## MUSIC LEARNING HELPS LANGUAGE LEARNING?





Assists with word decoding



Improves comprehension in beginner readers



Improves comprehension in those students experiencing reading difficulties



Improves phonological awareness for specific language sounds more than direct phonological training



Increases the speed that children learn new words



Increases the understanding of how to use new words in language



Improves young readers' understanding of language syntax



Counteracts the negative effects of low SES on literacy development

## HOW ARE MUSIC & LANGUAGE LEARNING CONNECTED?

Music and Language processing share an overlapping neural network. The connections between music learning and language acquisition through to highly developed literacy was one of the first breakthroughs in the neuromusical research field.

There are now enough randomised, longitudinal and replicated studies to confidently point to a causal relationship between music learning and language and literacy enhancement.

## MUSIC SUPPORTS READING READINESS & LOW READERS











Are connected

When a child can maintain a steady beat

It shows that all the connection in the brain

Required for reading

## SELECTED MUSIC AND LANGUAGE LEARNING RESEARCH

**Ahissar**, M., Protopapas, A., Reid, M., & Merzenich, M. M. (2000). Auditory processing parallels reading abilities in adults. Proceedings of the National Academy of Sciences, 97(12), 6832–6837.

**Besedová**, P., Vyšata, O., Mazurová, R., Kopal, J., Ondráková, J., Vališ, M., & Procházka, A. (2019). Classification of brain activities during language and music perception. Signal, Image and Video Processing, 13(8), 1559-1567.

**Besson**, M., Schön, D., Moreno, S., Santos, A., & Magne, C. (2007). Influence of musical expertise and musical training on pitch processing in music and language. *Restorative Neurology and Neuroscience*, 25(3–4), 399–410.

**Bonacina**, S., Krizman, J., White-Schwoch, T., & Kraus, N. (2018). Clapping in time parallels literacy and calls upon overlapping neural mechanisms in early readers. Annals of the New York Academy of Sciences, 1423(1), 338-348.

Caldwell, B., & Vaughan, T. (2011). Transforming education through the arts. Routledge.

**Corrigall**, K. A., & Trainor, L. J. (2011). Associations between length of music training and reading skills in children. Music Perception: An Interdisciplinary Journal, 29(2), 147–155.

**Dittinger**, E., Chobert, J., Ziegler, J. C., & Besson, M. (2017). Fast brain plasticity during word learning in musically-trained children. Frontiers in Human Neuroscience, 11, 233.

**Eccles**, R., van der Linde, J., Le Roux, M., Swanepoel, D. W., MacCutcheon, D., & Ljung, R. (2021). The effect of music education approaches on phonological awareness and early literacy: A systematic review. Australian Journal of Language and Literacy, The, 44(1), 46-60.

**Fitzpatrick**, K. R. (2006). The effect of instrumental music participation and socioeconomic status on Ohio fourth-, sixth-, and ninth-grade proficiency test performance. Journal of Research in Music Education,

54(1), 73–84.

**Frey**, A., François, C., Chobert, J., Velay, J. L., Habib, M., & Besson, M. (2019). Music training positively influences the preattentive perception of voice onset time in children with dyslexia: A longitudinal study. Brain Sciences, 9(4), 91.

**Guo**, H., Yuan, W., Fung, C. V., Chen, F., & Li, Y. (2022). The relationship between extracurricular music activity participation and music and Chinese language academic achievements of primary school students in China. Psychology of Music, 50(3), 742-755.

**Jentschke**, S., & Koelsch, S. (2009). Musical training modulates the development of syntax processing in children. Neuroimage, 47(2), 735–744.

**Koelsch**, S. (2006). Significance of Broca's area and ventral premotor cortex for music-syntactic processing. Cortex, 42, 518–520.

**Kraus**, N., & White-Schwoch, T. (2016). Neurobiology of everyday communication: What have we learned from music?. The Neuroscientist, 1073858416653593.

**Ozernov-Palchik**, O., Wolf, M., & Patel, A. D. (2018). Relationships between early literacy and nonlinguistic rhythmic processes in kindergarteners. Journal of Experimental Child Psychology, 167, 354-368.

Patel, A. D. (2008). Music, language, and the brain. New York: Oxford University Press.

**Patscheke**, H., Degé, F., & Schwarzer, G. (2016). The effects of training in music and phonological skills on phonological awareness in 4- to 6-year-old children of immigrant families. Frontiers in Psychology, 7, 1647.

**Pitt**, J., & Welch, G. F. (2021). Music in early education and care settings for communication and language support. The Oxford Handbook of Early Childhood Music Learning and Development.

**Slater**, J., Strait, D. L., Skoe, E., O'Connell, S., Thompson, E., & Kraus, N. (2014). Longitudinal effects of group music instruction on literacy skills in low-income children. *PLOS ONE*, 9(11), e113383.

**Steinbrink**, C., Knigge, J., Mannhaupt, G., Sallat, S., & Werkle, A. (2019). Are Temporal and tonal musical skills related to phonological awareness and literacy skills?–Evidence from two cross-sectional studies with children from different age groups. Frontiers in psychology, 10, 805.

**Swaminathan**, S., & Schellenberg, E. G. (2020). Musical ability, music training, and language ability in childhood. Journal of Experimental Psychology: Learning, Memory, and Cognition, 46(12), 2340.

**Tervaniemi**, M., Putkinen, V., Nie, P., Wang, C., Du, B., Lu, J., ... & Tao, S. (2022). Improved auditory function caused by music versus foreign language training at school age: is there a difference?. Cerebral Cortex, 32(1), 63-75.

**Tierney**, A., & Kraus, N. (2013). Music training for the development of reading skills. Applying Brain Plasticity to Advance and Recover Human Ability Progress in Brain Research, 207, 209–241.

**Tsang**, C. D., & Conrad, N. J. (2011). Music training and reading readiness. Music Perception: An Interdisciplinary Journal, 29(2), 157–163.

**Vidal**, M. M., Lousada, M., & Vigário, M. (2020). Music effects on phonological awareness development in 3-year-old children. Applied Psycholinguistics, 41(2), 299-318.