The development of a structured schedule for collecting ICF-CY-based information on disability in school and preschool children: an action research from Italy

Alberto Raggi[a], Paolo Meucci[a], Matilde Leonardi[a], Tiziana Barbera[b], Annamaria Villano[b], Maria R. Caputo[b] and Alessandra Grassi[b]

The aim of this study was to present the development of an instrument to collect disability information in school settings, based on the International Classification of Functioning, Disability and Health, Children and Youth version (ICF-CY): the ICF-PEI Schedule (ICF-CY-based schedule for Individualized Education Plan). Through an action-research process, a group of 14 teachers participated in the definition of a comprehensive list of ICF-CY categories, which were then used in a pilot test: categories relevant in at least 30% of the cases were retained. Teachers also reported the most relevant difficulties they had in using the ICF-CY questionnaires: these were discussed in plenary. On the basis of a pilot test and teachers' difficulties, a set of structured, easy to use and feasible questions for the school context were developed. A total of 118 ICF-CY categories were included in the preliminary list and 67 were retained. The most relevant difficulties in using ICF-CY questionnaires were as follows: obtaining reliable information on bodily impairments; using capacity in activities and participation; using qualifiers in 'borderline situations'; and identifying systems and policies as barriers or facilitators. The ICF-PEI Schedule is composed of 62 items, with a simplified rating scale. Teachers are asked to rate performance, which is directly observed, and to address which environmental factors impact it; thus, environmental factor rating is simplified. The ICF-PEI Schedule was drafted as a feasible instrument for school settings to collect and exploit functioning and disability data. Teachers can fruitfully employ it to assist in the definition of educational objectives and verify them longitudinally.

Die vorliegende Studie möchte die Entwicklung eines Instruments vorstellen, mit dem Angaben über behinderte Schüler anhand der Internationalen Klassifikation der Funktionsfähigkeit, Behinderung und Gesundheit bei Kindern und Jugendlichen (ICF-CY) erfasst werden: das ICF-PEI-Programm (ICF-CY-Programm für einen auf einzelne Personen zugeschnittenen Bildungs- und Förderplan). Im Rahmen eines maßnahmebezogenen Forschungsverfahrens trugen 14 Lehrer zur Definition einer umfassenden Liste mit ICF-CY-Kategorien bei, die anschließend in einem Pilotprojekt Niederschlag fanden: Kategorien, die in mindestens 30% aller Fälle maßgeblich waren, wurden beibehalten. Die Lehrer äußerten sich auch zu den Schwierigkeiten, die sie primär bei der Anwendung der ICF-CY-Fragebögen hatten, und erörterten diese im Plenum. Ausgehend von dem Pilotprojekt und den von den Lehrern erwähnten Schwierigkeiten wurden strukturierte und leicht realisierbare Fragen für den schulischen Bereich entwickelt. In die engere Wahl kamen insgesamt 118 ICF-CY-Kategorien, von denen 67 beibehalten wurden. Die größten Schwierigkeiten bei der Anwendung der ICF-CY-Fragebögen waren der Erhalt zuverlässiger Informationen zu körperlicher Beeinträchtigung, die Verwendung der Kapazität bei Aktivitäten und Teilhabe, die Verwendung von Scores in grenzwertigen Situationen und die Ermittlung von Systemen und Regelwerken als Hindernisse oder Förderfaktoren (Facilitators). Das ICF-PEI-Programm setzt sich aus 62 Items mit vereinfachter Rating-Skala zusammen. Die Lehrer wurden gebeten, die direkt beobachtete Performance einzuschätzen und sich dazu zu äußern, welche Umgebungsfaktoren dabei eine Rolle spielen; somit wird das Rating der Umgebungsfaktoren vereinfacht. Das ICF-PEI-Programm wurde als realisierbares Instrument entwickelt, um im schulischen Bereich Daten zu Funktionsfähigkeit und Behinderung erfassen und auswerten zu können. Lehrer können es bei der Definition von bildungstechnischen Zielen nutzbringend einsetzen und diese longitudinal verifizieren.

El objetivo de este estudio fue presentar la evaluación de un instrumento que sirve para recopilar datos sobre discapacidad en el ámbito escolar, y que está basado en la Clasificación Internacional del Funcionamiento, de la Discapacidad y de la Salud: versión para la infancia y la adolescencia (CIF-IA): el programa CIF-PEI (programa basado en CIF-IA para el Plan Educativo Individualizado). Siguiendo un proceso de acción-investigación, un grupo de 14 profesores participaron en la elaboración de una lista exhaustiva de categorías de CIF-IA que, a continuación, fueron utilizadas en una prueba piloto; se conservaron las categorías relevantes en un mínimo del 30% de los casos. Además, los profesores informaron sobre las principales dificultades que habían surgido al utilizar los cuestionarios de CIF-IA, las cuales fueron tratadas a fondo. A partir de la prueba piloto y las dificultades mencionadas anteriormente, se redactaron una serie de preguntas estructuradas, viables y fáciles de usar en relación con el ámbito escolar. En la lista preliminar se incluyeron un total de 118 categorías de CIF-IA y se conservaron 67. Las dificultades más relevantes con respecto al uso de los cuestionarios CIF-IA fueron: la obtención de información fiable sobre discapacidades corporales; el uso de la

0342-5282 © 2013 Wolters Kluwer Health | Lippincott Williams & Wilkins DOI: 10.1097/MRR.0000000000000042

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

capacidad en las actividades y la participación; el uso de criterios de calificación en "situaciones límite"; y la identificación de sistemas y políticas como obstáculos o facilitadores. El programa CIF-PEI contenía 62 ítems, con una escala de valoración simplificada. Se pidió a los profesores que puntuasen el rendimiento, mediante observación directa, y que explicasen qué factores medioambientales influían en él; por lo tanto, la valoración de los factores medioambientales fue una valoración simplificada. El programa CIF-PEI fue elaborado como un instrumento viable para recopilar y hacer uso de datos de funcionamiento y discapacidad en ámbitos escolares. El profesorado puede emplear este programa de forma productiva con el fin de facilitar el establecimiento de los objetivos educativos y su verificación longitudinal.

