

2002 – 2004

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“Musical Training, Neural Plasticity and Brain Development Across the Life Span”

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Dr. Pantev’s project, together with Dr. Larry E. Roberts and Dr. Laurel J. Trainor, compares adult musicians and non-adult musicians, and studied children enrolled in Suzuki training programs. The study asked: How do functional brain attributes differ between musicians and non-musicians? Does expression of these attributes depend on musical training? Are there benefits of musical training for cognitive and perceptual skills beyond those involved in music performance? Important correlations between music and learning-induced cortical plasticity, enhancement of automatic encoding of melodic contour and interval structure, musical training and enhanced evoked brain activity specifically for sounds of the instrument of practice in children enrolled in Suzuki music lessons were found.

RESEARCH PUBLICATIONS, ETC.:

Under review:

- Shahin, A., L.E. Roberts, C. Pantev, L.J. Trainor and B. Ross. “Enhancement of the P2 auditory evoked response in musicians is modulated by spectral bandwidth.” *Cerebral Cortex*.
- Trainor, L.J. “Event-related potential measures in auditory developmental research.” *Developmental Psychophysiology*. Eds: L. Schmidt and S. Segalowitz. Cambridge: Cambridge University Press.

In press:

- Fujioka, T., L.J. Trainor, B. Ross, R. Kakigi and C. Pantev. “Automatic encoding of polyphonic melodies in musicians and non-musicians.” *Journal of Cognitive Neuroscience*.

2005

- Trainor, L.J. “Are there critical periods for music development?” *Developmental Psychobiology* 46(2005): 262-278.

2004

- Fujioka, T., L.J. Trainor, B. Ross, R. Kakigi and C. Pantev. “Musical training enhances automatic encoding of melodic contour and interval structure.” *Journal of Cognitive Neuroscience* 16(2004): 1010-1021.
- Shahin, A., L.E. Roberts and L.J. Trainor. “Enhancement of auditory cortical development by musical experience in children.” *NeuroReport* 15(2004): 1917-1921.

2003

- Pantev, C., B. Ross, T. Fujioka, L.J. Trainor, M. Schulte and M. Schulz. “Music and learning-induced cortical plasticity.” *The Neurosciences and Music: Mutual interactions and implications of developmental functions, volume 999*. Eds: G. Avanzini, D. Miciacchi, L. Lopez and M. Majno. New York: Annals of the New York Academy of Sciences. 438-450.
- Trainor, L.J., A. Shahin and L.E. Roberts. “Effects of musical training on auditory cortex in children.” *The Neurosciences and Music: Mutual interactions and implications of developmental functions, volume 999*. Eds: G. Avanzini, D. Miciacchi, L. Lopez and M. Majno. New York: Annals of the New York Academy of Sciences. 506-513.

Conference papers

2005

- Pantev, C. "Music and Neurophysiology." The Neuroscience and Music – II, Leipzig, Germany. 5-7 May 2005.
- Trainor, L.J. "Music and development." The Neuroscience and Music – II, Leipzig, Germany. 5-7 May 2005.

2004

- Fujioka T., L.J. Trainor, B. Ross, R. Kakigi and C. Pantev. "Static and dynamic representation of complex sounds: from tonotopy to musical notes." 15th International Conference on Biomagnetism, Boston, Massachusetts. 8-12 August 2004.
- Schulz, M., B. Ross, T. Fujioka, R. Ishii and C. Pantev. "Cortical rhythms of rhythmical tuning." 15th International Conference on Biomagnetism, Boston, Massachusetts. 8-12 August 2004.
- Fujioka, T., L.J. Trainor, B. Ross, R. Kakigi and C. Pantev. "Auditory memory trace encodes polyphonic melody." 15th International Conference on Biomagnetism, Boston, Massachusetts. 8-12 August 2004.
- Shahin, A., B. Ross, L.J. Trainor, C. Pantev and L.E. Roberts. "Effect of spectral complexity of tones on late auditory responses in musicians and non-musicians." 15th International Conference on Biomagnetism, Boston, Massachusetts. 8-12 August 2004.

2003

- Shahin, A., L.J. Trainor and L.E. Roberts. "Enhanced auditory evoked potentials in young children enrolled in music training." Neurosciences, New Orleans, Louisiana, United States. November 2003.
- Bosnyak, D.J., R.A. Eaton, and L.E. Roberts (J. Syka and M. M. Merzenich, organizers). "Distributed auditory cortical representations are modified when non-musicians are trained at pitch discrimination with 40-Hz amplitude modulated tones." Prague Symposium on Plasticity of the central auditory system and processing of complex acoustic signals, Prague, Czech Republic. 10-15 July 2003.
- Fujioka, T., L.J. Trainor, B. Ross, R. Kakigi and C. Pantev. "Musical training enhances automatic encoding of melodic contour and interval structure." Prague Symposium on Plasticity of the central auditory system and processing of complex acoustic signals, Prague, Czech Republic. 10-15 July 2003.

2002

- Pantev, C. "Music and learning induced plasticity." The neurosciences and music: Mutual interactions and implications on developmental functions, San Servolo Island, Venice, Italy. 25-27 October 2002.
- Trainor, L.J. "Effect of the musical training on the auditory cortex in children." The neurosciences and music: Mutual interactions and implications on developmental functions, San Servolo Island, Venice, Italy. 25-27 October 2002.