

Effectiveness of action video games training in children with developmental dyslexia: a meta-analysis

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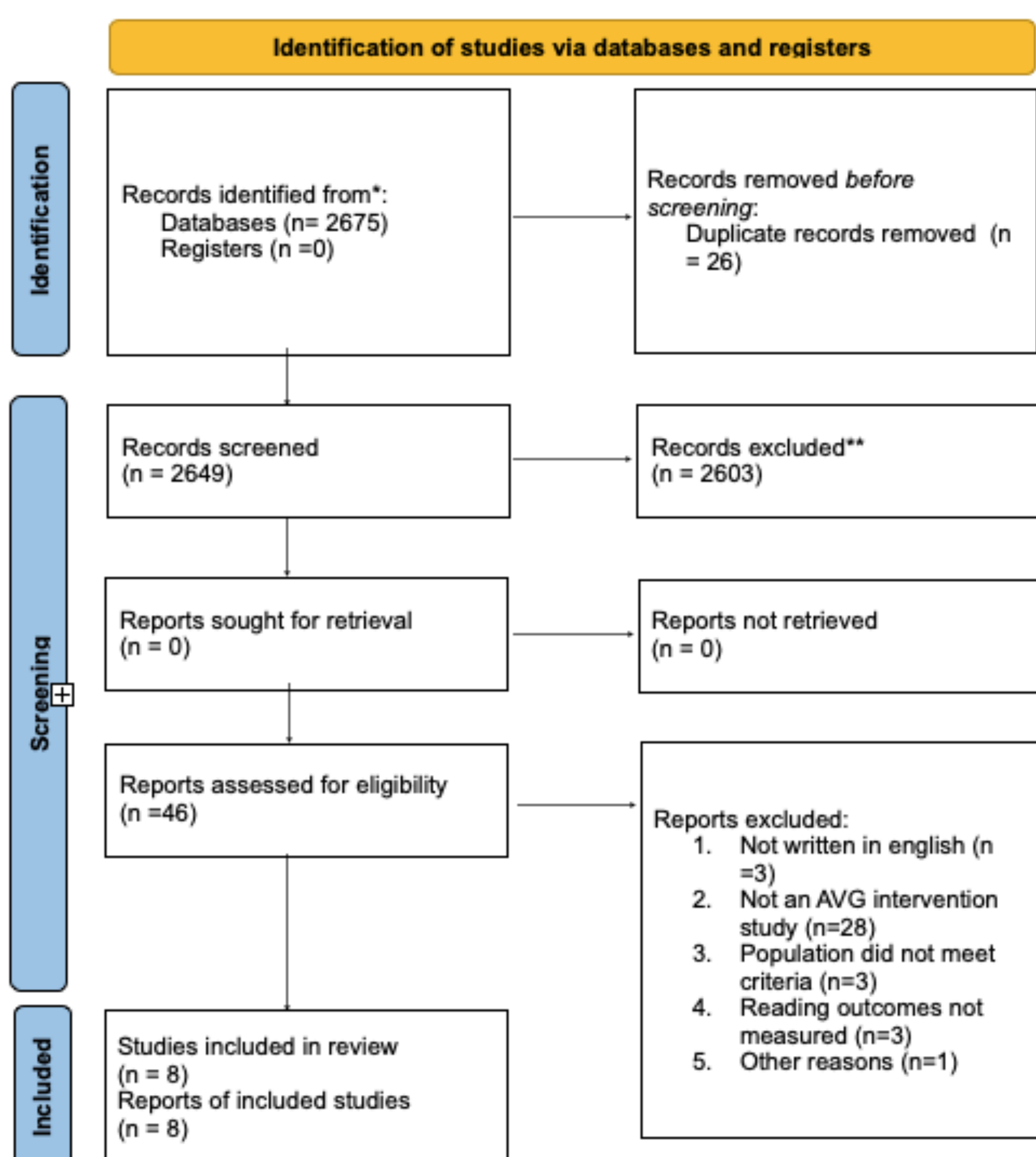
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INTRODUCTION

Dyslexia is a multifactorial neurodevelopmental disorder typically characterised by phonological and orthographic deficits. However, low-level sensory-processing impairments precede and underlie phonological and orthographic problems. Thus, dysfunction of selective attention could be one key distal contributor to dyslexia. Meta-analysis approaches have shown that visuo-spatial attention is impaired in pre-literacy, beginner and advanced readers with dyslexia and that children with dyslexia have a universal attentional network dysfunction.