Cette étude avait pour objet de décrire le développement d'un instrument destiné à recueillir des informations sur le handicap dans les établissements scolaires, en utilisant la classification internationale du fonctionnement, du handicap et de la santé – dans sa version pour les enfants et les jeunes (ICF-CY): le cadre ICF-PEI (cadre ICF-CY pour plan d'enseignement individualisé). Par le biais d'un processus de recherche-action, un groupe de 14 enseignants ont participé à la définition d'une liste exhaustive des catégories ICF- CY, qui ont ensuite été utilisées dans un test pilote: les catégories pertinentes dans au moins 30% des cas ont été retenues. Les enseignants ont également signalé les difficultés les plus pertinentes qu'ils rencontraient en utilisant les questionnaires ICF- CY: ces dernière ont ensuite été examinées en séance plénière. Sur la base d'un test pilote et des difficultés des enseignants, un ensemble de questions structurées, faciles à utiliser et réalisables dans le contexte scolaire a été développé. Un total de 118 catégories ICF-CY ont été incluses dans la liste préliminaire, et 67 ont été retenues. Les difficultés les plus pertinentes concernant l'utilisation des questionnaires ICF- CY étaient les suivantes: obtenir des informations fiables sur les déficiences physiques ; utiliser les capacités dans les activités et la participation ; utiliser les qualificatifs dans les «situations limites»; et identifier les systèmes et les politiques comme autant d'obstacles ou de facteurs facilitants. Le cadre ICF-PEI se compose de 62 articles, avec une échelle de notation simplifiée. Les enseignants sont invités à noter la performance directement observée, et à gérer les facteurs environnementaux qui l'affectent; la notation du facteur environnemental est ainsi simplifiée. Le cadre ICF-PEI a été élaboré comme un instrument possible pour permettre aux établissements scolaires de recueillir et d'exploiter les données sur le fonctionnement et le handicap. Les enseignants sont à même de les employer utilement pour aider à définir les objectifs pédagogiques et en assurer le contrôle longitudinal. *International Journal of Rehabilitation Research* **00:000–000 © 2013 Wolters Kluwer Health | Lippincott Williams & Wilkins.**

International Journal of Rehabilitation Research 2013, **00**:000–000

Keywords: action research, disability assessment, disability evaluation, ICF-CY, school

[a]Neurology, Public Health and Disability Unit, Neurological Institute C. Besta IRCCS Foundation, Milan and [b]'Silvio Pellico' Compulsory State School, Arluno, Italy

Correspondence to Alberto Raggi, PsyD, Neurology, Public Health and Disability Unit, Neurological Institute C. Besta IRCCS Foundation, Via Celoria 11, 20133 Milan, Italy
Tel: +39 02 2394 3105 x2521; fax: +39 02 2394 2442;
e-mail: araggi@istituto-besta.it

Received 5 September 2013 **Accepted** 21 October 2013

Introduction

Disability is a state of reduced functioning that arises in an individual and in interaction with features of the environment. Such a definition is grounded in the biopsychosocial model of the International Classification of Functioning, Disability and Health, Children and Youth version (ICF-CY) (World Health Organization, 2007). For children with disability, school is one of the most relevant environments, and access to education is a human right reinforced by the UN Convention on the Rights of Persons with Disabilities (United Nations, 2006).

The provision of disability benefits and the approaches to school-based interventions differ from country to country. In Italy, these are regulated by Law no. 104 (1992), which envisages four passages and documents: the 'Notification Card', by which schools notify the presence of students with learning or relational difficulties to disability services; the 'Functional Diagnosis', which describes the student's psychological and physical status; the 'Dynamic Functional Profile', which describes the level of cognitive–behavioural development and the achievable goals; and the 'Individualized Education Plan' (Piano Educativo Individualizzato – PEI), which describes the educational actions planned for the forthcoming 6–12 months according to the goals identified in the Dynamic Functional Profile. However, the lack of a shared language among disability services, teachers and parents – all involved in these passages – and the persistence of a 'silo' effect hindering cooperation between institutions have been reported as critical issues (De Polo *et al.*, 2009). The consequence is that the information included in the PEI overlaps with that of the Functional Diagnosis and of the Dynamic Functional Profile, and is difficult to be updated within a 6–12-month period and to be synthesized for describing educational actions. At a system level, data lacking a common denominator cannot be used to plan context-wide actions targeting groups of children. In our opinion, the common denominator may be represented by the ICF-CY classification, which allows the systematiza-

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

tion of information on impairments, activity limitations, participation restrictions and environmental factors (EFs) in a consistent framework.

The possibility of describing functioning of one or more children with the same approach is of particular interest given the need to follow up children over different stages and up to the conclusion of the education process (Fusaro *et al.*, 2009; McCormack *et al.*, 2011; Ståhl *et al.*, 2011; Foley *et al.*, 2012). However, ICF-CY application is hampered by the classification's complexity and limited feasibility in educational practice, for example, because of the difficulty in selecting the appropriate set of ICF-CY categories and qualifiers case by case (Ibragimova *et al.*, 2009; Björck-Åkesson *et al.*, 2010; Martinuzzi *et al.*, 2010), as well as the number of categories [more than 1600 divided in the four domains of body functions (BF), body structures (BS), activities and participation (A&P) and EF]. However, it would be extremely useful to characterize the features of disability in children beyond classical categories used to provide benefits (Barton *et al.*, 2012) and thus move to the definition of tailored educational programmes. The aim of this paper is to present the development of an ICF-CY-based schedule to collect and exploit disability information, for use in school settings to define educational objectives: the ICF-PEI Schedule.

