

# Special needs in research and instruction in WNA

ICMI23 Panel, Macau  
June 6, 13.30 – 15.30

Chair: Lieven Verschaffel  
University of Leuven, Belgium

# Contributors

- Panelists
  - Prof. Anna Baccaglini-Frank (Sapienza University of Rome, Italy)
  - Prof. Joanne Mulligan (Macquarie University, Sydney Australia)
  - Prof. Marja van den Heuvel-Panhuizen (University of Utrecht, The Netherlands)
  - Prof. Yan Ping Xin (Purdue University, West Lafayette, IN, USA)
- Discussant
  - Prof. Em. Brian Butterworth (Institute of Cognitive Neuroscience at University College London, UK)

# Issue 1.

Establishing agreement on consistently used terminology and use of standardized criteria concerning the nature and seriousness of the mathematical learning difficulty, problem or disability (MLD)

# Issue 2

Characterizing the various general and specific cognitive mechanisms that are implicated in the development of MLD

# Issue 3

Unraveling the neurological and genetic underpinnings  
of MLD

# Issue 4

Looking for appropriate evidence-based educational interventions for children with MLD

# Questions for the panel

- What is the appropriate moment to start with the diagnosis of MLD and with (remedial) interventions?
- Do MLD children profit more from individualized interventions organized out of the regular mathematics class, or do they profit more from being integral part of the regular mathematics class?
- Do these children need a special kind of intervention or do they profit most from the same kind of instruction as children without MLD? E.g., are conceptually-based and constructivist-oriented mathematics instruction also suitable for children with learning disabilities

# Questions for the panel (cont)

- Should math education for children with MLD not pay more attention to what children with MLD *can* do, rather than what they *cannot* do?
- Is assessment of and instruction to children with MLD not too narrowly focused on number and arithmetic, and should there not be more attention to spatial understanding or to awareness of patterns and structure?
- Are the answers to the above questions the same for all categories of children with MLD?



# Structure

- PART 1 ( $\pm$  60 min)
  - Introduction ( $\pm$  10 minutes)
  - Short contribution by the panelists ( $\pm$  10 minutes per panelist)
  - Discussion ( $\pm$  10 minutes)
- PART 2 ( $\pm$  45 minutes)
  - Questions and comments from the audience
- PART 3 (about 15 minutes)
  - Final comments by panelists and the discussant

# Mathematical learning disability in DSM V (Diagnostic and Statistics Manual of Mental Disorders)

## Diagnostic Criteria

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- A. Difficulties learning and using academic skills, as indicated by the presence of at least one of the following symptoms that have persisted for at least 6 months, despite the provision of interventions that target those difficulties:

### **315.1 (F81.2) With impairment in mathematics:**

Number sense

Memorization of arithmetic facts

Accurate or fluent calculation

Accurate math reasoning

**Note:** *Dyscalculia* is an alternative term used to refer to a pattern of difficulties characterized by problems processing numerical information, learning arithmetic facts, and performing accurate or fluent calculations. If dyscalculia is used to specify this particular pattern of mathematic difficulties, it is important also to specify any additional difficulties that are present, such as difficulties with math reasoning or word reasoning accuracy.