Nine randomised controlled trials involving children with a diagnosis of dyslexia were selected.

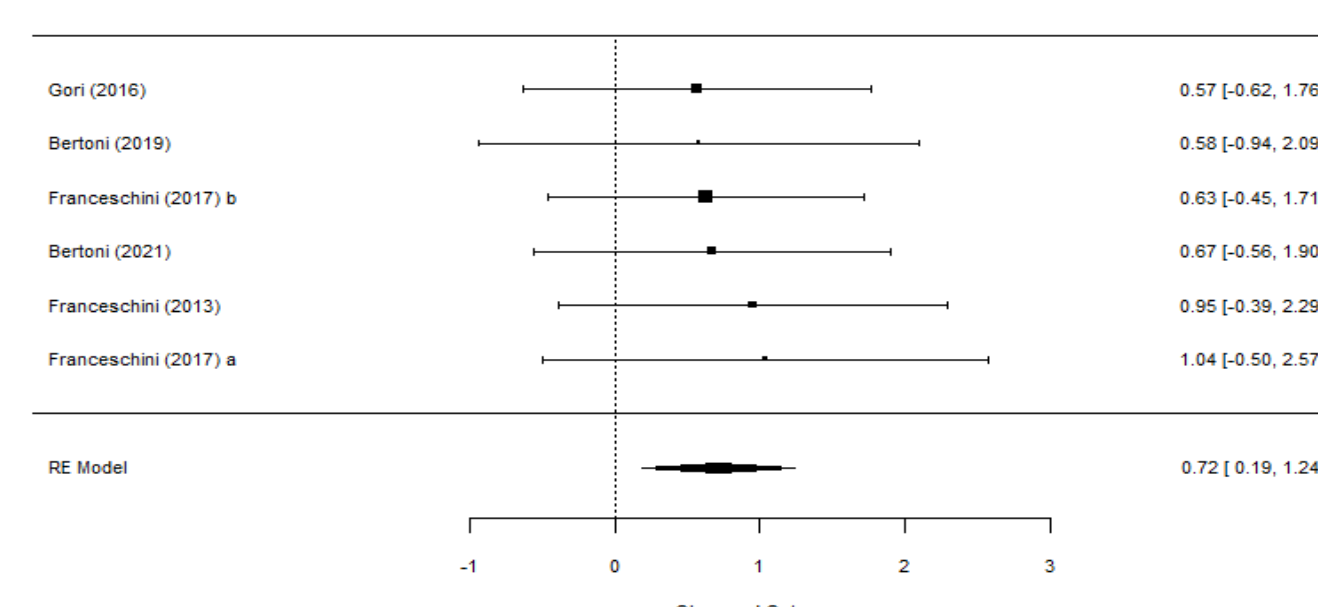
METHOD



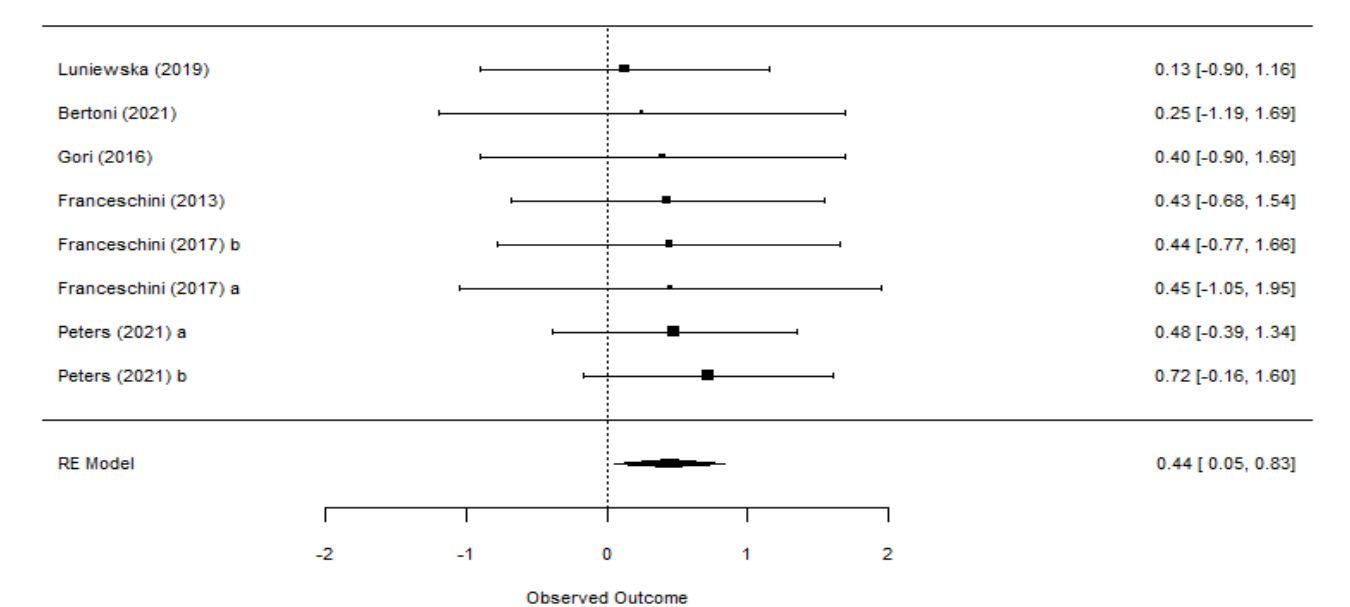
RESULTS

	Effect Size	Z	p-value
Visual Attention	0.72	2.67	0.008
Reading Speed	0.44	2.21	0.03
Phonological Skills	0.45	2.14	0.03
Cross-Modal Abilities	0.41	2.28	0.02

