

2001 – 2002

Dr. Gottfried Schlaug

Harvard University – Boston, Massachusetts, United States

E-mail: gschlaug@bidmc.harvard.edu

Web site: www.musicianbrain.com

“Neural Correlates of Motor Skill and Musical Imagery in Pianists”

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Dr. Schlaug’s study examines brain plasticity in musicians, neural correlates of specific musical skills, neural correlates of learning musical skills, how these brain adaptations relate to skill performance, and whether mental rehearsal of musical skills relies on similar brain regions than the actual physical performance. His studies revealed that brain structure and function changes in response to musical skill acquisition; early commencement of musical training and practice intensity are important predictors of these changes. Actual and imagined musical performance relies on the same brain networks. This study informs about neural coding of musical skills.

RESEARCH PUBLICATIONS, ETC.:

In press

- Koelsch, S., T. Fritz, K. Schulze, D. Alsop and G. Schlaug. “Adults and children processing music: An fMRI study.” *NeuroImage* (2005).

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- Gaab, N., M. Paetzold, M. Becker, M.P. Walker and G. Schlaug. “The influence of sleep on auditory learning – A behavioral study.” *Neuroreport* 15(2004): 731-734.
- Hamilton, R., A. Pascual-Leone and G. Schlaug. “Absolute pitch in blind musicians.” *Neuroreport* 5(2004): 803-806.
- Overy, K., A. Norton, K. Cronin, N. Gaab, D. Alsop, E. Winner and G. Schlaug. “Differential lateralization for melody versus rhythm is already present in young children.” *Neuroreport* 25(2004): 1723-1726.

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- Gaab, N., C. Gaser, T. Zaehle, Y. Chen and G. Schlaug. “Functional anatomy of pitch memory – An fMRI study with sparse temporal sampling.” *NeuroImage* 19(2003): 1417-1426.
- Gaab, N., J. Keenan and G. Schlaug. “The effects of gender on the neural substrates of pitch memory.” *Journal of Cognitive Neuroscience* 15(2003): 810-820.
- Gaab, N., and G. Schlaug. “The effect of musicianship on pitch memory in performance matched groups.” *Neuroreport* 14(2003): 2291-2295.
- Gaser, C., and G. Schlaug. “Brain structures differ between musicians and non-musicians.” *Journal of Neuroscience* 23(2003): 9240-9245.
- Hutchinson, S., L.H.L. Lee, N. Gaab and G. Schlaug. “Cerebellar volume: Gender and musicianship effects.” *Cerebral Cortex* 13(2003): 943-949.
- Lee, D.J., Y. Chen and G. Schlaug. “Corpus callosum: Musician and gender effects.” *Neuroreport* 14(2003): 205-209.

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- Keenan, J.P., A.R. Halpern, V. Thangaraj, C. Chen, R.R. Edelman and G. Schlaug. “Absolute pitch and planum temporale.” *NeuroImage* 14(2001): 1739-1740.
- Schlaug, G. “The brain of musicians: A model for functional and structural plasticity.” *The Annals of the New York Academy of Science* 930(2001): 281-299.

Conference papers

2004

- Cronin, K., K. Overy, A. Norton, S. Marchina, E. Winner and G. Schlaug. "The effects of experience and brain maturity on neural correlates of music processing." 10th Annual Meeting of the Organization for Human Brain Mapping, Budapest Congress Center, Budapest, Hungary. 13-17 June 2004.
- Overy, K., A. Norton, K. Cronin, N. Gaab, D. Alsop, E. Winner and G. Schlaug. "After one year of musical training, young children show a left-hemispheric shift for melody processing." 10th Annual Meeting of the Organization for Human Brain Mapping, Budapest Congress Center, Budapest, Hungary. 13-17 June 2004.
- Overy, K., A.C. Norton, K.T. Cronin, N. Gaab, D.C. Alsop, E. Winner and G. Schlaug. "Comparing rhythm and melody discrimination in young children using fMRI." International Conference for Music Perception and Cognition 8, Northwestern University, Evanston, Illinois, United States. 3-8 August 2004.
- Norton, A., K. Cronin, K. Overy, E. Winner and G. Schlaug. "Are there correlations between musical and non-musical cognitive skills?" Poster presented at the First Workshop on Brain Sound and Music, Montreal, Canada. 24 June 2004.
- Schlaug, G. "Brain effects of musical training." Cognitive Neuroscience Society, San Francisco, California, United States. 18-20 April 2004.
- Schlaug, G. "Brain and cognitive effects of learning a musical instrument." First Workshop on Brain Sound and Music in Montreal, Montreal, Canada. 24 June 2004.
- Schlaug, G., D.J. Lee, K. Overy, K. Cronin, A. Norton and E. Winner. "Does brain anatomy predict musicianship?" 10th Annual Meeting of the Organization for Human Brain Mapping, Budapest Congress Center, Budapest, Hungary. 13-17 June 2004.
- Schlaug, G. "Neural correlates of amusia." Annual Meeting of Theoretical and Experimental Neuropsychology, University of Quebec, Montreal, Canada. 25 June 2004.
- Schlaug, G., A. Norton, K. Overy, K. Cronin, D.J. Lee and E. Winner. "Effects of music training on children's brain and cognitive development." International Conference for Music Perception and Cognition 8, Northwestern University, Evanston, Illinois, United States. 3-7 August 2004.

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- Cronin, K., S. Marchina, K. Overy, A. Norton, E. Winner and G. Schlaug. "Brain correlates in rhythmic processing differ in boys and girls." Cognitive Neuroscience Society, New York, New York, United States. 31 March - 1 April 2003.
- Meidell, K.L., N. Gaab, A. Halpern and G. Schlaug. "Motor imagery in pianists." Cognitive Neuroscience Society, New York, New York, United States. 31 March - 1 April 2003.
- Meidell, K.L., N. Gaab, A. Halpern and G. Schlaug. "Performance in motor imagery." 9th International Conference on Functional Mapping of the Human Brain, New York, New York, United States. 19-22 June 2003.
- Schlaug, G., E. Winner, A. Norton, K. Cronin and K. Overy. "Effects of music training on children's brain and cognitive development." Cognitive Neuroscience Society, New York, New York, United States. 31 March - 1 April 2003.

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- Meidell, K.L., N. Gaab, A. Halpern, Y. Chen and G. Schlaug. "Motor imagery in pianists." Society for Neuroscience Annual Meeting, New Orleans. November 2002.
- Schlaug, G. "Absolute Pitch: The nature versus nurture debate." International Symposium on Musical Acoustics, National Autonomous University of Mexico, Mexico City, Mexico. 9-13 December 2002.

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- Meidell, K.L., N. Gaab, A. Halpern, Y. Chen and G. Schlaug. "Motor imagery in pianists." Society for Neuroscience Annual Meeting, New Orleans. November 2002.
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