Nadine Gaab, Ph.D.

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http://www.childrenshospital.org/research/gaab

Academic Positions

07/07-present **Children's Hospital Boston/Harvard Medical School, Boston, MA**
Division of Developmental Medicine: Laboratories of Cognitive Neuroscience
Harvard Medical School
Assistant Professor of Pediatrics

Harvard Graduate School of Education, Cambridge, MA
Faculty Affiliate

Education

08/05 - 06/07 **Massachusetts Institute of Technology (MIT), Cambridge, MA:**
Department of Brain & Cognitive Sciences
Postdoctoral Associate
(Advisor: John D. E. Gabrieli, Ph.D.)

02/04 - 07/05 **Stanford University, Stanford, CA:**
Department of Psychology and Radiology
Postdoctoral Research Fellow
(Advisors: John D. E. Gabrieli, Ph.D. and Gary H. Glover, Ph.D.)

06/03 - 04/04 **University of Zürich, Switzerland:**
Ph.D. in "Psychology/Neuropsychology"
(Advisor: Lutz Jäncke, Ph.D.)
Ph.D. thesis title: "The Auditory cortex: perception, memory, plasticity and the influence of musicianship" (see publication list)

Harvard Medical School, Boston, MA:
Department of Neurology: Music and Neuroimaging Laboratory at Beth Israel Deaconess Medical Center; *Visiting Research Fellow*
(Advisor: Gottfried Schlaug, M.D., Ph.D.)

05/01 - 06/03 **University of Magdeburg, Germany:**
Ph.D. candidate "Cognitive Neuroscience"
(Advisor: Lutz Jäncke, Ph.D.)

Harvard Medical School, Boston, MA:
Department of Neurology: Music and Neuroimaging Laboratory at Beth Israel Deaconess Medical Center; *Visiting Research Fellow*
(Advisor: Gottfried Schlaug, M.D., Ph.D.)

10/95 - 04/01 **University of Trier, Germany:**
Master of Science in Psychology (main focus: clinical and experimental psychology)
Master's thesis title: "Short-term plasticity in the human auditory cortex: an fMRI study"

Research Experience/Summer Schools

07/07-present	**Massachusetts Institute of Technology (MIT), Cambridge, MA:** *Research Affiliate*
06/06	**Princeton University, Princeton, NJ:** *John Merck Fund Summer Institute on the Biology of Developmental Disabilities*
07/04	**University of California, Los Angeles, CA:** *Graduate summer school*: Mathematics in brain imaging; Institute for Pure and Applied Mathematics (IPAM)
07/02	**Harvard Medical School, Boston, MA:** *TMS intensive course* (by Alvero Pascual-Leone, M.D.)
10/00	**University of Munich, Germany:** *Research Assistant:* DFG-project: "Time-order judgments and the auditory cortex"
07/99 - 08/99	**University of Düsseldorf, Germany:** *Internship* at the Medical School, Department of Geriatric Psychiatry; Development of the TFDD (Alzheimer-Assessment)
	University of Trier, Germany:
04/99 - 07/99 09/99 - 04/00	*Internship/Research Assistant* Center for Psychobiological and Psychosomatic Research", Project: "Prevalence of symptoms of PTSD in German professional firefighters"
09/98 - 04/99	**St. Mary's Medical Center, San Francisco, CA:** *Clinical Internship* Neurobehavioral Rehabilitation Unit (Advisor: Ronald Ruff, Ph.D.); *Research Assistant* in Project: External memory aids for patients with prospective memory deficits"
03/98 - 04/98	**University of Tübingen, Germany:** *Internship/Research Assistant* Medical School, Department of Otolaryngology, Phoniatrics and Pediatric Audiology
12/97 - 08/98	**University of Trier, Germany:** *Internship/Research Assistant* Center for Psychobiological and Psychosomatic Research

Awards

02/07	**Educational Stipend** from the International Society for Magnetic Resonance in Medicine for attending the Joint Annual Meeting ISMRM-ESMRMB in Berlin, Germany.
04/05	**Travel Award** from the German Research Foundation (DFG) for attending "The Neurosciences and Music" conference in Leipzig, Germany
04/04	**"Summa cum laude"** Highest distinction for doctoral thesis from University of Zürich/Switzerland

Awards (continued)

05/03 **Travel Award** for the Organization for Human Brain Mapping's Ninth Annual Meeting in New York 2003

