “personal factors”. In the absence of inclusion and exclusion criteria for the component it is difficult to ascertain how terms such as “background”, “features”, “lifestyle”, “habits”, “upbringing”, “experience” and “characteristics” not only constitute a coherent, unique component, but that is also independent of the other four ICF components.

The lack of a distinct definition of “personal factors” is perhaps best illustrated by the inclusion of the terms “other characteristics”, “other such factors” and “and so on” as exemplars. The use of these undefined and ambiguous terms is incompatible with the requirements of a classification. Without a definition for the construct of “personal factors”, the basis for its uniqueness as an ICF component and a clearly stated reason for its application, it is difficult to determine what, if anything could or should be documented as “personal factors” with the use of the ICF.

Taxonomy of codes

In contrast to the other four components in the ICF, there is no taxonomy for the component of “personal factors”. In the absence of codes, there is no format or structure for classification. The stated rationale for excluding codes for “personal factors” is

Table 2. “Personal factors” terms and their typical meaning as listed in the English, Swedish and Chinese versions of the ICF.

English word	Swedish word	Chinese word
Gender	Kön [sex]	性别 [gender]
Race	Ras [race]	种族 [race]
Age	Ålder [age]	年龄 [age]
Other health conditions	Andra hälsofaktorer [Other health factors]	其他健康情况 health status in other areas]
fitness	Kondition [fitness]	健康情况 health status]
Life experiences	Livs erfarenheter [Life experiences]	生活经验 [life experience]
Lifestyle	Livsstil [Life style]	生活方式 lifestyle]
Habits	Vanor [habits]	习惯 [habits]
Upbringing (lived)*	Uppfostran [upbringing]*	教养 [manners as a result of upbringing*]
Upbringing (provided)+	Uppfostran [bring up; raise+]	教养 [upbringing provided+]
Coping styles	“Coping” sätt [coping manner]	应对方式 [coping styles]
Social background (lived)*	Social bakgrund [Social background+]	社会背景 [social background individual characteristics*]
Social background (provided)+	Social bakgrund [Social background+]	社会背景 [broad social context+]
Education (achieved)*	Utbildning [Training*]	教育 [education provided+]
Education (provided)+	Utbildning [Instruction]+	教育 [education provided+]
Profession	Yrke [Profession]	职业 [profession]
Past life events (lived)*	Tidigare erfarenhet [Earlier life experience*]	过去的经历 [past life events (lived)*]
Past life events (provided)+	Händelser i det förlutna [Events in the past+]	过去的经历 [past life events (lived)*]
Concurrent events (lived)*	Aktuell erfarenhet [Current experience *]	现时的经历 [concurrent events (lived)*]
Concurrent events (provided)+	Aktuella händelser [Current events+]	现时的经历 [concurrent events (lived)*]
Overall behavior pattern	Allmänna beteendemönster Common pattern of behaviour	总的行为方式 [overall behavior pattern]
Character style	Karaktär [Character]	性格类型 [character style]
Individual psychological assets	Individuella psykologiska tillgångar [Individual psychological resources]	个人心理优势 [individual psychological assets]
other characteristics	Andra egenskaper [other qualities]	其他特征 [other characteristics]
“other such factors”	Andra sådana faktorer [other such factors]	
“and so on”	Och så vidare [and so on]	

The common meaning of some “personal factors” words could take at least two forms; (a) for the starred items * listed above, the meaning could refer to *lived experiences* in which the person is an *actor*, thus belonging to the person (e.g. acquired education); or (b) for items marked with a plus sign +, the meaning could refer to *experiences/events provided* for/available to the person as a *recipient* (e.g. instruction, schooling).

that they “. . . are not classified in ICF because of the large social and cultural variance associated with them” [1, p. 8]. As the component of “personal factors” is not defined, lacks inclusion and exclusion criteria, and is only referenced by exemplars, it is not clear what social and cultural dimensions would limit their classification. Although definitions of some “personal factors” such as habits and life style may vary from one culture to another, it is difficult to see how definitions of sex and age could vary significantly across cultures. If social and cultural variance in fact precludes the derivation of categories/codes for “personal factors” it is not clear why the component was included in the ICF at all.

