

# **A TROUBLE AT THE INTERFACE OF DIFFERENT DISCIPLINARY FIELDS (MATHEMATICS EDUCATION, PSYCHOLOGY AND COGNITIVE SCIENCES): DYSCALCULIA**

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Research about dyscalculia still must be lightened (Lewis & Fisher, 2016). Various interpretation perspectives exist but the dominant perspective focuses on individual's cognitive characteristics. We question the place of mathematics education in these researches and the way to reconcile the different points of view to a better understanding of mathematical learning disabilities (MLD). The compartmentalization of approaches makes the communication between teachers and speech therapists difficult. We therefore consider the reconciliation of approaches through the creation of a mathematical difficulties detection tool that would facilitate the exchanges between these two types of professionals by proposing a common inventory of child's difficulties that can be used by each of them.

To develop this tool, we conducted an analysis of different existing tests designed to evaluate mathematical basic skills at the entry to basic school. To ensure the diversity of theoretical foundations, we selected diagnostical tests from research in numerical cognition, but also tests used in school designed on elements from mathematics education. Analysis based on criteria from mathematics education and numerical cognition allows us to precisely identify tasks and variables used in each test.

With this method, we have highlighted some biases of numerical cognition tests in relation to what is taught and to mathematics education knowledge (non-evaluated elements or questioning of the choices of variables). These elements confirm the interest of mathematics education in research about MLD, especially regarding the diagnosis. Moreover, further to this analysis, we can identify the tasks and variables used according to the theoretical frameworks (mathematics education and numerical cognition). This provides us the bases to build our detection tool which will be more detailed during the conference.

## **References**

Lewis, K.E. & Fisher, M.B. (2016). Taking stock of 40 years of research on mathematical learning disability: methodological issues and future direction. *Journal for Research in Mathematics Education*, 47(4), 338-371.