

**B1 – ASSESSMENT AND INSTRUCTION OF EARLY MATHEMATICS SKILLS
IN INTERNATIONAL CONTEXT****B1**

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Symposium Presentations**Intercultural validation of a mathematics competence test for grade 1 children**

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Antje Ehlert
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Validation of a grade 1 mathematics competence test for learning disabled children

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**Early detection of mathematical learning difficulties in the context of internal school
entry tests in German primary schools**

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Antje Ehlert
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Preschool training of early mathematical skills

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SYMPOSIUM ABSTRACT

This symposium addresses the assessment of mathematical concepts of children in the 4–8 year old age group. A conceptual model of mathematics hierarchical competence development (*Fritz, Ehlert & Balzer, 2013*) forms the theoretical foundation of all studies. The papers present a continuum from math skills development in two different cultures (Germany and South Africa), the validation of the math test with learning disabled children, the question of how valid common school entry tests are, capturing math competencies and ending with an early math intervention study (Hungary).

In the first presentation the migration process from a German test to South Africa is described. In the translation process it was imperative to find out whether the items of the translation had retained the conceptual content of the original test and had been allocated to the same conceptual levels as in the original test. In a number of pilot studies with a total of 1,600 South African children, it could be demonstrated that the test is functional for South African conditions (in four languages) and that the Rasch modeling holds successfully in these languages.

In the second talk results from a study with learning disabled children are presented, to validate the MARKO-D test. For this the mathematical competencies of 82 children with diagnosed learning disabilities in grade 3 of schools with special education and 502 children in public primary schools were captured. To verify the validity of the test, the items were Rasch-scaled and analyzed for existing significant DIFs. The results show that the model could be validated for children with learning disabilities. Only 4 items didn't capture the same construct.

In the third presentation a closer look is taken on school internal entry tests used in German primary schools. The question is raised whether these tests are suitable for an early detection of children who are at risk to develop mathematical learning difficulties. Therefore 238 primary schools in 3 federal states of Germany were contacted within a survey in order to learn more about their entry test procedure. A first insight into the analysis of the test material shows that the mathematical tasks are consistently too easy. This could lead to the conclusion that the sensitivity of the school entry tests might not be sufficient to detect children who are at risk to develop mathematical learning difficulties.

The fourth study aims to adapt the Mina and the Mole training program into Hungarian context and to test its effectiveness on the development of early mathematical skills and additional cognitive domains. It is a well structured educational tool for kindergarten teachers, and it is based on an empirically tested developmental model. Results of the study show that the instrument can be useful to foster counting and basic numerical skills of low achiever children.