Methods

An action-research approach was used that enabled us to analyse practical difficulties in ICF-CY application and develop tailored solutions. Fourteen teachers participated in the research and the whole process was supervised by researchers with expertise in ICF training and implementation. The process was divided into three phases preceded by an ICF-CY training (Francescutti *et al.*, 2009).

The first phase was the identification of a comprehensive list of ICF-CY categories for a pilot test. The list was based on the age-specific ICF-CY questionnaires for age 3–6 and 7–12 years (French WHO Collaborating Centre for the Family of International Classification, 2013), which covered the age group of children attending preschool and primary school. Several categories were added to this list if in the opinion of the research group they had an impact on children's functioning at school, for example categories referring to specific tasks (d140 – Learning to read), or behaviours (d230 – Managing daily routine). Similarly, BF categories were added if impairments could impact on school activities (e.g. impairments in b760 – Functions of control of voluntary movement, may impact on writing).

In the second phase, the relevance of selected categories was tested. Teachers were asked to fill in the predefined list, referring to one of the children for whom they were responsible. Age in months, sex and diagnoses coded according to the International Classification of Diseases (World Health Organization, 1992–1994) were also collected, and each case was discussed in plenary sessions. The children's parents were asked to provide written consent to participate.

Definition of relevance was based on frequency of category use; to our knowledge there are only four experiences of identification of relevant ICF categories in children, with thresholds varying between 30 and 40% (Montirosso *et al.*, 2009a, 2009b; Andrade *et al.*, 2012; Leonardi *et al.*, 2012a); therefore, we decided to rely on a conservative 30% selection threshold (for EF, it comprised both facilitators and barriers). The decision to address the presence of problems enabled us to focus on areas requiring intervention, and is consistent with the way in which data are organized in the Dynamic Functional Profile and the Functional Diagnosis.

The third phase was the development of questions based on retained categories and on teachers' difficulties with ICF-CY use. These reports were discussed in plenary and divided into topics; for each topic the supervisor drafted a proposal that was again discussed.

Results

Fourteen teachers, with a mean of 10.2 (SD 7.7) years of teaching expertise and support to children with disabilities, participated in the research.

Phase 1: defining the list of ICF-CY categories

The categories that were added to the list of ICF-CY categories were mostly from the mental functions chapter (b114 – Orientation functions, b117 – Intellectual functions, b130 – Energy and drive functions, b163 – Basic cognitive functions, b167 – Language functions, b172 – Calculation functions). Table 1 reports BF categories: 34 were selected, mostly from mental and movement functions. Table 2 reports BS categories: 13 were selected, mostly from movement-related structures. Table 3 reports A&P categories: 36 were selected, mostly from learning and mobility. Table 4 reports EF categories: 35 were selected, mostly from products and technologies, and support chapters. Therefore, the preliminary list was composed of 118 categories.

Phase 2: pilot study

Data from 14 children (nine boys, aged 66–147 months, mean 111.6, SD 26.5) were collected. The most common diagnoses were disorders of psychological development, such as pervasive developmental disorder (nine children); congenital malformations, deformations and chromosomal abnormalities (six children) and mental retardation (three children). After the pilot study 67 categories were retained (Tables 1–4): 15 were BF, nine of which were mental functions; four were BS; 28 were A&P, six of which were related to mobility; and 20 were EF, seven of which were related to personal support.

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Table 1 ICF-relevant categories from the domain of body functions

ICF	Category	Impairments (%)
b110	Consciousness functions	–
b114	Orientation functions	42.9
b117	Intellectual functions	57.1
b130	Energy and drive functions	57.1
b134	Sleep functions	–
b140	Attention functions	100
b144	Memory functions	71.4
b147	Psychomotor functions	85.7
b156	Perceptual functions	–
b163	Basic cognitive functions	42.9
b167	Mental functions of language	85.7
b172	Calculation functions	57.1
b210	Seeing functions	42.9
b230	Hearing functions	–
b280	Sensation of pain	–
b320	Articulation functions	57.1
b410	Health functions	–
b435	Immunological system functions	–
b440	Respiration functions	–
b445	Respiratory muscle functions	–
b510	Ingestion functions	–
b515	Digestive functions	–
b525	Defecation functions	–
b540	General metabolic functions	–
b620	Urinary functions	42.9
b6703	Genital functions	–
b710	Mobility of joint functions	–
b730	Muscle power functions	–
b735	Muscle tone functions	–
b750	Motor reflex functions	–
b760	Control of voluntary movement functions	71.4
b765	Involuntary movement functions	42.9
b770	Gait pattern functions	71.4
b850	Functions of hair	–

Table 2 ICF-relevant categories from the domain of body structures

ICF	Category	Impairments (%)
s110	Structure of brain	42.9
s120	Spinal cord and related structures	42.9
s2	Eye, ear and related structures	42.9
s3	Structures involved in voice and speech	–
s410	Structure of cardiovascular system	–
s430	Structure of respiratory system	–
s5	Structures related to the digestive, metabolic and endocrine systems	–
s6	Structures related to the genitourinary and reproductive systems	–
s710	Structure of head and neck region	–
s730	Structure of upper extremity	–
s750	Structure of lower extremity	42.9
s760	Structure of trunk	–
s8	Skin and related structures	–

Phase 3: development of questions

Teachers' difficulties with the use of ICF-CY questionnaires were grouped into four topics: difficulty in obtaining reliable information on BF and BS, because of confidentiality and technicality of the topic; difficulties with the capacity qualifier, whereas teachers felt confident with the performance qualifier; difficulties in selecting the most appropriate qualifier particularly with 'borderline situations' (e.g. between mild and moderate problems); and difficulties in identifying systems and policies as barriers or facilitators. On the basis of these comments and on the results of the pilot study, six actions were taken to develop the ICF-PEI Schedule, the English adaptation of which is presented in the Appendix.

