BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Vincent J. Schmithorst, Ph.D.	**Research Assistant Professor**
eRA COMMONS USER NAME	
VINSCH	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University of Cincinnati, Cincinnati, OH	B.S.	1989	Physics
University of Cincinnati, Cincinnati, OH	B.M.	1989	Piano
University of Cincinnati, Cincinnati, OH	M.S.	1994	Physics
University of Cincinnati, Cincinnati, OH	Ph.D.	1997	Physics

A. Positions and Honors

1998-2002 Research Associate, Imaging Research Center, Children's Hospital Medical Center
2002-Present Assistant Professor, IRC, Cincinnati Children's Hospital Medical Center
1999-Present Member, International Society of Magnetic Resonance in Medicine
2006 Received “Editors Choice Award” from the Organization for Human Brain Mapping (Neuroimage: Cognitive Neuroscience Section)

B. Selected peer reviewed publications (from 60 total)

1. Adler CM, Sax KW, Holland SK, **Schmithorst VJ**, Rosenberg L, Strakowski SM. Changes in neuronal activation with increasing attention demand in healthy volunteers: An fMRI study. Synapse 2001; 42: 266-272.
2. Holland SK, Plante E, Weber Byars A, Strawsburg RH, **Schmithorst VJ**, Ball WS, Jr. Normal fMRI Brain Activation Patterns in Children Performing a Verb Generation Task. Neuroimage 2001; 14: 837-43.
3. **Schmithorst VJ**, Dardzinski BJ, Holland SK. Simultaneous correction of ghost and geometric distortion artifacts in EPI using a multiecho reference scan. IEEE Trans Med Imaging 2001; 20: 535-9.
4. Byars AW, Holland SK, Strawsburg RH, Bommer W, Dunn RS, **Schmithorst VJ**, Plante E. Practical aspects of conducting large-scale functional magnetic resonance imaging studies in children. J Child Neurol 2002; 17: 885-90.
5. Dardzinski BJ, Laor T, **Schmithorst VJ**, Klosterman LA, Graham TB. Mapping T2 relaxation time in the pediatric knee: feasibility with a clinical 1.5T MR imaging system. Radiology 2002; 225: 233-9.
6. **Schmithorst VJ**, Wilke M, Dardzinski BJ, Holland SK. Correlation of White Matter Diffusivity and Anisotropy Changes with Age During Childhood: A Cross-Sectional Diffusion Tensor Imaging Study. Radiology 2002; 222: 212-218.
7. **Schmithorst VJ**, Dardzinski BJ. Automatic Gradient Preemphasis Adjustment: A 15-Minute Journey to Improved Diffusion-Weighted Echo Planar Imaging. Magn Reson Med 2002; 47: 208-212.
8. **Schmithorst VJ**, Wilke M. Differences in white matter architecture between musicians and non- musicians: a diffusion tensor imaging study. Neurosci Lett 2002; 321: 57-60.
9. Wilke M, **Schmithorst VJ**, Holland SK. Assessment of spatial normalization of whole-brain magnetic resonance images in children. Human Brain Mapping 2002; 17: 48-60.
10. Bickle J, Avison CM, **Schmithorst VJ**, Landreth A, Holland SK. Bridging the cognitive-cellular neuroscience gap empirically: a study combining physiology, modelling and fMRI. Journal of Experimental and Theoretical Artificial Intelligence 2003; 15: 161-175.
11. Lamba M, Holland SK, **Schmithorst V**, Dardzinski B, D'Errico F, Nath R. Fast high-resolution 3D segmented echo planar imaging for dose mapping using a superheated emulsion chamber. Magn Reson Med 2003; 49: 675-681.
12. **Schmithorst VJ**, Holland SK. The effect of musical training on music processing: a functional magnetic resonance imaging study in humans. Neurosci Lett 2003; 348: 65-68.