In the absence of taxonomy of codes, a total of 19 exemplars are provided as illustrations of the component. These exemplars as described in three language versions of the ICF (English, Chinese, and Swedish) are summarized in Table 2. A review of the exemplars suggests essentially equivalent meaning for some terms but variation in meaning within and between languages of other terms. The entries in this table would be expanded by almost a factor of 10 if the 238 examples of “personal factors” identified in the papers by Geyh et al. [27] and others were to be included. A review of the identified terms suggests that words such as “education” or “upbringing” could reflect alternate meaningful concepts. One meaning for the factor of “upbringing”, e.g. could be that the phenomenon represents the lived experience of the individual relating to the component of activities and participation. An alternate meaning of “upbringing” could be that the factor represents the care, support and attitudes provided to, or made accessible to the individual in the form of Environmental Factors. The terms could thus be seen to have potential counterpart content in other components of the ICF based on identification of meaningful concepts of the terms. A review of Table 3 suggests that identified elements in the component

of “personal factors” are not independent of content in other ICF components and in fact share proxy, or counterpart, information in one or more other components. Terms with a least two possible meanings as noted could be aligned with counterpart content in at least two ways depending on underlying meaning.

Even though there is no taxonomy of codes of “personal factors”, the ambiguity of the component and the nature of the exemplars raise questions about the uniqueness of the identified content and overlap with that of other components. The basis for such overlap was discussed above in terms of the lack of clear definition and the extremely wide range of identified factors including habits, upbringing, character style and concurrent and past life events. In some cases, overlap might be attributable to the use of broad terms, e.g. “fitness” that could be potentially aligned with content in several chapters (e.g. Mobility and Self-Care) in the Activities and Participation component. Overlap in the case of a “personal factor” such as “coping styles” could similarly align with a number of categories in the Mental Functions chapter of Body Functions as well as the second chapter (General Task and Demands) in the Activities and Participation component. The lack of a classification of codes thus represents another problem in that the proposed content of the component lacks independence and overlaps with content of other components.

Component purpose

In spite of repeated invitations for users to apply “personal factors”, there is no stated purpose for the inclusion or application of “personal factors” in the use of the ICF. This is the case even though “personal factors” are listed as a formal element in Table 1 of the ICF manual [1, p. 11]. A review of the descriptions of “personal factors” fails to clarify the purpose they are to serve as a contextual factor in the classification. If the intent of

Table 3. “Personal factors” terms in the ICF and ICF-CY with regard to their underlying referent and possible link to content in the domains of body functions, body structure, activities/participation and environmental factors.

Factor term	Underlying referent	BF	BS	A&P	EF
Gender	Biological	x	x		
Race	Biological	x	x		
Age	Biological	x	x		
Other health conditions	Biological	x	x		
Fitness	Health/physical/mental state	x	x	x	
Lifestyle	Activity/participation pattern			x	
Habits	Activity/participation pattern			x	
Upbringing (lived)*	History of activity/participation			x	
Upbringing (provided)+	History of caregiving environment				x
Coping styles	Mental/psychological marker; behavior response pattern	x			
Social background (lived)*	History of doing/participating			x	
Social background (provided)+	History of caregiving environment				x
Education (achieved)*	History of participation (level of education completed)			x	
Education (provided)+	History of environments (e.g. recipient of public school, higher education)				x
Profession	Life role (Participation)			x	
Past life events (lived)*	History of doing/participating			x	
Past life events (provided)+	History of environment (e.g. recipient of natural or man-made event)				x
Concurrent events (lived)*	Doing/participating			x	
Concurrent events (provided)+	Current environment (recipient of natural or man-made event)				x
Overall behavior pattern	Behavioral/psychological	x		x	
Character style	Psychological	x			
Individual psychological assets	Psychological, behavioral, performance; capacity	x		x	
Other characteristics	Unknown	x	x	x	x
“and so on”	Unknown	x	x	x	x

