Music therapy fails dyslexics

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There is no link between a lack of musical ability and dyslexia. Moreover, attempts to treat dyslexia with music therapy are unwarranted, according to scientists in Belgium writing in the current issue of the *International Journal of Arts and Technology*.

Cognitive neuroscientist José Morais of the Free University of Brussels and colleagues point out that research into dyslexia has pointed to a problem with how the brain processes sounds and how dyslexic readers manipulate the sounds from which words are composed, the phonemes, consciously and intentionally. It was a relatively short step between the notion that dyslexia is an issue of phonological processing and how this might also be associated with poor musical skills - amusia - that has led to approaches to treating the condition using therapy to improve a dyslexic reader's musical skills.

Morais and colleagues demonstrate that theoretically this is an invalid argument and also present experimental evidence to show that there is no justification either for the link or for using music therapy to treat dyslexia.

Language and music are apparently uniquely human traits and many researchers have tried to find direct links between the two. A whole industry of music therapy hinges on this purported association with claims that language remediation is possible through the application of learning in music. Given the social importance of literacy, a role for music in helping poor or dyslexic readers to overcome their difficulties has been at the forefront of therapy for many years. Morais' team points

out that the notion is based on studies that are generally flawed in two respects.

The first problem with studies that attempt to link a lack of musical ability with reading difficulties is that the quality of published empirical studies is quite variable and many reviews of the field fail to discard papers containing insufficient information, either on materials and methods, or on the experimental results. The second flaw is that many studies imply an explicit causality between amusia and dyslexia on the basis of results that are themselves merely statistical correlations. Such an approach to science leads to a circular argument in which some researchers argue that music discrimination predicts phonological skills, which in turn predicts reading ability and that reading ability implies phonological skills and so on.

More recent studies have broken the link between hearing and reading by showing that deaf children, who often learn to perceive speech accurately using lip reading and visual clues can have literacy levels just as high as hearing children. Of course, most of those children do not develop good musical ability with respect to musical pitch. Conversely, people who are unable even to hum a familiar tune show normal literacy levels.

Music and speech do overlap, but musical sounds and phonemes are not the same, the researchers explain. Musical tones are simply sounds, however, they are produced and can be heard without recourse to complex auditory analysis. Phonemes, in contrast, whether spoken or read, are abstractions of the units into which language might be broken down. They are purely symbolic and require significantly more interpretation to understand than simply hearing a sound.

"The conscious representations of phonemes play a crucial role in the learning of literacy abilities in the alphabetic writing system. Children do

not become spontaneously aware of phonemes. Nor do they become aware of phonemes by learning music," the researchers say. The team has now studied the differing abilities of children, both with and without dyslexia, on understanding and interpretation of phonemes and syllables and musical notes and the intervals between them in a melody. They saw no significant differences between dyslexic readers and age-matched normal readers in the melodic tests.

Literacy is crucially dependent on phonological skills, but alphabetic literacy is strongly constrained by the development of phoneme awareness and abilities, and phonemes have no correspondence in music, the team explains. Thus, although music, through its emotional characteristics, might be a great motivational support for speech-based therapy, this limits, to a large extent, the possibilities of using music training to re-educate dyslexic readers.

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