

The Psychologist's Role: A Neglected Presence in the Assistive Technology Assessment Process

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Abstract

Objective According to the ideal model of an AT assessment (ATA) process in the centre for technical aid proposed by Scherer and Federici and colleagues [15, 16], this study puts forward a proposal for the precise placement of the clinical psychologist in the process of matching people and technology and outlines the skills required for each stage of the intervention.

Main content The recent advance of the biopsychosocial model, the call for integration of objective and subjective measures, the recognized growing relevance of personal factors to the long-term success of assistive technology (AT) matching, and the increasing attention to the 'imbalance of power' [2] in the relationship between professionals and users all require a change of attitude and practice in terms of the role of the psychologist in the ATA process. Therefore it is time for 'psycho' to act as more than simply a prefix.

Results The international scientific literature has never given a clear definition of the role and competencies of the (clinical) psychologist in the rehabilitation field. A search for 'psychologist role' and 'disab*' or 'rehabil*' in the 'abstract' field of the main scientific production's databases elicits no more than 28 journal articles from 1973 to 2010. Very few of these refer to the placement of the clinical psychologist in a centre for technical aid.

Conclusion The World Health Organization should face the major challenge of operationalizing the personal factors of the ICF after ten years of deafening silence. There is a risk that the call for complexity, implied in the biopsychosocial model, will be ignored, reducing the ICF to merely a flat juxtaposition of medical and social models without either a real qualitative leap or a creative synthesis for comparison.

Keywords. ICF, assistive technology assessment process, psychologist's role, biopsychosocial model

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1. Psychologists' dwindling role in Assistive Technology Assessment

Psychology itself is dead. Or, to put it another way, psychology is in a funny situation. My college, Dartmouth, is constructing a magnificent new building for psychology. Yet its four stories go like this: The basement is all neuroscience. The first floor is devoted to classrooms and administration. The second floor houses social psychology, the third floor, cognitive science, and the fourth, cognitive neuroscience. Why is it called the psychology building? [4 pp. xi-xii]

We ask, along with the neuroscientist Gazzaniga, why the disability model of the *ICF: International Classification of Functioning, Disability and Health* (ICF) is called the bio-psycho-social model [24] when nothing of the psychological appears within it? We do not believe that psychology is obsolete but surely the (clinical) psychologists risk to do not find where dwelling if the ICF's disability model does not provide a 'floor' for the psychology. Perhaps it is not so bad if the problem is confined to (clinical) psychologists' occupation in the world, but it would be very bad if psychology did not use available tools to prevent assistive technology (AT) being abandoned [6, 11, 13, 17, 18, 21, 22, 25]; it should safeguard an AT assessment (ATA) user-driven *process* through which the selection of one or more technological aids for an *assistive solution* is facilitated by the comprehensive utilization of clinical measures, functional analysis, and psycho-socio-environmental evaluations that address, in a specific context of use, the personal *well-being* of the user through the best *matching* of user/client and assistive solution [15].

If one searches for 'psychologist role' and 'disab*' or 'rehabil*' in the 'abstract' field of the main databases of the scientific production index, such as Cambridge Scientific Abstracts (CSA), PubMed, Medline, PsyArticle, PsyInfo, Eric, Ebsco, from 1900 until now, the findings are astonishing: only 56 products are listed between 1973 and 2010. By eliminating studies referring to school psychologists or related only marginally to the (clinical) psychologist's role in rehabilitation and AT assignment, the products come down to 36: eight book chapters and monographs, and 28 journal articles. Twenty-three of them were published between 1973 and 1999, namely within a period of 26 years, and the remaining 13 in the last 11 years. We found just two [sic!] conference papers [7, 9] in the AAATE conference proceedings by searching for 'psycholog*' in titles or abstracts.

The international scientific literature has never given a clear definition of the role and competencies of the psychologist in the rehabilitation field. In the ATA process the psychologist's role is named but is usually confined to the testing and diagnostic phases.

The professional skills of psychologists and their usefulness in:

- (i) advocating user's request in the user-driven *process* through which the selection of one or more technological aids for an *assistive solution* is reached;
 - (ii) acting as mediator between the user seeking a solution and the multidisciplinary team of a centre for technical aid;
 - (iii) team facilitating among members of the multidisciplinary team, and finally;
 - (iv) reframing the relationship between the client and his or her family within the framework of the new challenges and limitations and restrictions they face;
- are all issues of minor relevance in the AT scientific literature [1, 14, 15].

