Critical Review:
Is rhythmic music therapy effective in improving phonological awareness skills in children with dyslexia?

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The present study critically evaluates research regarding the effect of rhythmic musical therapy on the phonological awareness skills in children with dyslexia. Included is a critical review of six articles pertaining to various music interventions, with articles including nonrandomized clinical trials and mixed method designs. Overall, the results of this review suggest that rhythmic music therapy could be a beneficial supplement to traditional language therapy to improve phonological awareness skills in children with dyslexia.

Introduction

Dyslexia is a neurodevelopmental disorder, involving a cluster of symptoms that may affect the accuracy of word recognition, spelling, and decoding. According to the International Dyslexia Association (IDA), dyslexia, a specific language impairment, is the most common cause of difficulties with reading, writing, and spelling, affecting 5-20% of the general population (2012). One of the main underlying deficits in those with dyslexia is phonological awareness, which affects the individual's ability to recognize and manipulate sounds in syllables, words, and phrases (Bishop-Liebler, Welch, Huss, Thomson, & Goswami, 2014). Impairments present in dyslexia can further extend to non-linguistic deficits, such as the inability to perceive rhythm in both speech and music (Bishop-Liebler et al., 2014).

The IDA recommends structured literacy as the most effective approach to intervention for dyslexia (2018). Structured literacy is a systematic, explicit method of instruction that addresses all methods of reading comprehension, including how phonology, orthography, syntax, morphology, and semantics work together (IDA, 2018). Students begin learning phonemes, which are smallest units of language, and build up to put together large words and sentences, allowing them to develop decoding skills (IDA, 2018). Other research has shown the importance of using multisensory techniques to develop reading skills, such as focusing on building connections between visual, auditory, and kinesthetic/tactile domains to improve deficits (Al Otaiba, Rouse, & Baker, 2018). This approach supports the role of music therapy in intervention for dyslexia.

As music and language have been found to share similar structural characteristics, music therapy has been suggested as an effective treatment for the improvement of various communication disorders (Hobson, 2006). These disorders include but are not limited to aphasia, apraxia, dysarthria, Autism Spectrum Disorder, and specific language impairments (Hobson, 2006). As dyslexia is considered a specific language impairment, research suggests that music therapy may be beneficial in improving the deficits associated with dyslexia (Rolka and Silverman, 2015). One linguistic and non

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articles. The search was limited to articles written in English or French from the years 2000-2019.

Selection Criteria

In order to be included in the review, articles must have met the following inclusion criteria: the use of music therapy or rhythmic intervention training, participants being children with dyslexia or at a strong risk for dyslexia, and phonological awareness or skills included as outcome measures.

Data Collection

The literature search generated six articles which met the aforementioned selection criteria. The articles included (4) nonrandomized clinical trials and (2) mixed methods designs which included a combination of single subject design and nonrandomized clinical trials.

Results

Nonrandomized clinical trials

A nonrandomized clinical trial uses a non-randomized control group or condition to determine the effectiveness of an intervention. Implementation of this format is effective when factors are unable to be randomized. The lack of a blinding procedure in this design may lead to observational biases. Regardless, this design provides a high level of evidence.

Flaugnacco, Lopez, Terribili, Montico, Zoia, and Schön (2015) conducted a study with 48 children

Results of the study indicated that CMT positively influenced temporal components of speech, as well as other speech aspects, including phonological awareness. Treatment protocol was reported adequately and in detail. Appropriate data analyses were completed to compare the results of the two studies. In the second study, testing at four different time points was beneficial in removing the potential of a motivational bias.

A limitation of the study is the small sample size, as is common in studies regarding developmental dyslexia. In the second experiment, an additional caveat affecting generalizability arose from the lack of criteria reported in determining the categorization of reading abilities. Overall, this paper did not report reliability measures. No analyses were run comparing the differences between groups.

Accordingly, this study provides mildly compelling evidence that music training is beneficial to improving the phonological deficit present in children with dyslexia.

Overy (2000) completed a nonrandomized clinical trial to examine the nature of timing deficits in musical abilities in children with dyslexia, and if music training focused on timing skills helps improve language and literacy skills. Children with a strong risk for dyslexia (N=6) (based on the Dyslexia Screening Test) were matched with 16 controls, children with “no risk” for dyslexia. All children were pre-tested on WORD reading and spelling tests, along with particular music tests that had been developed to test specific music skills, including rhythm perception, production, and processing, metre skills, and rapid temporal processing. After receiving training for one whole scho.

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