

# **The relationship between phonological encoding, visual recognition, and graphomotor skills in preschool children**

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## **Abstract**

There is evidence of a relationship between phonological encoding, visual recognition, and graphomotor skills (Levinthal and Hornung, 1982; Pollatsek et al., 2010). Already preschool children use a phonetic code as a memory strategy (Lean & Arbuckle, 1984), which could explain the forementioned relationship. Children at risk for specific learning disorders may have early deficits in all of the above mentioned skills (Kuzeva, 2017; Mammarella and Pazzaglia, 2010; Ortiz et al., 2014; Zhang et al., 2019). Thus, poor performance in visual recognition and graphomotor skills may be, at least in part, due to deficits in phonological encoding, while we rely on phonemic encoding to remember visually presented stimuli (Patterson & Marcel, 1976). 180 preschool Croatian speaking children from a kindergarten in Zagreb were assessed with the screening Test for Assessment of Reading and Writing Preskills (PredČiP; Kuvač Kraljević and Lenček, 2011) in the year before school enrollment. Scores on the sub-blocks Phonological Awareness (rhyme recognition and production, syllable and phoneme synthesis and analysis), Visual Discrimination, and Graphomotor skills – shape tracking (placement, closure, line execution, and details) were analyzed. As we hypothesized, a statistically significant positive correlation was found between phonological skills and visual perception ( $r = 0.3$ ,  $p < 0.01$ ) and between phonological skills and shape tracing ( $r = 0.4$ ,  $p < 0.01$ ). Accordingly, it is possible that the lower results in visual perception and shape tracing are not the result of a deficit in visual perception nor graphomortor skills per se (Sowman and Ahissar, 2010), but rather a deficit in phonological encoding that mediates lexical access (Spinks et all, 2000) and makes tracking easier. This would explain the presence of concurrent deficits in the skills studied and point to the need to promote these skills simultaneously from an early age (Ćužić et al., 2021).

**Keywords:** phonological encoding, visual recognition, graphomotor skills, preschool children