07/02 - 02/04 **Graduate Fellowship** for the Harvard Medical School in Boston from the German National Merit Foundation (Studienstiftung des deutschen Volkes; an institution supported largely by the German government that grants competitive scholarships to approximately 0.25 percent of the German university student population)

05/02 **"fMRI Experience Travel Award"** from the Institute of Psychiatry, King's College in London, UK to attend the "fMRI Experience Conference 2002"at NIH as a guest speaker

06/01 - 06/02 **Graduate Fellowship** for the Harvard Medical School in Boston from the German Academic Exchange Service (DAAD)

07/08 **Harvard University Committee on the Biological Sciences Nominee** for the John Merck Fund (Cognitive Science) 2008

Scientific Memberships

03/02- Present **Society for Neuroscience** (SFN)
08/01- Present **Cognitive Neuroscience Society** (CNS)
09/04- Present **Association for Psychological Science** (APS)
09/05- Present **Association for Women in Science** (AWIS)
01/02- Present **Organization for Human Brain Mapping** (OHBM)
07/08- Present **International Society for Behavioral Neuroscience** (ISBN)

Committee memberships/Board memberships

07/07- Present **MRI committee: Children's Hospital Boston**
05/07-Present **Board member: German Academic Exchange Service Alumni Association (DAADAA)**
04/08 **Member of the Poster committee for the Cognitive Neuroscience Society conference**

Current Funding

1/2008-12/2009 **Charles Hood foundation**
Neural pre-markers of developmental dyslexia in children prior to reading onset
(Role: PI)

1/2008-12/2008 **Milton Funds (Harvard University)**
Linking musical training, rapid auditory processing and language/reading skills in children with and without reading impairments (Role: PI)

1/2008-12/2008 **Children's Hospital Boston pilot grant**
Neural correlates of rapid auditory and phonological processing in pre-reading children with and without a family risk of developmental dyslexia –an fMRI pilot study
(Role: PI)

4/2008-10/2009 **GRAMMY foundation**
Linking musical training, rapid auditory processing and language/reading skills: a behavioral and functional magnetic imaging study (Role: PI)

Current funding (continued)

10/2007-10/2009 **Victory foundation**
TUNE*in*™ to READING Efficacy: a remediation study in children with developmental dyslexia (Role: PI)

Publications

Peer reviewed journals

1. Christodoulou, C. & **Gaab, N**. (in press). Using and Misusing Neuroscience in Education-Related Research. Cortex.

2. **Gaab, N.,** Gabrieli, J. & Glover, G. (2008). Resting in peace or noise: scanner background noise suppresses default-mode network. Human Brain Mapping, 29 (7): 858-867.

3. **Gaab, N.**, Gabrieli, J.D.E., Deutsch, G., Tallal, P., and Temple, E. (2007). Neural correlates of rapid auditory processing are disrupted in children with developmental dyslexia and ameliorated with training: An fMRI study. Restorative Neuroscience and Neurology, 25: 295-310.

4**. Gaab, N.**, Gabrieli, J. & Glover, G. (2007). Assessing the influence of scanner background noise on auditory processing- I: an fMRI study comparing three experimental designs with varying degrees of scanner background noise. Human Brain Mapping, 28 (8): 703-720.

5. **Gaab, N.**, Gabrieli, J. & Glover, G. (2007). Assessing the influence of scanner background noise on auditory processing- II: an fMRI study comparing auditory processing in the absence and presence of recorded scanner noise using a sparse temporal sampling design. Human Brain Mapping, 28 (8): 721-732.

6. **Gaab, N.**, Schulze, K., Ozdemir, E. & Schlaug, G. (2006). Neural correlates of absolute pitch differ between a blind and sighted musicians. Neuroreport, 17 (18): 1853-1857.

7. Tallal, P. & **Gaab, N**. (2006). Dynamic Auditory Processing, Musical Experience and Language Development. Trends in Neurosciences, 29 (7): 382-370.

8. Bermpohl, F., Pascual-Leone, A., Amedi, A., Merabet, L., Fregni, F., **Gaab, N.**, Alsop, D., Schlaug, G. & Northoff, G. (2006). Attentional modulation of emotional stimulus processing- an fMRI study using emotional expectancy. Human Brain Mapping, 27 (8): 662-677.

9. **Gaab, N.**, Gaser, C. & Schlaug, G (2006). Improvement-related functional plasticity following pitch memory training. Neuroimage, 31 (1): 255-263.