Nevertheless, the recent advance of the biopsychosocial model in the social and scientific communities [12], the integration of objective and subjective measures in the

diagnostic process [3, 5, 19, 20], the recognized relevance of contextual factors and, particularly, the personal factors affecting the long-term success of AT matching [8], and the increasing attention to the ‘imbalance of power’ [2] in the relationship between professionals and users all require a change of attitude and practice in relation to the role of the psychologist in the ATA process.

It is reasonable to assume that the deafening silence on the psychologist’s role in the ATA process is largely owed to the lack of personal factor codes in the ICF.

2. Nothing about ‘Psycho’ without Psychologists: the ICF and the need for its revision

The second part of the ICF covers ‘contextual factors’, divided into two components: the environmental factors and the personal factors. The latter are not actually coded in the ICF framework but are involved in the process of functioning and disability and are described in the conceptual background of the Classification. Personal factors are defined in the ICF as ‘the particular background of an individual’s life and living and comprise features of the individual that are no part of a health condition or health states’ [24]. They include ‘gender, race, age, other health conditions, fitness, lifestyle, habits, upbringing, coping styles, social background, education, profession, past and current experience, overall behaviour pattern and character style, individual psychological assets and other characteristics, all or any of which may play a role in disability at any level’ [19, 24]. They encompass one domain (Internal influences on functioning and disability) and one construct (Impact of the attributes of the person) (table 1). The domain is ‘what’ the ICF classifies in each of its components at the highest semantic level (e.g. Mental functions, Structures of the nervous system, Learning and applying knowledge, etc.) and the construct refers to ‘how’ each category is weighted in an operational way by the means of specific qualifiers. For example, [24 Annex 2], the performance of a person (positive aspect: functioning qualifier to weight) who lost his leg (body structure’s domain [cod. s750]; negative aspect: impairment qualifier [cod. s750.4]) in a work-related accident and since then has used a cane (environmental factor’s construct [cod. e1201; positive aspect; facilitator qualifier e1201.+3) but faces moderate difficulties in walking around (activities and participation’s construct; negative aspect: activity limitation qualifier [cod. d4500.2]) because the sidewalks in the neighbourhood are very steep and have a very slippery surface (environmental factors’ construct: negative aspect: barriers qualifier [cod. e2100.-3]) is classified as ‘moderate restriction in performance of walking short distances’: cod. d4500.2.

Table 1. An overview of ICF [from 24 p. 14].

	Part 1: Functioning and Disability		Part 2: Contextual Factors	
Components	Body Functions and Structure	Activities and Participation	Environmental Factors	Personal Factors
Domains	Body functions Body structures	Life areas (tasks, actions)	External influences on functioning and disability	Internal influences on functioning and disability

Constructs	Change in body functions (physiological)	Capacity Executing tasks in a standard environment	Facilitation of hindering impact of features of the physical, social and attitudinal world	Impact of attributes of the person
	Change in body structures (anatomical)	Performance Executing tasks in the current environment		
Positive aspect	Functional and structural integrity	Activities and Participation	Facilitators	not applicable
Negative aspect	Functioning		Barriers/hindrance	not applicable
	Impairment	Activity limitation Participation restriction		
	Disability			

The use of the cane aid reduces the impact of the physical impairment and the environmental barriers on the individual’s capacity and performance, although the individual capacity without assistance and/or in a in a standardized environment might be considered more severe [e.g., cod. d4500.2 3]). The whole of this assessment process may be carried out by a multidisciplinary team where a (clinical) psychologist professional might not be necessary, since competence in terms of human cognition, emotion and behaviours and the social relations system is not essential for classifying the person in the example or for prescribing the aid (cane). This bio-social perspective on functioning and disability classification means the ‘psycho’ remains just a prefix in a word, namely the ‘internal influences on functioning and disability’ and the ‘impact of attributes of the person’ (table 1) are not considered. This prevents cultural and professional development of (clinical) psychologist’s role in the field of ATA process. Generally, in a centre for technical aid, the clinical psychologist does not belong to the multidisciplinary team of professionals, often being present just as an external consultant. Engineers, physiotherapists and specialists in rehabilitation (e.g. speech language pathologists, audiologists, optometrists, special educators, occupational therapists) usually comprise the internal team of a centre for technical aid and define the current bio-social-outlook on disability.