13. Szaflarski JP, Holland SK, **Schmithorst VJ**, Dunn RS, O'Brien KJ. High-resolution fMRI at 3T: Hippocampal activation with picture encoding task in healthy and epilepsy subjects. Neurology 2003; 60: A116.
14. Wilke M, **Schmithorst VJ**, Holland SK. Normative pediatric brain data for spatial normalization and segmentation differs from standard adult data. Magn Reson Med 2003; 50: 749-57.
15. Wilke M, Holland SK, Myseros JS, **Schmithorst VJ**, Ball WS. Functional magnetic resonance imaging in pediatrics. Neuropediatrics 2003; 34: 225-33.
16. Adler CM, Holland SK, **Schmithorst VJ**, Tuchfarber MJ, Strakowski SM. Changes in neuronal activation in patients with bipolar disorder during performance of a working memory task. Bipolar Disord 2004; 6: 540-549.
17. Adler CM, Holland SK, **Schmithorst V**, Wilke M, Weiss KL, Pan H, Strakowski SM. Abnormal frontal white matter tracts in bipolar disorder: a diffusion tensor imaging study. Bipolar Disord 2004; 6: 197-203.
18. Chiu C-YP, **Schmithorst VJ**, Holland SK, Choo DI. Event-related fMRI study of recognition of simulated CI speech. International Congress Series 2004; 1273: 390-393.
19. Holland SK, Choo DI, Ret JK, Hilbert L, Dunn RS, **Schmithorst VJ**. fMRI of severe to profoundly hearing-impaired infants and toddlers under sedation. International Congress Series 2004; 1273: 383-386.
20. Schapiro MB, Holland SK, **Schmithorst VJ**, Wilke M, Byars AW, Strawsburg RH, Wakefield JL. BOLD fMRI signal increases with age in selected brain regions in children. Neuroreport 2004; 15: 2575-2578.
21. **Schmithorst VJ**, Holland SK. The effect of musical training on the neural correlates of math processing: a functional magnetic resonance imaging study in humans. Neurosci Lett 2004; 354: 193-196.
22. **Schmithorst VJ**, Endorf RJ, Kulatunga S, Spelic DC, DiBianca FA, Rodriguez C, Zeman HD, Zhu Z, Giakos GC. Feasibility of Using a Kinestatic Charge Detector for Dual-Energy Chest Radiography. Journal of X-Ray Science and Technology 2004; 12: 1-11.
23. **Schmithorst VJ**, Holland SK. Comparison of Three Methods for Generating Group Statistical Inferences from Independent Component Analysis of fMRI Data. J Magn Reson Imaging 2004; 19: 365-368.
24. **Schmithorst VJ**, Endorf RJ, Kulatunga S, Spelic DC, DiBianca FA, Rodriguez C, Zeman HD, Zhu Z, Giakos GC. Optimization of a Dual-Energy Imaging Kinestatic Charge Detector for Chest Radiography. Journal of X-Ray Science and Technology 2004; 12: 151-159.
25. **Schmithorst VJ**, Brown RD. Empirical Validation of the Triple-Code Model of Numerical Processing for Complex Math Operations Using Functional MRI and Group Independent Component Analysis of the Mental Addition and Subtraction of Fractions. Neuroimage 2004; 22: 1414-1420.
26. **Schmithorst VJ**, Holland SK. Event-related fMRI technique for auditory processing with hemodynamics unrelated to acoustic gradient noise. Magn Reson Med 2004; 51: 399-402.
27. Szaflarski JP, Holland SK, **Schmithorst VJ**, Dunn RS, Privitera MD. High-resolution functional MRI at 3T in healthy and epilepsy subjects: hippocampal activation with picture encoding task. Epilepsy Behav 2004; 5: 244-52.
28. Thompson EA, Holland SK, **Schmithorst VJ**. A STAP algorithm approach to fMRI: A simulation study. J Magn Reson Imaging 2004; 20: 715-722.
29. Adler CM, Delbello MP, Mills NP, **Schmithorst V**, Holland S, Strakowski SM. Comorbid ADHD is associated with altered patterns of neuronal activation in adolescents with bipolar disorder performing a simple attention task. Bipolar Disord 2005; 7: 577-88.
30. Chiu CY, Coen-Cummings M, **Schmithorst VJ**, Holland SK, Keith R, Nabors L, Kramer M, Rozier H. Sound blending in the brain: a functional magnetic resonance imaging investigation. Neuroreport 2005; 16: 883-886.
31. **Schmithorst VJ**. Separate Cortical Networks Involved in Music Perception: Preliminary Functional MRI Evidence for Modularity of Music Processing. Neuroimage 2005; 25: 444-451.
32. **Schmithorst VJ**, Holland SK, Ret J, Duggins A, Arjmand E, Greinwald J. Cortical reorganization in children with unilateral sensorineural hearing loss. Neuroreport 2005; 16: 463-467.
33. **Schmithorst VJ**, Wilke M, Dardzinski BJ, Holland SK. Cognitive functions correlate with white matter architecture in a normal pediatric population: A diffusion tensor MRI study. Hum Brain Mapp 2005; 26: 139-147.
34. Adhami F, Liao G, Morozov YM, Schloemer A, **Schmithorst VJ**, Lorenz JN, Dunn RS, Vorhees CV, Wills-Karp M, Degen JL, Davis RJ, Mizushima N, Rakic P, Dardzinski BJ, Holland SK, Sharp FR, Kuan CY.