10. Bermpohl, F., Pascual-Leone, A., Amedi, A., Merabet, L., Fregni, F., **Gaab, N.**, Alsop, D., Schlaug, G. & Northoff, G. (2006). Dissociable networks for the expectancy and perception of emotional stimuli in the human brain. Neuroimage, 30(2): 588-600.

11. **Gaab, N.**, Tallal, P., Kim, H., Lakshminarayanan, K., Glover, G.H. & Gabrieli, J.D.E. (2005). Neural correlates of rapid spectro-temporal processing in musicians and nonmusicians. Ann. N.Y. Acad. Sci., 1060: 82-88.

12. Walker, M.P., Stickgold, R., Alsop, D., **Gaab, N.** & Schlaug, G. (2005). Sleep dependent motor memory plasticity in the human brain. Neuroscience, 133 (4): 911-917.

Peer reviewed journals (continued)

13. Overy, K. Norton, A.C., Cronin, K.T., **Gaab, N.**, Alsop, D.C., Winner, E. & Schlaug, G. (2004). Imaging melody and rhythm in young children. Neuroreport, 15(11): 1723-1726.

14. **Gaab, N.**, Paetzold, M., Walker, M.P. & Schlaug, G. (2004). The influence of sleep on auditory learning. Neuroreport, 15(4): 731-734. ***See also****:* http://www.f1000biology.com/article/15094486/evaluation

15. **Gaab, N.** & Schlaug, G. (2003). Musicians differ from nonmusicians in brain activation despite performance matching. Ann. N.Y. Acad. Sci., 999: 385-388.

16. **Gaab, N.**, Gaser, C., Zaehle, T., Jaencke, L. & Schlaug, G. (2003). Functional anatomy of pitch memory-an fMRI study with sparse temporal sampling. Neuroimage, 19(4): 1417-1426.

17. **Gaab, N.**, Keenan, J. & Schlaug, G. (2003). The effects of gender on the neural substrates of pitch memory. Journal of Cognitive Neuroscience, 15: 810-820.

18. **Gaab, N.** & Schlaug, G. (2003). The effect of musicianship on pitch memory in performance matched groups. Neuroreport, 14(18): 2291-2295.

19. Hutchinson, S., Lee. L.H., **Gaab, N.** & Schlaug, G. (2003). Cerebellar volume differences of musicians. Cerebral Cortex, 13: 943-949.

20. Jäncke, L., **Gaab, N.**, Wüstenberg, T., Scheich, H. & Heinze, H.J.(2001). Short-term functional plasticity in the human auditory cortex: an fMRI study. Cognitive Brain Research, 12: 479-485.

21. Ihl, R., Grass-Kapanke, B., Lahrem, P., Brinkmeyer, J., Fischer, S., **Gaab, N.** & Kaupmannsennecke, C. (2000). Entwicklung und Validierung eines Tests zur Früherkennung der Demenz mit Depressionsabgrenzung (TFDD). Fortschr. Neurol. Psychiat., 68: 413-422.

Ph.D. thesis

Gaab, N. (2004). The auditory cortex: perception, memory, plasticity and the influence of musicianship. Online publication (# 3391) at the University main library Zürich/ Switzerland
http://www.dissertationen.unizh.ch/index2004.html

Book chapter

Schlaug, G. & **Gaab, N**. (2003). Das musizierende Gehirn: Strukturelle und funktionelle Unterschiede zwischen Musikern und Nicht-Musikern. In: Musik und Humanität; Interdisziplinäre Grundlagen für (musikalische) Erziehung und Bildung. Eds.: Bastian, H.G. & Kreutz, G.; Schott Musik International: 120-134.

Selected conference papers, abstracts and posters

1. Lieberman, D.A., Kim, H., Lakshminarayanan, K., Glover, G.H., Tallal, P., Gabrieli, J.D.E., **Gaab, N.** (2008). Specificity within auditory cortices for nonlinguistic auditory timing patterns related to speech processing. Poster accepted at the "Fifteenth Annual Meeting of the Cognitive Neuroscience Society", San Francisco, CA; April 2008.

2. **Gaab, N.** Ofen, N., Gabrieli, J.D.E. & Glover, G.H. (2007). Resting in peace, noise or with instructions: the influence of scanner background noise on the default mode of brain functions. Poster presented at the meeting of the International Society for Magnetic Resonance Imaging in Medicine, Berlin, Germany, May 2007.