(1) Item reduction: Categories falling below the 30% threshold and BS categories were excluded; the three categories related to services, systems and policies for special education were merged into one item. Because of the complexity of use, the category b163 – Basic cognitive functions (functions involved in acquiring knowledge about objects, events and experiences) was also excluded, and two activities that can be more easily addressed in the school context were used instead: d132 – Acquiring information (acquiring information on facts about persons, things and events) and d137 – Acquiring concepts (understanding and using basic and complex concepts related to the characteristics of things, persons or events). Therefore, 62 items, 14 of which referred to BF, 30 to A&P and 18 to EF, were used to develop the ICF-PEI Schedule.

(2) Simplification of qualifiers' scale: qualifiers for mild and moderate problems and those for severe and complete problems were merged. Therefore, a three-step scale was defined: 0 – no problem; 1 – mild-to-moderate problem and 2 – severe-to-complete problem.

(3) New formulation of BF items: a thorough mapping of items on ICF-CY categories content was performed to make items as explicit as possible. In case items covered different concepts, an effort to include all of them was made; for example, b130 – Energy and drive was operationalized as 'Does the student feel tired, listless, with no (or with too much) appetite, or does he/she have difficulties in controlling his/her behaviour?' In other cases, mapping was more direct: for example, b210 – Seeing functions was operationalized as 'Does the student have seeing problems?' An effort to operationalize response options was also taken, for example, for b210 – Seeing problems answers were operationalized as 'No, he/she does not have seeing problems; Yes, he/she has a visual deficit between 1/10 and 4/10; Yes, he/she has a visual deficit higher than 5/10'.

(4) New formulation of A&P items, where teachers had to refer to performance only, that is the ability to perform an activity accounting for EFs, judging the extent to which children had difficulties in performing each activity (e.g. b145 – Learning to read was operationalized as 'Does the student have difficulties in learning to read?'). Some categories may not be appropriate based on the student's age (e.g. learning to read for preschool children, or learning through actions with objects for older students) and therefore the 'Not Applicable' option was included.

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Table 3 ICF-relevant categories from the domain of activities and participation

ICF	Category	Performance problems (%)	Capacity problems (%)
d120	Other purposeful sensing	–	–
d131	Learning through actions with objects	42.9	42.9
d133	Acquiring language	57.1	57.1
d137	Acquiring concepts	–	–
d140	Learning to read	71.4	71.4
d145	Learning to write	71.4	85.7
d150	Learning to calculate	71.4	71.4
d210	Undertaking a single task	71.4	71.4
d220	Undertaking multiple tasks	85.7	100
d230	Carrying out daily routine	14.3	71.4
d250	Managing one's own behaviour	28.6	42.9
d310	Communicating with – receiving – spoken messages	42.9	42.9
d315	Communicating with – receiving – nonverbal messages	–	–
d330	Speaking	57.1	71.4
d331	Pretalking	–	–
d335	Producing nonverbal messages	42.9	42.9
d410	Changing basic body position	28.6	57.1
d415	Maintaining a body position	14.3	42.9
d440	Fine hand use	42.9	57.1
d445	Hand and arm use	–	–
d450	Walking	28.6	42.9
d455	Moving around	–	–
d480	Riding animals for transportation	–	–
d510	Washing oneself	14.3	42.9
d520	Caring for body parts	21.4	35.7
d530	Toileting	21.4	57.1
d540	Dressing	21.4	78.6
d550	Eating	14.3	57.1
d571	Looking after one's safety	0	42.9
d6	Domestic life	14.3	42.9
d710	Basic interpersonal interactions	57.1	71.4
d815	Preschool education	–	–
d820	School education	57.1	71.4
d860	Basic economic transactions	57.1	57.1
d880	Engagement in play	42.9	57.1
d9	Social community and civic life	28.6	57.1

(5) To address capacity, for each activity teachers are required to evaluate whether – for that specific activity – there are EF acting as facilitators or barriers: 'For these activities, are there environmental factors that … Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way; … Hinder: in a mild/moderate (– 1) or significant (– 2) way?'. Therefore, the level of capacity of a student is derived on the basis of his/her performance and on the degree to which EFs facilitate or hinder the activity. Parallel to this, while completing the A&P section, teachers also focus on presence of EF, which makes it easier to fill in this section.

(6) For EF, two approaches were taken. For items referring to products or services, the question was expressed in terms of availability with respect to students' needs: 'Are adequate transportation means for indoor or outdoor environment available to the student? YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance. NO, and this is a mild/moderate (– 1) or significant (– 2) problem. He/she does not need them'. For items referring to support and attitudes, their impact on the student is addressed: 'The support that the student received from parents, sisters and brothers has … a POSITIVE impact: it's of mild/moderate (+ 1) or significant (+ 2) relevance. … a NEGATIVE impact: and this is a mild/moderate (– 1) or significant (– 2) problem … Essentially a NEUTRAL impact'.