The ICF imputes the lack of codes for personal factors to ‘the large social and cultural variance associated with them’ [24]. The real novelty of the bio-psycho-social model compared with the previous medical and social ones, however, is precisely the presence of the ‘psycho’ prefix between ‘bio’ and ‘social’. The inadequate coding of such an important component of the contextual factors ten years after the ICF edition, given also its distinctive value for the whole Classification, creates a disturbing parallel between the ICIDH of 1980 [23] and the ICF: ICIDH aimed to describe and represent disability in terms of the social model but ended up revealing a substantial consistency with the medical model, just so does the ICF seem to ignore the call for complexity, implied in the biopsychosocial model, and act only, literally, as an integration between

the medical model and the social one without a real qualitative leap. The psychological variables comprising ICF personal factors can make a substantial difference in a rehabilitation process and, particularly, they play a central role during the assistive technology assessment process. The lifestyle, the coping styles, the social and cultural background or the character style really determine the success of person and technology matching. An appropriate psychological evaluation or a precise clinical intervention with the user/client and/or their significant human context over the course of the whole assistive technology assignment process may prevent, for example, the abandonment or the discard of the assistive solution provided, a big problem of the matching outcome. It is reasonable to assume that the lack of importance given to the 'systemic' skills of the psychologist in matching the person with the technology process is largely owed to the non-coding of personal factors in the ICF.

The ICIDH's revision was performed by including environmental factors into the coding scheme [10], today we claim that the ICF needs for its revision since it would be urgent to develop personal factors.

3. Sketching the psychologist's role in the ATA process

According to the ideal model of an ATA process in a centre for technical aid proposed by Scherer and Federici and colleagues [15, 16], the phases in which the clinical psychologist's competences are specifically employed may be divided into six stages (the three blue hexagons marked ' ψ ' in figure 1):

1. **Acceptance and evaluation of the user's request** (ψ hexagon n. 1)

- a. *User data collection*

When the user provides information to the centre for technical aid, data are collected, and the case is opened and transmitted to the multidisciplinary team. All the clinical measures, functional analysis, and psycho-socio-environmental evaluations provided by the user are analysed by the clinical psychologist in order to: (i) profile, within the limits of the data collected, the user/client according to a biopsychosocial and holistic perspective; (ii) draw up a psychological report for the subsequent multidisciplinary team evaluation.

- b. *Meeting with the multidisciplinary team*

The multidisciplinary team evaluates the user's request and data. The clinical psychologist's tasks at this stage are: (i) to emphasize the unique and peculiar aspects of the case represented by the user/client in terms of personal factors and of his or her human and relational context of life; (ii) to advocate user's request in the multidisciplinary team; (iii) to facilitate team members' communications and solution-seeking in the interest of the user/client.

2. **Promoting the assistive solution** (ψ hexagon n. 2)

- a. *Assistive solution multidisciplinary team evaluation*

The multidisciplinary team arranges a suitable setting for the matching assessment and, along with the user, assesses the assistive solution proposed, tries the solution and gathers outcome data. After the matching process the multidisciplinary team evaluates the outcome. If it is successful, the team proposes an assistive solution to the user and