Selected conference papers, abstracts and posters (continued)

3. **Gaab, N.** Ofen, N. & Gabrieli, J.D.E. (2007). Resting with instructions: Actively ignoring or attending to scanner background noise during rest periods can alter default mode of brain functions. Poster presented at the "Fourteenth Annual Meeting of the Cognitive Neuroscience Society", New York City, NY, May 2007.

4. **Gaab, N.,** Gabrieli, J.D.E & Glover, G.H (2006). Resting in peace or noise- scanner background noise suppresses default mode of brain function. Poster presented at the 11th International Conference on Functional Mapping of the Human Brain, Florence, June 2006.

5. Bermpohl, F., Pascual-Leone, A., Amedi, A., Merabet, L., Fregni, F., **Gaab, N.**, Wrase, J., Bauer, M., Heinz., A., Schlaug, G. & Northoff, G. (2006). The medial prefrontal cortex is associated with the temperament trait of ‚novelty seeking': evidence from fMRI. Poster presented at the "Thirteenth Annual Meeting of the Cognitive Neuroscience Society", San Francisco, CA; April 2006.

6. **Gaab, N.**, Tallal, P., Kim, H., Archie, J.J., Lakshminarayanan, K., Glover, G.H. & Gabrieli, J.D.E. (2005). Musical experience shapes auditory rapid spectro-temporal processing in females. Poster presented at the 11th International Conference on Functional Mapping of the Human Brain, Toronto, Canada June 2005.

7. **Gaab, N**., Tallal, P., Kim, H., Archie, J.J., Lakshminarayanan, K., Glover, G.H. & Gabrieli, J.D.E. (2005). Neural correlates of rapid temporospectral processing in musicians and non-musicians. Poster presented at the "The Neurosciences and Music" Conference, Leipzig, Germany May 2005.

8. **Gaab, N**., Kim, H., Lakshminarayanan, K., Tallal, P. & Gabrieli, J.D.E. (2005). Differences in musicians and non-musicians in rapid auditory temporospectral processing of non-linguistic and linguistic stimuli. Poster presented at the "The Neurosciences and Music" Conference, Leipzig, Germany May 2005.

9. **Gaab, N.**, Tallal, P., Kim, H., Archie, J.J., Lakshminarayanan, K., Glover, G.H. & Gabrieli, J.D.E. (2005). Neural correlates of auditory spectro-temporal processing. Poster presented at the "Twelfth Annual Meeting of the Cognitive Neuroscience Society", New York City, NY April 2005.

10. Bermpohl, F., **Gaab, N.**, Fregni, F., Merabet, L., Schlaug, G., Northoff, G. & Pascual-Leone, A. (2004). Attentional modulation of emotional processing – an fMRI study. Poster presented at the "Society for Neuroscience 34th Annual meeting", San Diego, CA October 2004.

11. Bermpohl, F., Northoff, G., **Gaab, N.**, Fregni, F., Merabet, L., Schlaug, G. & Pascual-Leone, A. (2004). Neural correlates for emotional expectancy. Poster presented at the 10th International Conference on Functional Mapping of the Human Brain, Budapest, Hungary June 2004.

12. **Gaab, N.**, Ozdemir, E., Overy, K. & Schlaug, G. (2004). Shared neural substrates for singing, speaking and humming. Poster presented at "Eleventh Annual Meeting of the Cognitive Neuroscience Society", San Francisco, CA April 2004.

13. **Gaab, N.**, Schulze, K., Ozdemir, E. & Schlaug, G. (2004). Extensive activation of occipital and parietal cortex in a blind absolute pitch musician. Poster presented at "Eleventh Annual Meeting of the Cognitive Neuroscience Society", San Francisco, CA April 2004.

14. **Gaab, N.**, Walker, M.P. & Schlaug, G. (2003). The influence of sleep on auditory learning- a behavioral study. Poster presented at: "Society for Neuroscience 33rd Annual meeting", New Orleans, LA November 2003.

15. **Gaab, N.** & Schlaug, G. (2003). Performance related changes in the auditory cortex- an fMRI training study. Poster presented at the "Auditory Cortex" Conference in September 2003, Magdeburg, Germany.

Selected conference papers, abstracts and posters (continued)

16. **Gaab, N.**, Gaser, C. & Schlaug, G. (2003). Developing Musical Expertise -an fMRI training study comparing trained non-musicians with musicians. Poster presented at the 9th International Conference on Functional Mapping of the Human Brain, New York City, NY June 2003.

18. Schulze, K., **Gaab, N.**, Overy, K. & Schlaug, G. (2003). A voxel-based morphometric study of subjects with congenital amusia. Poster presented at the 9th International Conference on Functional Mapping of the Human Brain, New York City, NY June 2003.