Discussion

This paper presents a new ICF-CY-based schedule aimed to facilitate teachers in the collection and exploitation of data on children's functioning and disability. There are three highly relevant strengths of the ICF-PEI Schedule.

First, using the three-step qualifier scale decreases teachers' uncertainty in choosing the most appropriate one. This may reduce the richness of disability profiles, but enables synthetic information to be derived on impairments, limitations and EF, such as the 'extension' and 'severity' indexes that are useful in describing ICF-based data in populations of adults and children with disabilities (Leonardi *et al.*, 2009a, 2009b, 2012b; Raggi *et al.*, 2010a, 2010b, 2011; Giovannetti *et al.*, 2013). Second, the exclusion of BS-related items and the reduction and simplification of BF items makes it less critical for teachers to report information dealing with body impairments, at the same time promoting stronger connections with disability services. Third, the organization of the A&P section facilitates the task of addressing performance and capacity: performance is

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Table 4 ICF-relevant categories from the domain of environmental factors

ICF	Category	Facilitators (%)	Barriers (%)
e1100	Food	–	–
e1101	Drugs	–	–
e115	Products and technology for personal use in daily living	–	–
e1152	Products and technology used for play	42.9	0
e120	Products and technology for personal indoor and outdoor mobility and transportation	42.9	0
e125	Products and technology for communication	57.1	0
e130	Products and technology for education	–	–
e150	Design, construction and building products and technology of buildings for public use	–	–
e155	Design, construction and building products and technology of buildings for private use	–	–
e215	Population	–	–
e225	Climate	–	–
e230	Natural events	–	–
e235	Human-caused events	–	–
e260	Air quality	–	–
e310	Immediate family	85.7	14.3
e315	Extended family	57.1	0
e320	Friends	42.9	0
e325	Acquaintances, peers, colleagues, neighbours and community members	85.7	0
e330	People in position of authority	100	0
e340	Personal care providers and personal assistants	57.1	0
e350	Domesticated animals	–	–
e355	Health professionals	57.1	0
e410	Individual attitudes of immediate family members	57.1	42.9
e415	Individual attitudes of extended family members	–	–
e425	Individual attitudes of acquaintances, peers, colleagues, neighbours and community members	57.1	0
e430	Individual attitudes of people in positions of authority	85.7	0
e440	Individual attitudes of personal care providers and personal assistants	–	–
e450	Individual attitudes of health professionals	28.6	14.3
e540	Transportation services, systems and policies	–	–
e570	Social security services, systems and policies	85.7	0
e580	Health services, systems and policies	71.4	28.6
e585	Education and training services, systems and policies	100	0
e5853	Special education and training services	57.1	28.6
e5854	Special education and training systems	57.1	28.6
e5855	Special education and training policies	57.1	28.6

directly observed, while capacity is estimated by addressing the impact of EF on performance. Moreover, as teachers are asked to address the presence of EF, it will then be easier to determine which ones act as facilitators or barriers. As in many instruments assessing functioning and disability, in particular among children, the evaluation is performed 'from outside', relying on absolute values of scale items that might not be meaningful to the child's daily life. Our attempt was to incorporate information on the impact of EFs in real-life activities. Although this again may limit the richness of a more fluent strategy to collect information on the environment, it is likely to make it possible to aggregate this information at a group level.

The ICF-PEI Schedule responds to the need for a feasible way to apply ICF-CY at school, and to systematize the amount of qualitative information about functioning and disability included in the documents used to describe students' functional status, and set medium-term and long-term educational objectives. Such an approach forces teachers to systematically look at a broad set of issues, thus increasing the amount of data taken into account: this is important at the individual level for monitoring purposes, and at the system level to plan and monitor broad interventions aimed to target difficulties of groups of children. As a recent paper has shown, a successful planning and rehabilitation process is dependent on information sharing between families and services (Järvikoski *et al.*, 2013); in future the ICF-PEI Schedule may promote collaboration between teachers, disability services and parents.

The evaluation of improvements in an educational and rehabilitation context should not strictly focus on the reduction of difficulties, but also consider the reduction of provided support, that is the decrease in dependency on others. Independence in daily tasks and inclusion in social situations are connected to the promotion of autonomy and participation, and are indicators of overall health, well-being and future life outcomes (King *et al.*, 2003; Coster and Khetani, 2008). Coster and Khetani (2008) shed light on participation as the engagement in a variety of activities that accomplish larger goals, for example being autonomous in walking for long distances promotes participation in school trips, which in turn promotes other achievements, that is socialization and interaction with peers. Our approach enables the evaluation of the outcome of interventions carried out in the education setting, and indirect evaluation of the level of inclusion in different contexts, which has relevant implications for education systems. In fact, by evaluating the outcome 'participation', an indirect evaluation of the levels of functioning of the systems themselves is also performed (Hollenweger, 2010).

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Ibragimova *et al.* (2009) performed a field trial of ICF-CY questionnaires and concluded that they are useful for collection and interpretation of data based on ICF-CY. They pointed out difficulties in the use of performance and capacity qualifiers, in acknowledging the child–environment interaction, and the need to simplify the questionnaires. The organization of the A&P section of our schedule is a first step towards a feasible disability data collection. Teachers are asked to rate only performance, thus reducing possible misunderstanding of constructs; for each activity they have to focus on the presence of facilitating/hindering factors, fostering attention to child–environment interaction. The presence of examples in questions makes the instrument user-friendly: a minimal knowledge of the terms is needed, but extensive ICF training, in our opinion, is not necessary. Finally, items were developed to reflect 'real-life' situations at school, as questions were created that are linked to daily school situations, as also indicated by Coster and Khetani (2008), and the content of items represents a step towards the suggestion by Eriksson *et al.* (2007) to broaden the amount of collected data beyond domains such as moving around, engagement in play, recreation and leisure.