The common meaning of some “personal factors” words could take at least two forms; (a) for the starred items* listed above, the meaning could refer to *lived experiences* in which the person is an *actor*, thus belonging to the person (e.g. acquired education); or (b) for items marked with a plus sign +, the meaning could refer to *experiences/events provided for/available* to the person as a *recipient* (e.g. instruction, schooling).

including “personal factors” was simply to insure that demographic characteristics of persons were recorded, no rationale is provided why such documentation requires a separate component of the ICF. If documentation of demographic and related background information such as age, gender and race was the intended application, there is no obvious need for a separate component of “personal factors” in the ICF. Demographic information such as age and gender is typically entered in client records and in research protocols without reference to a classification scheme. Some, but not all, of the other exemplars listed in the ICF as “personal factors”, may be seen as background variables important for clinic or research records, but there is no rationale for their linkage to a taxonomy. In the absence of an inclusive list of codes of “personal factors” and lack of information as to their role as contextual factors, there are no guidelines for why “personal factors” should be documented at all, much less how they should be recorded relative to other codes in defining the status of an individual’s state of functioning and disability.

Component context

A conceptual issue related to the lack of a stated purpose for personal factors pertains to the identification of “personal factors” as a component of Contextual Factors. Given the absence of a taxonomy of actual codes, there is no clarification of what aspects or features of “personal factors” define their role as contextual factors to impact the health and health-related states of a person with a health condition. In Table 1 of the ICF manual, the domain and construct of “personal factors” are described as “internal influences on functioning and disability” and as the “impact of attributes of the person” [1, p. 11], respectively. Ironically, in the same table, positive and negative aspects assigned to other components are referenced as not applicable for “personal factors”. The issue in this regard can be illustrated by how “personal factors” are described in the ICF manual:

“The scheme shown in Figure 1 demonstrates the role that contextual factors (i.e. environmental and personal factors) play in the process. These factors interact with the individual with a health condition and determine the level and extent of the individual’s functioning. Environmental Factors are extrinsic to the individual (e.g. the attitudes of the society, architectural characteristics, and the legal system) and are classified in the Environmental Factors classification. Personal factors, on the other hand, are not classified in the current version of ICF. They include gender, race, age, lifestyle, habits, coping styles and other such factors. Their assessment is left to the user, if needed” [1, p. 19].

The premise for “personal factors” as a contextual factor appears to be that some attributes internal to an individual can impact or serve as external contexts for yet other internal attributes of the individual. This raises a logical problem in that “personal factors”, in the form of characteristics or attributes that belong to the person (e.g. age, gender, race), are to serve as external contexts for other characteristics or attributes that are also internal to the person (e.g. mental functions, communication and self-care). Specifically, “personal factors” such as demographic variables of age, gender or race, or other factors such as habits or life-styles are by definition, characteristics that belong to, or are intrinsic to the person in much the same way as Body Functions, Body Structures and Activities and Participation are intrinsic to the person. This paradoxical problem is illustrated in the “biopsychosocial” model in which “personal factors” and Environmental Factors are portrayed together as Contextual Factors exerting external influences on the other components of the person, Body Functions, Body Structures and Activities and Participation. By their very description, “personal factors” are characteristics of the person, therefore it is not logical that they can somehow exert external influences on the functioning or performance of the person.

Factors such as gender and age, e.g. can be seen as belonging to the person in that they can be related to underlying

characteristics categorized in Body Functions and/or Body Structures. In the case of gender, categories in Chapter 6 of Body Functions and Body Structures contain information that includes characteristics related to gender. With reference to the variable of age, chronological age is not specified for any code in the ICF or ICF-CY. However, proxy information for development or maturation can be found in the content of codes for functioning, activities and participation that are broadly aligned with a life stage or age. Examples of such codes are s32000 (primary dentition) and d8802 (parallel play). Similar correspondence can be found for other exemplars of “personal factors” that belong to, or are internal to the person. “Personal factors” of coping and character styles and behavior patterns can be seen to be related to content in Chapter 1 of the Body Functions component and in Chapter 2 of the activities and participation component, respectively.

