Title:
Rhythm-based telerehabilitation for dyslexia: evidence and future perspectives

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Abstract

Traditional dyslexia interventions often require multi-componential methods and several personalized materials to be effective. Innovative process-based approaches, addressing a specific cognitive component, appear to be a more efficient and promising option. Based on the neural and cognitive overlaps between the music and language domains, several studies explored the effect of music training on reading development. Overall, findings suggest that music-based interventions aimed at enhancing basic auditory skills of children with dyslexia have an impact on phonological and reading abilities, thus supporting the hypothesis of a transfer effect of musical training on phonology and literacy. These encouraging results inspired the design of a rhythm-based intervention, Rhythmic Reading Training (RRT), in which reading exercises are combined with a rhythmic synchronization task. The hypothesis supporting the development of RRT was that synchronizing speech production during reading to a regular acoustic stimulus would improve temporal processing, thus enhancing the precision of timing perception and, as a consequence, the discrimination of some acoustic features of the linguistic sounds. This intervention program was tested in multiple controlled clinical trials, which confirmed its effectiveness in improving the reading skills of children, adolescents, and young adults with dyslexia. Given the advantage of telerehabilitation methods, clinical research was needed to test the effectiveness of tele-training approaches by comparing their outcomes with those of face-to-face interventions. In this perspective, RRT was tested in a small-scale clinical trial during the lockdown phase of the COVID-19 pandemic in order to compare the effectiveness of telerehabilitation vs. in-presence rehabilitation of dyslexia. Results demonstrated that RRT is effective in spite of the administration method (remote or in-presence), thus adding evidence of its potential as a rehabilitation method for dyslexia.