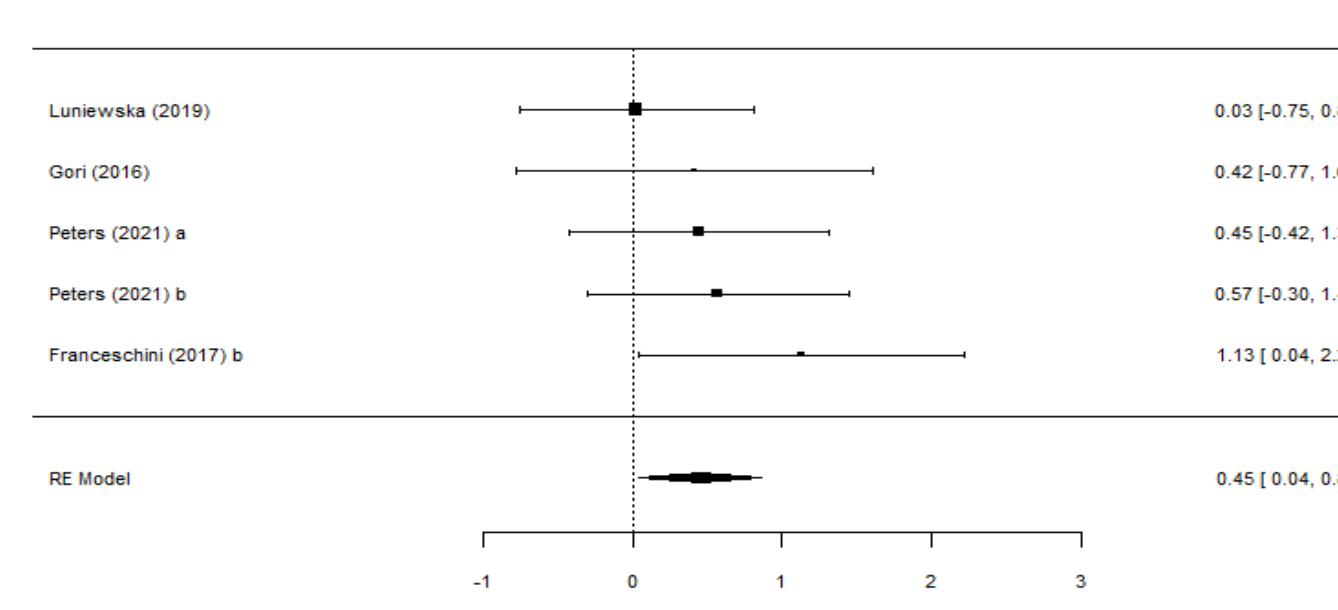
VISUAL ATTENTION



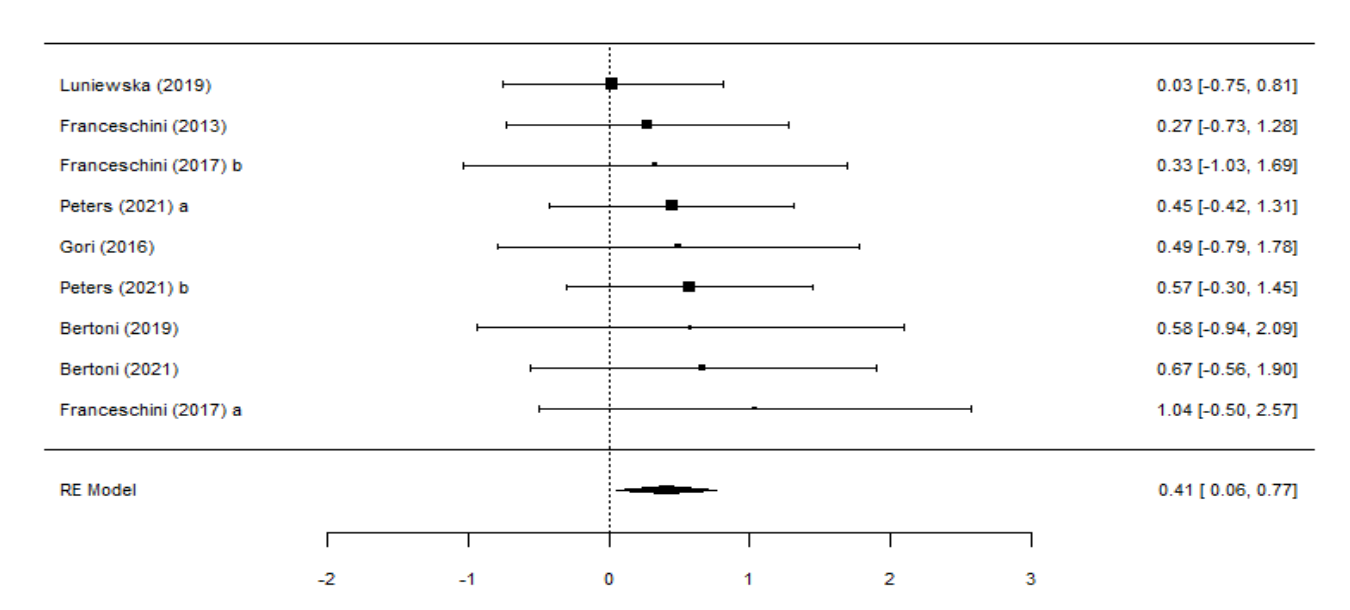
READING SPEED



PHONOLOGICAL SKILLS



CROSS-MODAL ABILITIES



CONCLUSION

The impacts of this training not only affect visual attention (the primary outcome) but, more importantly, also extend over cognitive functions not directly trained, such as reading speed, phonological skills (phonetic discrimination and short-term phonological memory) and cross-modal abilities (rapid automatization naming).

These improvements highlight a clear role of selective attention in reading skills development and the generalisation effects of action video games training. The clinical application of action video games enables effective, fun and engaging treatment of dyslexia.