The action-research approach is both a strength and a limitation of our study: solutions to improve the feasibility of ICF-CY are tightly connected to actual difficulties of a group of teachers, but its applicability to other contexts needs to be evaluated. Another critical issue is the teachers' ability to address BF impairments. To limit this problem, BF-related items were kept to a minimum and questions address what is reasonably most visible to teachers. However, bodily impairments cannot be adequately assessed by responding to a few questions, and therefore commitment of disability services is needed.

Conclusion

We presented the ICF-PEI Schedule, a system to collect functioning and disability data in an education setting that teachers can fruitfully employ to guide the definition of educational objectives and verify them longitudinally. It was developed with an action research and is grounded in previous experience and age-specific ICF-CY questionnaires. Future research activities will evaluate its metric properties. At present, it is an instrument of clear value to organize data collection and exploitation, but the potential to act as a disability assessment instrument is yet to be verified.

Acknowledgements

The authors thank all persons who participated in the project: the teachers who participated in the pilot study (Anna Renna, Benedetta Locatelli, Elisabetta Cislaghi, Giuseppa Andaloro, Laura Merlo, Lucia Stefanino, Luisa Grazioli, Maria Di Bona, Oriana Di Giovanni, Paola Patti, Rosalba Restelli, Silvia Perdichizzi, Tiziana Minoia and Tiziana Prinzivalli) and the personnel of 'Silvio Pellico' Compulsory State School, who made the whole process possible.

The project was funded by the Italian Ministry of Education, University and Research (MIUR), Grant Number D87E10000290001.

Conflicts of interest

There are no conflicts of interest.

References

Andrade PM, Ferreira FO, Mendonça AP, Haase VG (2012). Content identification of the interdisciplinary assessment of cerebral palsy using the International Classification of Functioning, Disability and Health as reference. *Disabil Rehabil* **34**:1790–1801.

Barton LR, Spiker D, Williamson C (2012). Characterizing disability in head start programs: not so clearcut. *Early Child Res Q* **27**:596–612.

Björck-Åkesson E, Wilder J, Granlund M, Pless M, Simeonsson R, Adolfsson M, *et al.* (2010). 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* **32**: S125–S138.

Coster W, Khetani MA (2008). Measuring participation of children with disabilities: issues and challenges. *Disabil Rehabil* **30**:639–648.

De Polo G, Pradal M, Bortolot S, Buffoni M, Martinuzzi A (2009). Children with disability at school: the application of ICF-CY in the Veneto region. *Disabil Rehabil* **31**:S67–S73.

Eriksson L, Welander J, Granlund M (2007). Participation in everyday school activities for children with and without disabilities. *J Dev Phys Disabil* **19**: 485–502.

Foley KR, Dyke P, Girdler S, Bourke J, Leonard H (2012). Young adults with intellectual disability transitioning from school to post-school: a literature review framed within the ICF. *Disabil Rehabil* **34**:1747–1764.

Francescutti C, Fusaro G, Leonardi M, Martinuzzi A, Sala M, Russo E, *et al.* (2009). Italian ICF training programs: describing and promoting human functioning and research. *Disabil Rehabil* **31**:S46–S49.

French WHO Collaborating Centre for the Family of International Classification. ICF-CY questionnaires for age 0–3; 3–6; 7–12 and >13 years. Available at: *http://www.ccoms-fci-cif.fr/ccoms/pagint/missions_cif.php* [Accessed 21 August 2013].

Fusaro G, Maspoli M, Vellar G (2009). The ICF-based functioning profiles of school children in care with the neuropsychiatric community services in the Piedmont region: evidences for better caring and programming. *Disabil Rehabil* **31**:S61–S66.

Giovannetti AM, Raggi A, Leonardi M, Mosca F, Gangi S, Sabbadini S, Picciolini O (2013). Usefulness of ICF-CY to define functioning and disability in very low birth weight children: a retrospective study. *Early Hum Dev* **89**:825–831.

Hollenweger J (2010). MHADIE's matrix to analyse the functioning of education systems. *Disabil Rehabil* **32**:S116–S124.

Ibragimova N, Granlund M, Bjorck-Akesson E (2009). Field trial of ICF version for children and youth (ICF-CY) in Sweden: logical coherence, developmental issues and clinical use. *Dev Neurorehabil* **12**:3–11.

Järvikoski A, Martin M, Autti-Rämö I, Härkäpää K (2013). Shared agency and collaboration between the family and professionals in medical rehabilitation of children with severe disabilities. *Int J Rehabil Res* **36**:30–37.

King G, Law M, King S, Rosenbaum P, Kertoy MK, Young NL (2003). A conceptual model of the factors affecting the recreation and leisure participation of children with disabilities. *Phys Occup Ther Pediatr* **23**:63–90.

Law no. 104 of 5 February 1992. 'Legge-quadro per l'assistenza, l'integrazione sociale e i diritti delle persone handicappate.' Available at: *http://www.handylex.org/stato/l050292.shtml* [Accessed 21 August 2013].

Leonardi M, Raggi A, Antozzi C, Confalonieri P, Maggi L, Cornelio F, Mantegazza R (2009a). Disability and functional profiles of patients with myasthenia gravis measured with ICF classification. *Int J Rehabil Res* **32**:167–172.

Leonardi M, Meucci P, Ajovalasit D, Albanesi F, Cerniauskaite M, Invernizzi V, *et al.* (2009b). ICF in neurology: functioning and disability in patients with migraine, myasthenia gravis and Parkinson's disease. *Disabil Rehabil* **31**:S88–S99.

