Moving beyond intelligence in the revision of ICD-10: specific cognitive functions in intellectual developmental disorders

A lower level of intelligence, as measured by IQ, has historically been the central defining criterion of mental retardation (MR). The use of IQ scores in terms of standard deviation units from the mean is the basis for defining MR in the ICD-10 and DSM-IV-TR, and more recently for defining intellectual disability (ID) in the DSM-5. Similarly, ID is defined by the American Association on Intellectual and Developmental Disabilities as an IQ score approximately two standard deviations below the mean (1).

However, in recent years, an increasing number of researchers and clinicians have expressed the view that measurements of IQ fail to capture individual differences in cognitive dysfunction. The heterogeneity of cognitive dysfunction and consequent adaptive behavior profile in persons with MR is one of the reasons leading the working group in charge of this issue within the revision of the ICD-10 to propose a new definition for intellectual developmental disorders (IDD) in the upcoming 11th edition of the diagnostic system (2).

In 2011, the WPA Section on Psychiatry of Intellectual Disability started a mini-Delphi process with an international panel of experts to produce a consensus document on this issue. The present letter reports the results of the systematic mapping (3) of the international literature included in this process, focusing on current models of intelligence, multi-component and specific cognitive functions, and the relationship between intellectual and affective assessment, as relevant for defining IDD.

A total of 7,948 articles matched the key words. After titles were checked, 3,179 were selected. After abstracts were read, 2,497 were excluded as they were not relevant to the mapping topic, and 114 were excluded because they were not in English. After reading the remaining articles in full, 177 papers were included as relevant to search questions.

The mapping of current theoretical approaches identified limitations of IQ as an indicator of the adaptive complexity and dynamism of human intellectual functioning and pointed out the need for a shared model and comprehensive definition of intelligence. Of the available approaches, the most frequently used refers to a unitary capacity, articulated in complex functions. A second evolving group of theories identifies a key role of interdependent but specialized factors, such as specific cognitive functions. There is a neuro-bio-psychological evidence in support of both approaches, but multi-component models seem to prevail. Experimental data indicate that the same IQ score can correspond to very different cognitive profiles, and that functional limitations and problem behaviors associated with IDD correlate with impairment of specific cognitive functions more than with IQ (4,5).

To address the limitations of the current conceptualization of MR, the ICD-11 working group proposed revised diagnostic criteria for IDD, based on a more articulated model of cognitive impairment. This approach juxtaposes a new concept of cognitive characterization to that of intelligence and complements the measurement of IQ with the assessment of specific cognitive functions and a contextualised description of consequent adaptive and learning difficulties (2).

Within this new approach, cognitive skills should be assessed through tests, semi-structured observations, and direct clinical examination. The tests should combine the measurement of IQ with that of several aspects of executive functioning, including perceptual reasoning, processing speed, verbal comprehension, as well as the assessment of attention, perception and working memory. The evaluation should aim to identify the cognitive dysfunctions that have the greatest negative impact in terms of behavior, adjustment, autonomy, and above all quality of life, across the lifespan. The instruments to assess specific cognitive functions should have a low cost, in order to allow fast assimilation by professionals practicing in low-income countries (6). Production and distribution by international non-profit organizations could greatly facilitate this effort.

In conclusion, within the proposed ICD-11 framework for characterization of IDD, there is a need for neuropsychological measures that can be readily adapted to different levels of severity, and that are easy to apply in clinical and research practice. The evolving understanding of how environmental and cultural factors influence development should promote a continuing search for assessment models and practices that capture developmental pathways of cognition in persons with IDD. Naturalistic, multidisciplinary and multicentric studies could provide useful data to this purpose (7).

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