

Dealing with MLD in math education

Thierry Dias¹, Marie-Line Gardes², Michel Deruaz¹, Francesca Gregorio^{1,4},
Cécile Ouvrier-Buffet³, Florence Peters⁴, Elisabetta Robotti⁵

¹HEP Vaud (Switzerland), ²ISCMJ University of Lyon (France), ³LDAR Paris-Est Créteil University (France),
⁴LDAR Paris University (France), ⁵University of Genova (Italy)

Context & research question

- « MLD is a neurodevelopmental disorder characterized by **persistent difficulties** in acquiring mathematical skills, despite normal intellectual abilities and adequate schooling » (Schwartz, 2017, p.66).
- Research about *mathematical learning disabilities* (MLD) has increased but their definition and diagnosis **does not enjoy a clear consensus** in cognitive sciences (Lewis & Fisher, 2016).

How has the field of mathematics education dealt with MLD these last 10 years in two major congresses in mathematics education (PME and CERME)?

Methodology

based on Joklitschke, Rott and Schindler (2018)

Step 1 : Choice of keywords

disab*, dyscalcul*, disord*, difficult*, inclus*

Lewis & Fisher (2016) Working Group 10 at PME42
Ouvrier-Buffet et al (2018)

Step 2 : Screening process

- Focusing on titles, abstracts and keywords section in the research reports and plenary panels

Step 3 : Reading and categorizing articles

- Selection of the articles which deal with Mathematical Learning Disabilities (or presented as such in the articles) by reading the articles
- Classification of the selected articles : participants of the experiments with diagnosis of MLD, with learning disabilities (LD) or with specific difficulties in learning mathematics but without diagnosis of MLD (Scherer, 2016)

PME/CERME proceedings 2009—2018

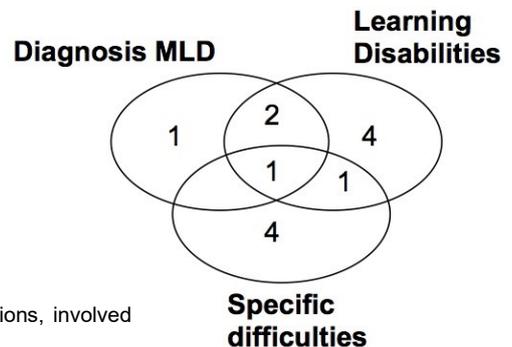
Keywords coming from cognitive and psychology scientific fields are hardly ever used in mathematics education

The notion of **difficulty** is a common topic in mathematic education research

	disab*	dyscalcul*	disord*	difficult*	inclus*	common	Total
Step 2	13	2	1	304	38	10	348
Step 3	8	2	0	5	5	7	13

Polysemic words not really efficient for searching articles about MLD

Classification (13 articles)



Discussion

- Articles of the final selection deal with specific difficulties in mathematics that are not explicitly addressed to persistent difficulties.
- There is **no consensus about the definition of MLD in mathematics education**, as well as in cognitive scientific field.



Need of a closer analysis of our papers' collection (research questions, involved definitions, theoretical frameworks and methodology)

Need of an extension of the papers' collection considered



BIBLIOGRAPHIE

- Joklitschke, J., Rott, B. and Schindler, M., (2018). Theories about mathematical creativity in contemporary research: a literature review. In E. Bergqvist, M. Österholm, C. Granberg, & L. Sumpter (Eds.), Proceedings of the 42nd Conference of the International Group for the Psychology of Mathematics Education (Vol. 3, pp. 171-178). Umeå, Sweden: PME.
- Lewis, K. E. & Fisher, M. B. (2016). Taking stock of 40 years of research on mathematical learning disability: Methodological issues and future directions. *Journal for Research in Mathematics Education*, 47(4), 338-371.
- Ouvrier-Buffet, C., Robotti, E., Dias, T. & Gardes, M.-L. (2018). *Mathematical learning disabilities: a challenge for mathematics education*. In E. Bergqvist, M. Österholm, C. Granberg, & L. Sumpter (Eds.), Proc. 42nd Conf. of the Int. Group for the Psychology of Mathematics Education (Vol. 1, pp. 207-208). Umeå, Sweden: PME.
- Schwartz, F. (2017). *Raisonnement transitif et dyscalculie : étude par IRMf chez l'enfant*. (Thèse de doctorat). Université de Lyon.
- Scherer, P., Beswick, K., DeBlois, L., Healy, L., & Opitz, E. M. (2016). Assistance of students with mathematical learning difficulties: how can research support practice? *ZDM*, 48(5), 633-649.