The overlap of content across components and findings on variability of interpretation of personal factors creates a number of related problems. As a formal taxonomy, the ICF should be defined by classification components that are unique, with distinct and non-overlapping content of information. As the “personal factor” component in the ICF includes characteristics that can be seen to “belong” to the person, the requirement for independent content is not met at a conceptual level with some overlap of content likely with content in the components of Body Functions and Activities and Participation. The issue of overlap also pertains to the paradoxical declaration that “personal factors” “...comprise features . . . that are not part of a health condition or health states . . .” but may “...include . . . other health conditions” [1, p. 17]. The logic of this statement is problematic; what would be examples of such health conditions?

Unknown consequences

Given the problems identified with “personal factors” in this article, there is potential for unknown consequences with uncontrolled implementation. At least three potential consequences can be identified, two related to the content of the component and the third to its application. A consequence of the ambiguity of the component of “personal factors” and the lack of a classification of codes is that something perceived as a “personal factor” by any user of the ICF can be identified as such. The potential for this problem is reinforced by the fact that “linking rules” proposed for aligning content of tools and instruments with codes in the four ICF components [28] have also been advanced for “personal factors”. Linking requires codes, but there are no “personal factors” codes available for linking. However, in the list of updated linking rules, rule number eight states: “If the meaningful concept is not contained in the ICF, but it is clearly a personal factor as defined in the ICF, the meaningful concept will be assigned pf” [28, p. 215]. The illustration for this rule links an item from the Quality of Life Index as follows: “. . . Your faith in God? The meaningful concept ‘faith in God’ is assigned pf” [28, p. 215]. This application is puzzling in that not only are there no codes available for linking at all, there does not seem to be an obvious exemplar that is applicable to this example. Application of “personal factors” under these conditions is inappropriate in that it allows documentation of a component that is idiosyncratic to individual users. Such idiosyncratic documentation lacks communicative value and thus obviates the purpose of the ICF to classify phenomena in standard terminology with universal applicability.

A second consequence of concern is that the use of exemplars in research or practice can serve to provide confirmation for the component even though it lacks a classification. Findings from a structural modeling study, for example, confirmed the domains

of “personal factors”, body functions and activities as significant predictors of participation in children with autism [29]. Further, linking of exemplars as noted above opens the door to the expansion of undefined content in the component. Specifically, identification of “personal factors” with the application of linking rules can expand what becomes accepted as “personal factors” within the ICF. This problem is illustrated in review, by Geyh et al., of 79 papers that were based on the fact that they made some reference to “personal factors” [27]. Within the perspective of that review, 48 of the 79 papers were identified as presenting “personal factors” consistent with the ICF, whereas for 28, the descriptions were not in keeping with descriptions in the ICF. A detailed review 705 statements demonstrated not only that a very wide range of phenomena were identified as “personal factors” but assumed (184 statements) that they had an influencing role (240 statements) on other ICF components. Of particular concern was the identification of 238 concepts as “personal factors” that were not consistent with descriptions in the ICF. These concepts encompassed positive and negative references to skills, attributes, behaviors, health status, roles, affective states, work, personality, lifestyle as well as other characteristics. These findings illustrate the problem of variable interpretation of “personal factors” by users in the absence of an unambiguous definition of the component and an associated taxonomy of specific codes. In short, a consequence may be that the component of “personal factors” becomes established over time by “default” through continuing addition of exemplars by users. The likelihood of this unknown consequence is reinforced by the conclusion in the review by Geyh et al., that some identified concepts were potential “personal factors”, representing “. . . a starting point for a comprehensive ‘item pool’ for the development of a future classification of PF” [27, p. 1098].