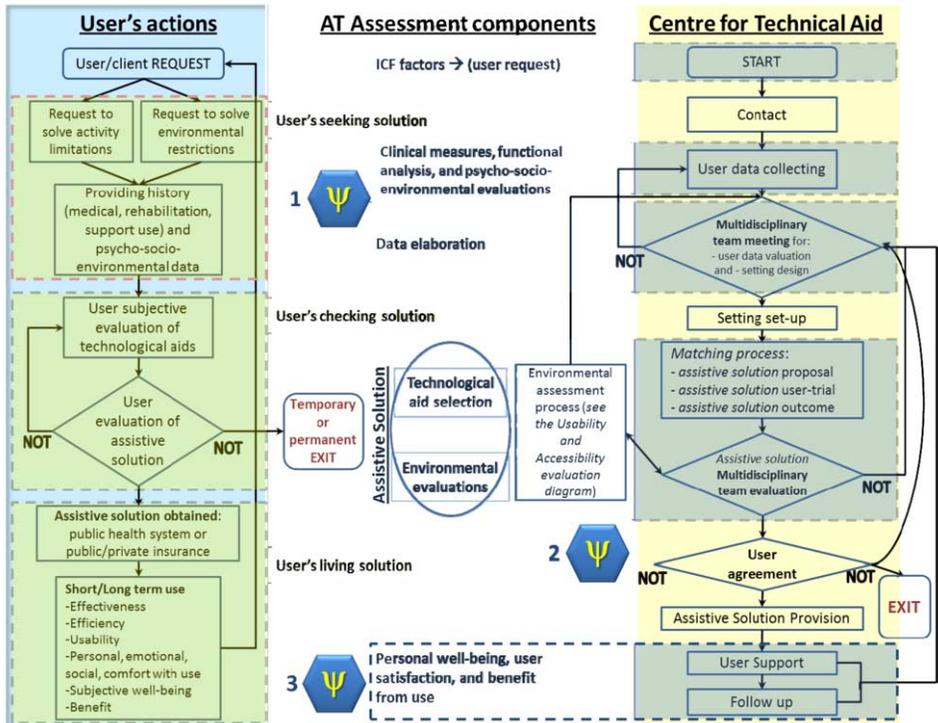


Figure 1. Flow chart of ATA process in a centre for technical aid: The ATA process can be read both from the perspective of the user/client or from the perspective of the centre for technical aid. In the central column are indicated the ATA components. The three blue hexagons with a 'ψ' point out where the clinical psychologist' competences are specifically requested [adapted from 15, 16].

schedules a new appointment. If it is not successful, the process restarts. In this stage the clinical psychologist advocates the user's request, guaranteeing a user-driven assignment process through which the selection of one or more technological aids for an assistive solution is reached. Active listening, empathy, ability to reformulate in a shared language the user/client requirements are the main instruments employed by the clinical psychologist in this stage. Furthermore, the psychologist may offer the opportunity to reframe the relationship between the user/client and his or her family within the framework of the new challenges, limitations and restrictions they face with the introduction of a new AT.

b. User agreement

The multidisciplinary team proposes the assistive solution to the user/client who evaluates whether or not the technological aid proposed by the professionals is a suitable solution. If yes, the user/client goes ahead with the process, but if not, the user/client exits the process without a solution, or waits for new technological products or professionals' solutions. The clinical psychologist may play a central role in this stage, e.g. by requesting the user/client to explore the reasons for rejection, especially if they are related to personal factors or factors depending on the context of human relationships. Although the main

objective of the ATA process is the best assistive solution for the user/client, it is equally true that often an adequate solution is better than no solution.

3. **User support and follow-up** (ψ hexagon n. 3)

When the technological aid is delivered to the user/client, follow-up and ongoing user support are activated. The clinical psychologist works to promote the well-being of the user/client by regularly monitoring the good quality of matching achieved in terms of impact on his or her personal empowerment.

4. **Conclusion**

In the present study we have urged a change of attitude and practice in relation to the role of the clinical psychologist in the ATA process, spurred by the recent advance of the biopsychosocial model in the social and scientific communities, the integration of objective and subjective measures in the diagnostic process, the recognized relevance of contextual factors and, particularly, the personal factors affecting the long-term success of AT matching, and the increasing attention to the 'imbalance of power' in the relationship between professionals and users. We are convinced that ICF revision is urgently needed in order to develop those personal factors which can make substantial differences in a rehabilitation process and, particularly, during the ATA process. The lifestyle, the coping styles, the social and cultural background or the character style really determine the success of person and technology matching.