Cerebral Ischemia-Hypoxia Induces Intravascular Coagulation and Autophagy. Am J Pathol 2006; 169: 566-583.
35. Adler CM, Adams J, Delbello MP, Holland SK, **Schmithorst V**, Levine A, Jarvis K, Strakowski SM. Evidence of white matter pathology in bipolar disorder adolescents experiencing their first episode of mania: a diffusion tensor imaging study. Am J Psychiatry 2006; 163: 322-4.
36. Chiu PC-Y, **Schmithorst VJ**, Brown RD, Holland SK, Dunn RS. Making Memories: An fMRI investigation of episodic memory encoding in school-age children. Developmental Neuropsychology 2006; 29: 321-340.
37. Jacola LM, Schapiro MB, **Schmithorst VJ**, Byars AW, Strawsburg RH, Szaflarski JP, Plante E, Holland SK. Functional magnetic resonance imaging reveals atypical language organization in children following perinatal left middle cerebral artery stroke1. Neuropediatrics 2006; 37: 46-52.
38. Plante E, Holland SK, **Schmithorst VJ**. Prosodic processing by children: an fMRI study. Brain Lang 2006; 97: 332-42.
39. Plante E, **Schmithorst VJ**, Holland SK, Byars AW. Sex differences in the activation of language cortex during childhood. Neuropsychologia 2006; 44: 1210-21.
40. **Schmithorst VJ**, Holland SK, Plante E. Cognitive Modules Utilized for Narrative Comprehension in Children: A Functional Magnetic Resonance Imaging Study. Neuroimage 2006; 29: 254-266.
41. **Schmithorst VJ**, Holland SK. Functional MRI evidence for disparate developmental processes underlying intelligence in boys and girls. Neuroimage 2006; 31: 1366-1379.
42. Szaflarski JP, Holland SK, **Schmithorst VJ**, Byars AW. fMRI study of language lateralization in children and adults. Hum Brain Mapp 2006; 27: 202-12.
43. Szaflarski JP, **Schmithorst VJ**, Altaye M, Byars AW, Ret J, Plante E, Holland SK. A longitudinal functional magnetic resonance imaging study of language development in children 5 to 11 years old. Ann Neurol 2006; 59: 796-807.
44. Wilke M, **Schmithorst VJ**. A combined bootstrap/histogram analysis approach for computing a lateralization index from neuroimaging data. Neuroimage 2006; 33: 522-30.
45. Yuan W, Szaflarski JP, **Schmithorst VJ**, Schapiro M, Byars AW, Strawsburg RH, Holland SK. FMRI shows atypical language lateralization in pediatric epilepsy patients. Epilepsia 2006; 47: 593-600.
46. Holland SK, Vannest J, Mecoli M, Jacola L, Tillema J-M, Karunanayaka PR, **Schmithorst VJ**, Yuan W, Plante E, Byars AW. Functional MRI of Language Lateralization During Development in Children. Int J Aud 2007; In Press.
47. Karunanayaka PR, Holland SK, **Schmithorst VJ**, Solodkin A, Chen EE, Szaflarski JP, Plante E. Age-related connectivity changes in fMRI data from children listening to stories. Neuroimage 2007; 34: 349-60.
48. Patel AM, Cahill LD, Ret J, **Schmithorst V**, Choo D, Holland S. Functional magnetic resonance imaging of hearing-impaired children under sedation before cochlear implantation. Arch Otolaryngol Head Neck Surg 2007; 133: 677-83.
49. **Schmithorst VJ**, Holland SK, Plante E. Object identification and lexical/semantic access in children: A functional magnetic resonance imaging study of word-picture matching. Hum Brain Mapp 2007; In Press.
50. **Schmithorst VJ**, Holland SK. Sex differences in the development of neuroanatomical functional connectivity underlying intelligence found using Bayesian connectivity analysis. Neuroimage 2007; 35: 406-419.
51. **Schmithorst VJ**, Holland SK, Dardzinski B. Developmental differences in white matter architecture between boys and girls. Hum Brain Mapp 2007; In Press.
52. **Schmithorst VJ**, Holland SK, Plante E. Development of effective connectivity for narrative comprehension in children. Neuroreport 2007; In Press.
53. **Schmithorst VJ**. Functional connectivity in the brain and human intelligence. Behav Brain Sci 2007; 169-170.
54. Tillema J-M, Byars AW, Jacola L, Schapiro M, **Schmithorst VJ**, Szaflarski JP, Holland SK. Cortical Reorganization of Language Functioning Following Perinatal Left MCA Stroke. Brain and Language 2007; In Press.
55. Yuan W, Jones BV, Cecil KM, Michaud L, Walz N, Karunanayaka P, Holland S, **Schmithorst V**, Wade S. Diffusion Tensor MRI Reveals Persistent White Matter Alteration after Traumatic Brain Injury Experienced During Early Childhood. AJNR Am J Neuroradiol 2007; In Press.