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Leonardi M, Sattin D, Giovannetti AM, Pagani M, Strazzer S, Villa F, *et al.* (2012a). Functioning and disability of children and adolescents in vegetative state and minimally conscious state: identification of ICF-CY relevant categories. *Int J Rehabil Res* **35**:352–359.

Leonardi M, Martinuzzi A, Meucci P, Sala M, Russo E, Buffoni M, Raggi A (2012b). A population survey in Italy based on the ICF classification: recognizing persons with severe disability. *Sci World J* **2012**:189097.

Martinuzzi A, Salghetti A, Betto S, Russo E, Leonardi M, Raggi A, Francescutti C (2010). ICF-CY as a roadmap for projecting and programming rehabilitation in a neuropaediatric hospital unit. *J Rehabil Med* **42**:49–55.

McCormack J, Harrison LJ, McLeod S, McAllister L (2011). A nationally representative study of the association between communication impairment at 4–5 years and children's life activities at 7–9 years. *J Speech Lang Hear Res* **54**:1328–1348.

Montirosso R, Ceppi E, D'Aloisio C, Zucca C, Borgatti R (2009a). International Classification of Functioning, Disability and Health in subjects with alternating hemiplegia of childhood. *Disabil Rehabil* **31**:S108–S115.

Montirosso R, Morandi F, D'Aloisio C, Berna A, Provenzi L, Borgatti R (2009b). International Classification of Functioning, Disability and Health in children with congenital central hypoventilation syndrome. *Disabil Rehabil* **31**: S144–S152.

Raggi A, Brunani A, Sirtori A, Liuzzi A, Berselli ME, Villa V, *et al*. ICF-Obesity Group (2010a). Obesity-related disability: key factors identified by the International Classification of Functioning, Disability and Health (ICF). *Disabil Rehabil* **32**:2028–2034.

Raggi A, Leonardi M, Ajovalasit D, D'Amico D, Bussone G (2010b). Disability and functional profiles of patients with migraine measured with ICF classification. *Int J Rehabil Res* **33**:225–231.

Raggi A, Leonardi M, Ajovalasit D, Carella F, Soliveri P, Albanese A, Romito L (2011). Disability and profiles of functioning of patients with Parkinson's disease described with ICF classification. *Int J Rehabil Res* **34**:141–150.

Ståhl Y, Granlund M, Gäre-Andersson B, Enskär K (2011). Review article: mapping of children's health and development data on population level using the classification system ICF-CY. *Scand J Public Health* **39**:51–57.

United Nations (2006). *United Nation Convention on the Rights of Persons with Disabilities*. New York: UN 2006; Available at: *http://www.un.org/disabilities* [Accessed 21 August 2013].

World Health Organization (1992–1994). *The International Statistical Classification of Diseases and Related Health Problems*. Geneva: WHO.

World Health Organization (2007). *The International Classification of Functioning, Disability and Health – Children and Youth version (ICF-CY)*. Geneva: WHO.

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Appendix

Table A1.

Table A1 English adaptation of the ICF-PEI Schedule

b114	Does the student have problems with recognizing places, persons or dates?	0 – No, he/she does not have these kinds of problems 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b117	Does the student have intellectual deficits?	0 – No, he/she does not 1 – Yes, he/she has an IQ between 84 and 55 2 – Yes, he/she has an IQ lower than 54	
b130	Does the student feel tired, listless, with no (or with too much) appetite, or does he/she have difficulties in controlling his/her own behaviour?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b140	Does the student have attention/concentration difficulties, or can he/she be easily distracted?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b144	Does the student have memory problems (i.e. difficulties with remembering things in the short or long term)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b147	Does the student become overagitated, have stereotyped behaviours or lacks clear manual/lateral dominance?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b167	Does the student have difficulties with reception or expression of written or spoken language?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b172	Does the student have difficulties in executing mathematical processes?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b210	Does the student have seeing problems?	0 – No, he/she does not have seeing problems 1 – Yes, he/she has a visual deficit between 1/10 and 4/10 2 – Yes, he/she has a visual deficit higher than 5/10	
b320	Does the student have difficulties with articulation of voice and speech?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b620	Does the student have difficulties with urination (e.g. incontinence)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b760	Does the student have difficulties with movement coordination (e.g. he/she is clumsy)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b765	Does the student have tics, stereotypes or sudden muscle contractions?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
b770	Does the student have an asymmetric, limping or spastic gait?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	
d131	Does the student have difficulties in using games to learn new things?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d132	Does the student have difficulties in acquiring information (e.g. asking why, what, how, where or asking a person's name)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d133	Does the student have difficulties in acquiring language?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d137	Does the student have difficulties in understanding simple (e.g. shape, quantity, length, equal/opposite) and complex (e.g. grouping) concepts?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d140	Does the student have difficulties in learning to read?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d145	Does the student have difficulties in learning to write?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems	

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Table A1 (*continued*)

		2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d150	Does the student have difficulties in learning mathematical operations such as addition, subtraction and multiplication?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d210	Does the student have difficulties in undertaking single tasks (e.g. organizing time and materials for a task)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d220	Does the student have difficulties in undertaking coordinated tasks requiring different tasks in sequence or simultaneously?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d230	Does the student have difficulties in following and managing his/her daily routine?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d250	Does the student have difficulties in managing his/her own behaviour?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d310	Does the student have difficulties in understanding spoken messages?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d330	Does the student have difficulties in speaking?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d335	Does the student have difficulties in expressing himself/herself using nonverbal messages?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d410	Does the student have difficulties in changing his/her body position (e.g. standing or sitting)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d415	Does the student have difficulties in maintaining his/her body position (e.g. remaining seated)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d440	Does the student have difficulties in grasping, picking up or manipulating objects using his/her hands (e.g. using pens or scissors)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d450	Does the student have difficulties in walking short or long distances?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d510	Does the student have difficulties in washing hands, face or the whole body?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d520	Does the student have difficulties in caring for teeth or nose?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d530	Does the student have difficulties in toileting (i.e. indicating the need, going to the bathroom and cleaning himself/herself)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Table A1 (*continued*)