References

- [1] P. Barry and J. O'Leary, Roles of the psychologist on a traumatic brain injury rehabilitation team, *Rehabilitation Psychology* **34** (1989), 83-90.
- [2] M. Brown and W.A. Gordon, Empowerment in measurement: "muscle," "voice," and subjective quality of life as a gold standard, *Archives of Physical Medicine and Rehabilitation* **85** (2004), S13-S20.
- [3] S. Federici and F. Meloni, WHODAS II: Disability self-evaluation in the ICF conceptual frame, in: *International Encyclopedia of Rehabilitation*, J. Stone and M. Blouin, eds., Center for International Rehabilitation Research Information and Exchange (CIRRIE), Buffalo, NY, 2010, pp. 1-22.
- [4] M.S. Gazzaniga, *The Mind's Past*, University of California Press, Berkeley, CA, 1998.
- [5] N.M. Kayes and K.M. McPherson, Measuring what matters: does 'objectivity' mean good science?, *Disability and Rehabilitation* **32** (2010), 1011-1019.
- [6] J.A. Lenker and V.L. Paquet, A New Conceptual Model for Assistive Technology Outcomes Research and Practice, *Assistive Technology* **16** (2004), 1-10.
- [7] S. Mitani, S. Fujisawa, A. Mima, H. Shiota, K. Yanashima, M. Takahara, and O. Sueda, The Importance of Measuring Medical and Psychological Characteristics in Visibility Measurement of Persons with Low Visual Capability, in: *Challenges for Assistive Technology: AAATE 07*, G. Eizmendi, J.M. Azkoitia, and G. Craddock, eds., IOS Press, Amsterdam, NL, 2007, pp. 331-335.
- [8] K.P.S. Nair, Life goals: the concept and its relevance to rehabilitation, *Clinical Rehabilitation* **17** (2003), 192-202.
- [9] M. Nihei, T. Inoue, Y. Kaneshige, and M.G. Fujie, Proposition of a New Mobility Aid for Older Persons: Reducing psychological conflict associated with the use of Assistive Technologies, in: *Challenges for Assistive Technology: AAATE 07*, G. Eizmendi, J.M. Azkoitia, and G. Craddock, eds., IOS Press, Amsterdam, NL, 2007, pp. 80-84.
- [10] D. Pfeiffer, The ICIDH and the need for its revision, *Disability & Society* **13** (1998), 503-523.

- [11] B. Philips and H. Zhao, Predictors of Assistive Technology Abandonment, *Assistive Technology* **5** (1993), 36-45.
- [12] T.G. Plante, *Contemporary Clinical Psychology*, Wiley and Sons, New York, NY, USA, 2005.
- [13] M.L. Riemer-Reiss and R. Wacker, Factors Associated with Assistive Technology Discontinuance Among Individuals with Disabilities, *Journal of Rehabilitation* **66** (2000), 44-50.
- [14] M.J. Scherer, ed., *Living in the state of stuck*, Brookline Books, 2000.
- [15] M.J. Scherer and S. Federici, eds., *Assistive Technology Assessment: A Handbook for Professionals in Disability, Rehabilitation and Health Professions*, CRC Press, London, UK, in press.
- [16] M.J. Scherer, S. Federici, L. Tiberio, M. Pigliautile, F. Corradi, and F. Meloni, ICF core set for Matching Older Adults with Dementia and Technology, *Ageing International* (Online First).
- [17] M.J. Scherer, C.L. Sax, A. Vanbiervliet, L.A. Cushman, and J.V. Scherer, Predictors of assistive technology use: The importance of personal and psychosocial factors., *Disability and Rehabilitation* **27** (2005), 1321-1331.
- [18] S. Söderström and B. Ytterhus, The use and non-use of assistive technologies from the world of information and communication technology by visually impaired young people: a walk on the tightrope of peer inclusion, *Disability & Society* **25** (2010), 303-315.
- [19] S. Ueda and Y. Okawa, The subjective dimension of functioning and disability: what is it and what is it for?, *Disability and Rehabilitation* **25** (2003), 596-601.
- [20] S. Uppal, Impact of the timing, type and severity of disability on the subjective well-being of individuals with disabilities, *Social Science and Medicine* **63** (2006), 525-539.
- [21] R. Verza, M.L.L. Carvalho, M.A. Battaglia, and M.M. Uccelli, An interdisciplinary approach to evaluating the need for assistive technology reduces equipment abandonment, *Multiple Sclerosis* **12** (2006), 88-93.
- [22] D. Waldron and N. Layton, Hard and Soft Assistive Technology: defining roles for clinicians, *Australian Occupational Therapy Journal* **55** (2008), 61-64.
- [23] World Health Organization (WHO), *ICIDH: International Classification of Impairments, Disabilities, and Handicaps. A Manual of classification relating to the consequences of disease*, WHO, Geneva, 1980.
- [24] World Health Organization (WHO), *ICF: International Classification of Functioning, Disability, and Health*, WHO, Geneva, 2001.
- [25] Z. Zimmer and N.L. Chappell, Receptivity to new technology among older adults, *Disability and Rehabilitation* **21** (1999), 222-230.