C. Research Support

Ongoing

K25 DC008110 (Schmithorst) 05/01/06 - 04/30/11
NIH/NIDCD
"Cortical Reorganization in Children with Unilateral Sensorineural Hearing Loss"
Role: Principal Investigator
The goal is to investigate cortical reorganization for basic and central auditory processing tasks in children ages 7-12 with early-onset severe-to-profound unilateral sensorineural hearing loss using functional MRI.

R01 DC07186 (Holland, S.) 12/01/04 – 11/30/09
NIH/NIDCD
"fMRI, Genes and Outcome for Cochlear Implants in Infants"
Role: Co-Investigator
GOAL: A feasibility study to determine whether functional MRI of auditory stimulation in deaf toddlers and children with and without sedation might be useful as an evaluation tool for selecting candidates for cochlear implantation.

R03 DC006771 (Schmithorst – consortium P.I.) 9/01/05 – 8/31/08
NIH/NIDCD (University of Cincinnati – Chiu)
"FMRI Studies of Neural Development in Speech Recognition"
Role: Co-Investigator/Consortium P.I.
The goal is a preliminary investigation of age-related differences in the neurocognitive mechanisms associated with speech recognition under conditions that simulate listening through a cochlear implant (Cl) using functional MRI.

Completed

R01 HD38578-01 (Holland) 02/01/00-01/31/05
NIH/NICHD
"fMRI, of Normal Language Development in Children"
Role: Co-Investigator
The major goal is to acquire functional MRI data from 300 normal children ages 5-17 in order to map normal patterns of brain development associated with language development.

R01 DC05311 (Holland) 07/01/01 – 06/30/03
NIH-NIDCD
"fMRI of Pediatric Cochlear Implant Candidates"
Role: Co-Investigator
The major goal is to evaluate the use of functional MRI as a preoperative indicator of postoperative outcomes for infant cochlear implant candidates.

R21 MH068267 (Holland – consortium P.I.) 05/1/04 – 04/30/06
NIH (Purdue University – Thompson)
"Application of the STAP Algorithm to fMRI Data"
Role: Co-Investigator
The major goal of this project is to generate fMRI data from a specific paradigm for use in demonstrating the utility of a new method of post-processing using the phased array processing technique developed by Dr. Thompson.