A third consequence of concern is the implication that “personal factors”, as one of the two contextual factors, play a qualifying role on the functioning and disability of an individual. If this in fact is an intended role for “personal factors”, application of the universal qualifier would be required to scale the valence and intensity of “personal factors” paralleling the qualifying role of Environmental Factors as barriers or facilitators on a person’s functioning. Although such an application is not described in the ICF, it appears that role of “personal factors” as a source of influence on other ICF components is endorsed in papers addressing the component [27]. Viewing “personal factors” in a manner parallel to Environmental Factors is problematic in at least two ways. The first problem is the paradox of some characteristics (“personal factors”) of an individual, serving as the context for other characteristics of the same individual. Another related problem of identifying “personal factors” as contextual factors is the potential that assigned exemplars such as life style, habits or character style can imply a negative factor in the individual’s disability. In situations where “personal factors” are assigned a negative value, there is a danger of “blaming the victim”, in which personal characteristics are seen as causal or contributing to the nature and severity of his or her health condition or disability. The real potential of this negative consequence is illustrated in a paper by Ustun [30] in which the utility of the ICF for the condition of ADHD includes proposed application of “personal factors” as follows: “. . . comorbidity with other mental disorders and/or with smoking or other psychoactive substance use disorders may play an important role in the resulting disability” (p. 136). This approach of assigning “personal factors” to a parallel role of Environmental Factors as contexts for an individual’s functioning, is not consistent with the underlying principle of the ICF to objectively describe the health and functioning of an individual. In short, the ICF clearly states that it is not a classification of people.

Application of the component of “personal factors” as the context for functioning and disability would create the risk of providing such a classification.

Given the serious problems identified in this review, we recommend that “personal factors”, as currently described in the ICF, not be applied by users in that it does not meet requirements as a component in a scientific taxonomy. Assuming that the initial purpose for including “personal factors” was that there was content missing that needed to be added to the ICF, the need for that content should be established using the WHO-FIC update platform for updating and revising classifications. This update mechanism should be used to insure that the inclusion of new or modified information will adhere to the conceptual and scientific requirements of taxonomy. This work could be carried out by existing WHO-FIC committees or as a special assignment by a WHO Work Group.

Is an additional “box” needed in the ICF?

Although an explicit rationale for including “personal factors” as a component was not made in the development of the ICF, an assumption may have been that content was needed that was not in the ICF. If this assumption of missing content is warranted and there is need for an additional “box”, a systematic approach should be followed to insure that such content is defined and brought into alignment with criteria required for a formal classification component. To this end, the addition of content could be approached productively using the classification criteria described previously in Table 1 of this article. The use of these criteria to review the appropriateness of potential content can be approached by answering the following questions. Is there information needed in the ICF that is currently not found in existing codes for Body Functions, Body Structures, Activities and Participation and Environmental Factors with associated taxonomies? What elements, if any, in “personal factors” as currently described (or to be identified) are actually present in some form in existing components? Can any of the content currently described in “personal factor” (or to be identified in future work) meet requirements as a mutually exclusive component in a classification of health components and health-related components? If content for such a component can be differentiated as a mutually exclusive component from Body Functions/Structures, Activities and Participation and Environmental Factors, the component should be given a non-overlapping name and located conceptually in an appropriate place in the classification.

If a systematic revision process determines that new, non-overlapping content is in fact needed in the ICF, it should not be identified as “personal factors” in that the term “personal” already encompasses content associated with the person in the other three components (Body Functions, Body Structures, and Activities and Participation). In fact, much as the term “disability” serves as an umbrella for the three components of impairments, limitations and restrictions, “personal factors” could logically be used as an umbrella term for the three components (e.g. BF, BS A&P) in their neutral form. If the need for an additional component is established, its name should convey content that is non-overlapping with other components. This approach would be consistent with the manner in which the Handicap Creation Process classification places Organic Systems and Capabilities under the rubric of “Personal Factors” [31,32].

