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Dyslexia and Motor Skills: A Meta-Analysis

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Abstract

Research suggests individual differences in motor skills may be associated with reading ability in school-age children. This meta-analysis explored whether deficits in motor skills are evident in developmental dyslexia, using estimates from 33 studies (k) with 122 effects (m) from dyslexic and age-matched neurotypical samples (N dyslexia = 1248, M age = 11.6 years, range 7.0 to 25.3 years). An overall effect of moderate magnitude, $g = -.52$ [95% CI $-.74; -.29$], confirmed that motor skills are impaired in dyslexia. Meta-regression analyses indicated no significant effects of participant age or language. Subgroup analyses revealed significant group differences for tasks with nonlinguistic stimuli ($k = 28$, $m = 83$), e.g., pegboard task, $g = -.46$ [$-.71; -.22$], or linguistic stimuli ($k = 10$, $m = 39$), e.g., word copying task, $g = -.66$ [$-1.09; -.24$]. Effects were significant for groups with confirmed dyslexia diagnoses ($k = 27$, $m = 103$), $g = -.56$ [$-.81; -.30$], but not for groups identified as poor readers, ($k = 6$, $m = 19$), $g = -.32$ [$-.93; .28$]. Effects were significant for fine motor skills ($k = 29$, $m = 106$), $g = -.61$ [95% CI $-.83; -.39$], but not for gross motor or composite measures ($k = 10$, $m = 16$), $g = -.26$ [95% CI $-.76; .24$]. The results suggest that fine motor tasks might help to identify children at risk of dyslexia. Longitudinal research may further elucidate relations between motor and reading skills.