19. Overy, K., Norton, A., Alsop. D., Cronin, K., **Gaab, N.**, Winner, E. & Schlaug, G. (2003). The Kid's Got Rhythm: An fMRI study of Rhythm Processing in Children ages Five to Seven. Poster presented at the 9th International Conference on Functional Mapping of the Human Brain, New York City, NY June 2003.

20. **Gaab, N.**, Gaser, C. & Schlaug, G. (2002). Professional musicians and musical novices – an fMRI training study. Poster presented at: "Tenth Annual Meeting of the Cognitive Neuroscience Society", New York City, NY March/April 2003.

21. Meidell, K.L., **Gaab, N.**, Halpern, A. & Schlaug, G. (2002). Motor Imagery in Pianists. Poster presented at: "Society for Neuroscience 32nd Annual meeting", Orlando, FL November 2002.

22. **Gaab, N.**, Gaser, C., Chen, Y. & Schlaug, G. (2002). The functional anatomy of auditory learning-an fMRI study with sparse temporal sampling. Poster presented at: "Society for Neuroscience 32nd Annual meeting", Orlando, FL November 2002.

23. Schlaug, G., **Gaab, N.** & Hutchinson, S. (2002). The musical cerebellum: gender and musicianship effects. Poster presented at the "The Neurosciences and Music: Mutual interactions and implications on developmental functions", Venice, Italy October 2002.

24. **Gaab, N.** & Schlaug, G. (2002). Musicians differ from non-musicians in brain activation despite similar performance. Poster presented at the "The Neurosciences and Music: Mutual interactions and implications on developmental functions" in Venice, Italy October 2002.

25. **Gaab, N.**, Gaser, C., Chen, Y. & Schlaug, G. (2002). Gender interacts with Neural Correlates of Musical Functions. Poster presented at the 8th International Conference on Functional Mapping of the Human Brain, Sendai, Japan June 2002.

26. **Gaab, N**., Zähle, T., Gaser, C., Chen, Y. & Schlaug, G. (2002). The role of posterior perisylvian regions in pitch memory: an fMRI-study with sparse temporal sampling. Poster presented at: "Ninth Annual Meeting of the Cognitive Neuroscience Society", San Francisco, CA, April 2002.

Selected invited oral presentations

1**. Gaab, N.** (scheduled). Dynamic auditory processing, musical experience and language/reading development. Invited oral presentation at the Neuropsychology unit at Salem Hospital, Salem, MA

2. **Gaab, N.** (scheduled). Musical Experience, Auditory Processing and Language Development. Invited oral presentation at the Learning and the Brain conference;. Cambridge, MA; November 2008.

3. **Gaab, N.** (2008). Dynamic auditory processing, musical experience and language/reading development. Invited keynote lecture at the 6th Annual Neuropsychology Research Day at the Graduate School and University Center, City University of New York, Queens, NY

Selected invited oral presentations (continued)

4. Bishop-Liebler, P., Hostetter, M., Himonides, E., Welch, G., **Gaab, N**. (2008). Linguistic and non-linguistic auditory processing skills in conservatoire level musicians, with and without developmental dyslexia, and nonmusicians. Oral presentation at the Music and Language conference, Tufts University, Medford, MA; July 2008.

5. **Gaab, N.** (2008). Linking music, language and reading: implications for developmental dyslexia. Oral presentation at the "International Society for Behavioral Neuroscience" Meeting, Sydney, Australia; June 2008.

6. **Gaab, N.** (2008). Dynamic auditory processing, musical experience and language/reading development. Invited oral presentation scheduled for the "5th Widex Congress of Pediatric Audiology", Amsterdam, The Netherlands; May 2008.

7. **Gaab, N.** (2008). Brain correlates of attention deficit hyperacticity disorder. The Children's Hospital Boston Developmental Medicine Forum, Newton, MA; April 2008.

8. **Gaab, N.** (2008). Neural correlates of rapid auditory processing are disrupted in children with developmental dyslexia and ameliorated with training: An fMRI study. Invited oral presentation for the National Assembly of Wales Visit in Boston, MA, April, 2008.