Conclusion

This examination of the component of “personal factors” in the ICF has identified conceptual and taxonomic problems that are not consistent with the requirements for a scientific

classification. These problems have direct implications for the continuing implementation and use of the ICF as the reference classification of health and human functioning in the WHO Family of Classifications (WHO-FIC). The nature and seriousness of the problems with the component of “personal factors” identified in this paper may be viewed as the product of an incomplete process in the development of the component in the ICF. Given these problems, the component as currently described in the ICF should not be applied. The legitimacy and power of a classification resides in the codes that can succinctly define the phenomena of interest. Application of “personal factors” when there are no codes, not only fails to yield the power of a standard and universal language but also lacks the legitimacy that a taxonomy provides. Such application may negatively impact the acceptance of the ICF as a scientific tool for clinical, policy and research applications. Further, it poses potential risks in terms of acceptance of the component by default, expansion of idiosyncratic exemplars by users, as well as value-laden attributions of personal characteristics in defining functioning and disability. The publication of the ICF and the ICF-CY represent significant initiatives on behalf of adults and children with disabilities by providing the first, universal language for comprehensive documentation of their health and functioning. As with any new initiatives however, it is important that lessons learned are recognized and steps taken to improve the classifications and their application accordingly. Priority should therefore be assigned to determine if in fact there is justification for any other component of “factors”, and if there is, use the WHO-FIC revision mechanism to produce a corresponding classification consistent with the conceptual and taxonomic criteria of the ICF.

Declaration of interest

The authors report no conflict of interest.

References

1. World Health Organization. International classification of functioning, disability and health. Geneva: World Health Organization; 2001.
2. World Health Organization. International classification of functioning, disability and health for children and youth. Geneva: World Health Organization; 2007.
3. Fayed N, Cieza A, Bickenbach J. Linking health and health related information to the ICF: as systematic review of the literature from 2001 to 2008. *Disabil Rehabil* 2011;33:1941–51.
4. Cerniauskaite M, Quintas R, Boldt C, et al. Systematic literature review on ICF from 2001 to 2009: its use, implementation and operationalisation. *Disabil Rehabil* 2011;33:281–309.
5. Ståhl Y, Granlund M, Gäre-Andersson B, Enskär K. Review article: mapping of children’s health and development data on population level using the classification system ICF-CY. *Scand J Public Health* 2011;39:51–7.
6. De Polo G, Pradal M, Bortolot S, et al. Children with disability at school: the application of ICF-CY in the Veneto region. *Disabil Rehabil* 2009;31:67–73.
7. McDougall J, Wright V, Schmidt J, et al. Applying the ICF framework to study changes in quality-of-life for youth with chronic conditions. *Dev Neurorehabil* 2011;14:41–53.
8. Björck-Åkesson E, Wilder J, Granlund M, et al. The International Classification of Functioning, Disability and Health and the version for children and youth as a tool in child habilitation/early childhood intervention-feasibility and usefulness as a common language and frame of reference for practice. *Disabil Rehabil* 2010;32:S125–38.
9. Sanches-Ferreira M, Simeonsson RJ, Silveira-Maia M, et al. Portugal’s special education law: implementing the International Classification of Functioning, Disability and Health in policy and practice. *Disabil Rehabil* 2013;35:868–73.
10. Hwang A-W, Liao H-F, Chen P-C, et al. Applying the ICF-CY framework to examine biological and environmental factors in early childhood development. *J Formosan Med Assoc* 2012;xx:1–10.

