

VALIDATION OF A GRADE 1 MATHEMATICS COMPETENCE TEST FOR LEARNING DISABLED CHILDREN

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Aim: Since the ratification of the UN Disability Rights Convention (cf. United Nations 2008) an increasing number of children with special educational needs is attending regular schools. To successfully teach these students in inclusive learning groups, it is necessary to take their individual learning prerequisites and pace into account as well as to plan adaptive teaching methods. For that reason diagnostic competences are required as essential basic competences for successful teaching (cf. Weinert, 2000). However, inclusive education raises questions about specific requirements of diagnostic tests, such as the examination of the validity under the condition of learning disabilities.

Research questions: (1) Is it possible to scale the test items on an IRT basis for children with learning disabilities in a comparable way as for younger averagely developed children? (2) Does the sequence of the concepts fit the theory of the test? (3) Do the test items measure the same in both samples?

Methods: A MARKO-D-test (MARKO-D-tests are based on the model of the mathematical development according to Fritz, Ehlert & Balzer, 2013) was used to capture the mathematical competencies. The sample consisted of 82 children with diagnosed learning disabilities attending schools for special education in grade 3 and 502 first-graders in regular primary schools. In order to answer the research questions the items were Rasch-scaled and analyzed for existing significant Differential Item Functionings (DIF).

Results: The results show that the model could be validated for children with learning disabilities. Only 4 items didn't fit as expected: in 3 out of 4 items the learning disabled children performed better. In summary we are able to state that the test satisfies all criteria for children with learning disabilities.

Importance and future implications The results of the DIF-analysis suggest that it is not trivial to use test instruments with learning disabled children without prior analysis of validity. Depending on the specific characteristics of a sample, items in diagnostic tests do not necessarily measure the same construct. For that reason the validity of competence measurement should be analyzed empirically also for children with specific disabilities. Against the background of inclusive teaching, this verification should be a prerequisite before using diagnostic tests.

References

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