9. **Gaab, N.** (2008). Linking music, language and dyslexia: evidence from behavioral and imaging studies. Invited oral presentation at the Massachusetts Neuropsychology Society, Boston, MA, March, 2008

10. **Gaab, N.,** Kovelman, I., Christodoulou, J. A., Liberman, D.A., Weinberg, A., Hostetter, M.K. , Norton, E., Reisner, S., Triantafyllou, C., Gabrieli, J.D.E. (2007). Learning to read changes the developing brain: Comparing phonological and semantic processing between prereaders and readers. Oral presentation at the "Society for Neuroscience 37th Annual Meeting", San Diego, CA; November 2007.

11. Christodoulou, J. A. , **Gaab, N**., Kovelman, I., Lieberman, D.A., Weinberg, A., Hostetter, M.K., Norton, E., Reisner, S., Triantafyllou, C., Whitfield-Gabrieli, S., Gabrieli, J.D.E. (2007). Learning to read changes the developing brain: Orthographic processing in prereaders and readers. Oral presentation at the "Society for Neuroscience 37th Annual Meeting", San Diego, CA; November 2007.
(Abstract also selected for Press Book submission).

12. **Gaab, N.** (2006). The neglected sense: dynamic auditory processing, musical training and its role in language development and impairment. Special Seminar, Departments of Cognitive and Linguistic Sciences; Brown University, Providence, RI; February 2007.

13. **Gaab, N.** (2006). The neglected sense: dynamic auditory processing, musical training and its role in language development and impairment. Special Seminar, Department of Psychology, University of Montreal, Montreal, Canada; February 2007.

14**. Gaab, N.** (2007). Linking music, language and dyslexia. Invited oral presentation at the BMRA symposium, Boston, MA, February 2007.

15. **Gaab, N.** (2007). The neglected sense: auditory processing, musical training and its role in language/reading development and impairment. Invited special talk at the Temporal Dynamics of Learning Center and The Center for Research on Language, UCSD, La Jolla, CA, January 2007.

16. **Gaab, N.** (2006). Assessing the neural correlates of developmental dyslexia: challenges, new directions and the role of auditory processing. Oral presentation at the Developmental Medicine Center Colloquium at Children's Hospital, Harvard Medical School, Boston, MA, December 2006.

Selected invited oral presentations (continued)

17. **Gaab, N.** (2006). Linking music, language and dyslexia. Invited oral presentation at the Music Teacher Association of California; San Jose, CA, October 2006.

18. **Gaab, N.** (2006). Exploring the musical brain: Evidence for structural and functional adaptation. Invited oral presentation at Joyful Melodies: Cupertino, CA, October 2006.

19. **Gaab, N.** (2006). Colored blobs on human brains-what can neuroimaging teach us about the brain? Invited oral presentation at the TEC Summer Science Institute; Dover, MA, July 12 2006.

20. **Gaab, N.** (2006). Linking Music, Language and Dyslexia. Invited oral presentation at the Learning and the Brain conference; Rethinking nature and nurture: using brain research to improve child learning and treat learning disorders. Cambridge, MA; May 2006.

21. **Gaab, N.** (2006). The neglected sense: dynamic auditory processing, musical training and its role in language development and impairment. Special Seminar, Department of Psychiatry and Behavioral Sciences, Stanford University Medical School, Stanford, CA; April 2006.

22. **Gaab, N.** (2006). Musical training, rapid temporal processing and language impairments. Oral presentation at CogLunch, Department of Brain and Cognitive Sciences, MIT, Cambridge, MA; March 2006.

23. **Gaab, N.** (2006). The challenge of assessing auditory processing in the MRI scanner and the influence of musical experience on linguistic and non-linguistic processing. Oral presentation at the Hearing Research Seminar Series, Hearing Research Center, Boston University, Boston, MA; January 2006.

24. **Gaab, N.** Music, language and spectro-temporal processing (2005). Oral presentation at the MIT Media Laboratory (group: Tod Machover) in Cambridge, MA; November 2005.

25. **Gaab, N.**, Kim, H., Lakshminarayanan, K., Archie, J.J., Glover, G., Tallal, P. & Gabrieli, J.D.E. (2005). Musical experience shapes auditory rapid spectro-temporal processing of linguistic and non-linguistic stimuli: evidence from fMRI and behavioral studies. Oral presentation at the "Society for Neuroscience 35th Annual Meeting", Washington, DC November 2005. ***(Abstract also selected for Press Book submission)***

26. **Gaab, N.** (2005). Connecting Music, Language and dyslexia: evidence from fMRI and behavioral studies. Oral presentation at the FriSem talk series at Stanford University, Stanford, CA October 2005.