11. Adolfsson M, Malmqvist J, Pless M, Granlund M. Identifying child functioning from an ICF-CY perspective: everyday life situations explored in measures of participation. *Disabil Rehabil* 2011;33:1230–44.
12. Wiegand NM, Belting J, Fekete C, et al. All talk, no action? The global diffusion and clinical implementation of the International Classification of Functioning, Disability and Health. *Am J Phys Med Rehabil* 2012;91:550–60.
13. Conti-Becker A. Between the ideal and the real: reconsidering the International Classification of Functioning, Disability and Health. *Disabil Rehabil* 2009;31:2125–9.
14. Salvador-Carulla, L, Garcia-Guiterrez C. The WHO construct of health-related functioning (HrF) and its implications for health policy. *BMC Public Health* 2011;11:1–10.
15. Fava GA, Sonino N. The biopsychosocial model thirty years later. *Psychother Psychosom* 2008;77:1–2.
16. Engel G. The need for a new medical model: a challenge for biomedicine. *Science* 1977;196:129–36.
17. Masala C, Petretto DR. From disablement to enablement: conceptual models of disability in the 20th century. *Disabil Rehabil* 2008;30:1233–44.
18. Stineman MG, Streim JE. The biopsychological paradigm: a foundational theory for medicine. *PM R* 2010;2:1035–45.
19. Simeonsson RJ, Sauer-Lee A, Granlund M, Björck-Åkesson E. Developmental and health assessment in habilitation with the ICF-CY. In: Mpofu E, Oakland T, eds. *Rehabilitation and health assessment: applying to ICF guidelines*. New York (NY): Springer; 2010:27–46.
20. Granlund M, Arvidsson P, Niiä A, et al. Differentiating activity and participation of children and youth with disability in Sweden: a third qualifier in the International Classification of Functioning, Disability, and Health for Children and Youth? *Am J Phys Med Rehabil* 2012;91:S84–96.
21. Badley EM. Enhancing the conceptual clarity of the activity and participation components of the International Classification of Functioning, Disability, and Health. *Soc Sci Med* 2008;66:2335–45.
22. Wang PP, Badley EM, Gignac M. Exploring the role of contextual factors in disability models. *Disabil Rehabil* 2006;28:135–40.
23. Borg J, Larsson S, Östergren P-O, Eide AH. The Friction model – a dynamic model of functioning, disability and contextual factors and its conceptual and practical applicability. *Disabil Rehabil* 2010;32:1790–7.
24. Huber JG, Sillick J, Skarakis-Doyle E. Personal perception and personal factors: incorporating health-related quality of life into the International Classification of Functioning, Disability and Health. *Disabil Rehabil* 2010;32:1955–65.
25. Offenbächer M, Sauer S, Hieblinger R, et al. Spirituality and the International classification of functioning, disability and health: content comparison of questionnaires measuring mindfulness based on the International classification of functioning. *Disabil Rehabil* 2011;33:2434–45.
26. Elsaesser L-J, Bauer SM. Provision of assistive technology services method (ATSM) according to evidence-based information and knowledge management. *Disabil Rehabil Assist Technol* 2011;6:386–401.
27. Geyh S, Peter C, Müller R, et al. The personal factors of the International Classification of Functioning, Disability and Health in the literature – a systematic review and content analysis. *Disabil Rehabil* 2011;33:1089–102.
28. Cieza A, Geyh S, Chatterji S, et al. ICF linking rules: an update based on lessons learned. *J Rehabil Med* 2005;37:212–18.
29. Gan S-M, Tung L-C, Ye C-H, et al. The ICF-CY-based structural equation model of factors associated with participation in children with autism. *Dev Neurorehabil* 2014;17:24–33.
30. Ustun T B. Using the International classification of functioning, disease and health in attention-deficit/hyperactivity disorder: separating the diseased from its Epiphenomena. *Ambul Pediatr* 2007;7:132–9.
31. Anaby D, Miller WC, Eng JE, et al. Can personal and environmental factors explain participation of older adults? *Disabil Rehabil* 2009;31:1275–82.
32. Fougeyrollas P, Noreau L, Bergeron H, et al. Social consequences of long term impairments and disabilities: conceptual approaches and assessment of handicap. *Int J Rehabil Res* 1998;21:127–41.