	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d540	Does the student have difficulties in getting dressed?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d550	Does the student have difficulties in eating?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d571	Does the student have difficulties in looking after his/her health and avoiding getting hurt?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d6	Does the student have difficulties in carrying out domestic activities (e.g. caring for his/her possessions)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d710	Does the student have difficulties in basic interpersonal interactions (e.g. greeting, making appropriate physical contact, managing relationships with strangers and familiar persons)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d820	Does the student have difficulties in attending educational programmes (e.g. attending classes, studying and completing assigned tasks)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d860	Does the student have difficulties in managing money for his/her purchases?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d880	Does the student have difficulties in playing alone or with others?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
d9	Does the student have difficulties in managing his/her spare time (e.g. engaging in sport, socialising out of the family and school setting)?	0 – No, he/she does not have this kind of problem 1 – Yes, he/she has mild/moderate problems 2 – Yes, he/she has severe/complete problems	9-NA
	For these activities, are there environmental factors that …	Facilitate: in a mild/moderate (+ 1) or significant (+ 2) way Hinder: in a mild/moderate (– 1) or significant (– 2) way	
e1152	Are adequate products for play available to the student?	YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance NO, and this is a mild/moderate (– 1) or relevant (– 2) problem He/she does not need them	
e120	Are adequate transportation means for indoor or outdoor environment available to the student?	YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance NO, and this is a mild/moderate (– 1) or relevant (– 2) problem He/she does not need them	
e125	Are adequate products for communication (e.g. glasses, hearing aids or communication boards) available to the student?	YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance NO, and this is a mild/moderate (– 1) or relevant (– 2) problem He/she does not need them	
e310	The support that the student receives from parents, brothers or sisters has …	A POSITIVE impact: it is of mild/moderate (+ 1) or significant (+ 2) relevance A NEGATIVE impact: and this is a mild/moderate (– 1) or relevant (– 2) problem Essentially a NEUTRAL impact	
e315	The support that the student receives from extended family members (e.g. grandparents, aunts) has …	A POSITIVE impact: it is of mild/moderate (+ 1) or significant (+ 2) relevance A NEGATIVE impact: and this is a mild/moderate (– 1) or relevant (– 2) problem Essentially a NEUTRAL impact	
e320	The support that the student receives from his/her friends has …	A POSITIVE impact: it is of mild/moderate (+ 1) or significant (+ 2) relevance A NEGATIVE impact: and this is a mild/moderate (– 1) or relevant (– 2) problem Essentially a NEUTRAL impact	
e325	The support that the student receives from acquaintances, neighbours or classmates has …	A POSITIVE impact: it is of mild/moderate (+ 1) or significant (+ 2) relevance	

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.

Table A1 (*continued*)

		A NEGATIVE impact: and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially a NEUTRAL impact
e330	The support that the student receives from people in positions of authority (e.g. teachers) has …	A POSITIVE impact: it is of mild/moderate (+ 1) or significant (+ 2) relevance
		A NEGATIVE impact: and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially a NEUTRAL impact
e340	The support that the student receives from personal assistants, babysitters or for transportation service has …	A POSITIVE impact: it is of mild/moderate (+ 1) or significant (+ 2) relevance
		A NEGATIVE impact: and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially a NEUTRAL impact
e355	The support that the student receives from health professionals has …	A POSITIVE impact: it is of mild/moderate (+ 1) or significant (+ 2) relevance
		A NEGATIVE impact: and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially a NEUTRAL impact
e410	The attitudes of parents, brothers or sisters towards the student are …	POSITIVE: they are of mild/moderate (+ 1) or significant (+ 2) relevance
		NEGATIVE, and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially neutral
e425	The attitudes of acquaintances, neighbours or classmates towards the student are …	POSITIVE: they are of mild/moderate (+ 1) or significant (+ 2) relevance
		NEGATIVE, and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially neutral
e430	The attitudes of people in positions of authority (e.g. teachers) towards the student are …	POSITIVE: they are of mild/moderate (+ 1) or significant (+ 2) relevance
		NEGATIVE, and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially neutral
e450	The attitudes of health professionals towards the student are …	POSITIVE: they are of mild/moderate (+ 1) or significant (+ 2) relevance
		NEGATIVE, and this is a mild/moderate (– 1) or relevant (– 2) problem
		Essentially neutral
e570	Does the student have adequate access to social security services and systems (e.g. economic compensation)?	YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance
		NO, and this is a mild/moderate (– 1) or relevant (– 2) problem
		He/she does not need them
e580	Does the student have adequate access to health services?	YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance
		NO, and this is a mild/moderate (– 1) or relevant (– 2) problem
		He/she does not need them
e585	Does the student have adequate access to education services and systems?	YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance
		NO, and this is a mild/moderate (– 1) or relevant (– 2) problem
		He/she does not need them
e5853	Does the student have adequate access to special education services and systems (e.g. targeted support programmes)?	YES: they are a factor of mild/moderate (+ 1) or significant (+ 2) relevance
		NO, and this is a mild/moderate (– 1) or relevant (– 2) problem
		He/she does not need them

Copyright © Lippincott Williams & Wilkins. Unauthorized reproduction of this article is prohibited.