27. **Gaab, N.** & Maeda, F. (2005). What can Neuroscience tell us about reading? Oral presentation (keynote speaker) at Asilomar Regional Reading Conference (organized by the California Reading Association), Pacific Grove, CA March 2005.

28. **Gaab, N.**, Gabrieli, J.D.E. & Glover, G.H. (2004). "Sparse temporal sampling" improves power in auditory experiments- an fMRI study comparing block, event-related and sparse designs. Oral presentation at the "Society for Neuroscience 34th Annual meeting", San Diego, CA October 2004.

29. Walker, M., Stickgold, R., **Gaab, N.** & Schlaug, G. (2004). Sleep-dependent plasticity and motor skill learning in the human brain. Oral presentation at the "Society for Neuroscience 34th Annual meeting", San Diego, CA October 2004.

30. Ozdemir, E., **Gaab, N.**, Overy, K., Norton, A. & Schlaug, G. (2004). Shared neural substrates for singing, speaking, humming, and phonation. Oral presentation at the "Society for Neuroscience 34th Annual meeting", San Diego, CA October 2004

Selected invited oral presentations (continued)

31. **Gaab, N.** (2004). The human auditory cortex: fMRI, plasticity and the influence of musicianship. Oral presentation (Special Seminar) at Rutgers University, Newark, NJ in October 2004.

32. **Gaab, N**. (2004). Neural correlates of auditory learning- an fMRI training study. Oral presentation at the Bay Area Memory Meeting (BAMM), University of California, Berkeley, CA, August 2004.
33. **Gaab, N.** (2004). Music and the Brain: Auditory plasticity and sparse temporal sampling. Oral presentation at the Stanford Brain Research Institute, Stanford, CA August 2004.

34. Schlaug, G., Hamilton, R., Pascual-Leone, A., Schulze, K., Ozdemir, E. & **Gaab, N.** (2004). Absolute pitch in blind musicians. Oral presentation at the 8th International conference on music perception and cognition. Northwestern University, Chicago, IL August 2004.

35. **Gaab, N.** (2004). How (musical) experience shapes the brain. Oral presentation at the Symbolic Systems Alumni Day, Stanford University, Stanford, CA May 2004.

36. Overy, K., Norton, A., Alsop, D., **Gaab, N.**, Winner, E. & Schlaug, G. (2003). Musical Processing in young children aged 5 to 7: an fMRI study. Oral presentation at: "Society for Neuroscience 33rd Annual meeting", New Orleans, LA November 2003.

37. **Gaab, N.** & Schlaug, G. (2003). Training Non-Musicians on a Musical Task – an fMRI study. Oral presentation at the 5th Triennial conference of the European Society for the Cognitive Sciences of Music, Hannover, Germany September 2003.

38. **Gaab, N.**, Zaehle, T., Gaser, C., Chen, Y. & Schlaug, G. (2002). The functional anatomy of pitch memory. Invited oral presentation at the fMRI experience IV conference at the National Institute of Mental Health, Bethesda, MD May 2002.

Teaching experience/Professional Development/Community Outreach

Gaab, N. (scheduled). Music, language and reading. Lecture for parents at the Kingsley School in January 2009, Boston, MA

Gaab, N. (scheduled). This is your brain on music. Lecture for parents at Project Step (String Training and Education Program) in November 2008, Boston, MA

Gaab, N. (scheduled): In our own backyard: cutting edge research in the diagnosis and treatment of dyslexia. Lecture for the Brookline Special Education Parents Advisory Council in October 2008, Boston, MA

Gaab, N. (2008). The Reading Brain. Workshop at the Build the Out-of-School Time Network (BOSTnet) All Means All Conference, in October 2008, Boston, MA

Gaab, N. (scheduled). Audition and Music. Guest lecture for spring course " 9.10 Cognitive Neuroscience"; Instructor: Sue Corkin; Department of Brain and Cognitive Sciences, MIT, October 2008

Gaab, N. & Christodoulou, J (scheduled). The Reading Brain. Parent Workshop scheduled for October 2008 at Landmark School, Prides Crossing, MA

Gaab, N. (2008). The Reading Brain. Life Cycle Science Adult Workshop. Museum of Science, Boston, MA; April 2008.

