

## TRAINING EARLY MATHEMATICAL SKILLS: THE HUNGARIAN ADAPTATION OF MINA AND THE MOLE

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The level of early mathematical skills has a serious impact on later school performance (Duncan et al., 2007) and it has a dominant role in the development of cognitive abilities (Csapó and Szendrei, 2011). In order to foster early mathematical skills it is crucial to apply well-designed, evidence-based training tools. The aim of the Mina and the Mole training program is to foster the development of a complex series of early mathematical skills, starting from basic numerical skills such as working with quantities, sorting, or estimation through more complex skills such as the understanding of relations between numbers and operations (Langorst, Ehlert and Fritz-Stratmann, 2012). The programme consists of 6 consecutive modules with 27 training sessions embedded in a playful story context. Each session topic is introduced through a story followed by manipulative learning tasks and exercises as well as various interactive games and social activities (Fritz and Gerlack, 2011). Due to its complex nature, the program can also have a positive impact on the development of language processing in addition to early mathematical skills (Langhorst et al., 2013) and possibly on other connected cognitive domains necessary for successful school entry.

The aims of this study are to adapt the Mina and the Mole program into the Hungarian context and to test its effectiveness on the development of early mathematical skills and additional cognitive domains (e.g. relational reasoning and deductive reasoning) that are prerequisites of school readiness. Participants are 350 five- and six-year-olds attending kindergarten. The experimental group consists of 78 children and the control group 272. Training sessions take 30-40 minutes one or two times a week for four months. Sessions are led by the kindergarten teachers for groups of 8-10 children. The effectiveness of the training program is measured with DIFER (Diagnostic System for Assessing Development), a complex test battery for assessing school readiness in ages 4 to 8. Its subtests assess writing-movement coordination, speech sound discrimination, relational reasoning, counting and basic numeracy, deductive reasoning, comprehension of relations and basic social skills (Nagy et al., 2004; Csapó, Molnár and Nagy, 2014). Due to the complexity of the training program, we hypothesize that besides counting and basic numeracy, children will also show a development on several further subtests of DIFER, especially in the domains of relational reasoning and deductive reasoning. The empirical testing of the training program is currently in progress. Our aim is to provide a new empirically tested playful learning instrument which promotes the development of early mathematical skills and a successful school entry. The results of the study will be used for the refinement of the training program.

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