Teaching experience/Professional development (continued)

Gaab, N. (2008). A (very) basic introduction to fMRI and Statistical Parametric Mapping (SPM). Workshop at Children's Hospital Boston, Boston, MA, March 2008**.**

Gaab, N. (2008). Why it all works: What brain development tells us about learning. Workshop for teachers: Science Club for Girls. Cambridge, MA, March, 2008

Gaab, N. & Christodoulou, J. (2008). Landmark School: Teaching principals and Cognitive Neuroscience. Workshop for teachers at Landmark School, Prides Crossing, MA

Gaab, N., Geiger, N. & Gabrieli, J. D. E. (2008). Developmental Dyslexia: Perceptual aspects, Diagnosis, Brain-correlates, Remiadiation and Prevention. One day workshop: Independent Activities Period (IAP); Department of Brain and Cognitive Sciences, MIT, January 2008.

Gaab, N. (2007). Cognitive Neuroscience: Methods, brain plasticity, implications and applications. Workshop at the BCASLPA (British Columbia Association of Speech/Language Pathologists and Audiologists) meeting; Whistler, Canada, October 2007.

Gaab, N. (2007). The musical brain. Day class taught at the Beaver Country Day School (Senior class), Chestnut Hill, MA, April 2007

Gaab, N. (2007). Cognitive Neuroscience and Education: A useful collaboration? Workshop for the annual meeting of the Studienstiftung fellows in the US. Massachusetts Institute of Technology, January 2007.

Gaab, N. & Geiger, N. (2007). Developmental Dyslexia: Perceptual Aspects, Diagnosis, Brain-correlates, Remediation and Prevention. One day workshop: Independent Activities Period (IAP); Department of Brain and Cognitive Sciences, MIT, January 2007.

Gaab, N. (2006). The musical brain. Day class taught at the Beaver Country Day School (Senior class), Chestnut Hill, MA, May 2006

Gaab, N. (2006). Audition and Music. Guest lecture for spring course " 9.10 Cognitive Neuroscience"; Instructor: Sue Corkin; Department of Brain and Cognitive Sciences, MIT, April 2006

Gaab, N. (2004). Music and the brain. Day class taught at Stanford Sophomore College; Stanford University, September 2004

Gaab, N. (2004). Music and the brain. New insides from the cognitive neurosciences. Day class taught at the Beaver Country Day School (Senior class), Chestnut Hill, MA, March 2004

Gaab, N. (2003). Music and the brain. Scientific evidence for functional and structural adaptation. Day class taught at the Beaver Country Day School (Senior class), Chestnut Hill, MA, April 2003

Selected national media coverage

ABC News: Music Magic
ABC World News airdate: 12/05
See http://www.childrenshospital.org/cfapps/research/data_admin/Site2547/mainpageS2547P1.html

Playing music can be good for your brain
San Francisco Chronicle: 11/17/2005
http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2005/11/17/MNGQ9FPODP1.DTL

Selected national media coverage (continued)

Music study helps language processing, studies show
Stanford Report 11/16/2005
http://news-service.stanford.edu/news/2005/november16/music-111605.html

Sound of music gives feel for language
ScienceNOW Daily news 11/17/2005
http://sciencenow.sciencemag.org/cgi/content/full/2005/1117/3

Music and language
Live radio interview KFBK Sacramento 11/17/05
www.kfbk.com

Study shows how sleep improves memory
ScienceDaily 06/29/2005
http://www.sciencedaily.com/releases/2005/06/050629070337.html

From bench to bedside to classroom
CHB Dream magazine
http://www.childrenshospital.org/dream/dream_win08/from_bench_to_bedside_to_classroom.html

Easy listening
CHB Dream magazine
http://www.childrenshospital.org/dream/dream_win08/deciphering_dyslexia.html

Sound Training Rewires Dyslexic Children's Brains For Reading
Brainconnection.com
http://www.brainconnection.com/content/264_1
Sounding out dyslexia
Scientific American Mind
http://www.sciam.com/article.cfm?id=sounding-out-dyslexia

Ad hoc referee/Advisory board/Editorial board

Brain and Language
Cerebral Cortex
Clinical Physiology and Functional Imaging
Cognitive, Affective, and Behavioral Neuroscience
European Journal of Neuroscience
Frontiers in Integrative Neuroscience (Review Editor)
Human Brain Mapping Journal
Human Brain Mapping conference 2006 and 2007: Scientific abstracts
Journal of Cognitive Neuroscience
Journal of Child Psychology & Psychiatry
Journal of Interdisciplinary Music Studies (Advisory and Editorial board)
Neuroimage
Neuroreport
Neuropsychologia
Neuropsychology

Languages

German	Citizenship (permanent resident in the US)
English	Fluent
American Sign Language	Basic Knowledge
French	Basic Knowledge