

## REFERENCES

- Ackermann, H., & Riecker, A. (2004). The contribution of the insula to motor aspects of speech production: a review and a hypothesis. *Brain and Language, 89*, 320–328.
- Adolphs, R. (2002). Neural systems for recognizing emotion. *Current Opinion in Neurobiology, 12*, 169–177.
- Ahmad, Z., Balsamo, L. M., Sachs, B. C., Xu, B., & Gaillard, W. D. (2003). Auditory comprehension of language in young children: neural networks identified with fMRI. *Neurology, 60*, 1598–1605.
- Alajouanine, T., Lhermitte, F., Ledoux, M., Renaud, D., & Vignolo, L. A. (1964). Les composantes phonémiques et sémantiques de la jargonaphasie. *Revue Neurologique (Paris), 110*, 5–20.
- Alho, K., Vorobyev, V. A., Medvedev, S. V., Pakhomov, S. V., Starchenko, M. G., Tervaniemi, M., & Näätänen, R. (2006). Selective attention to human voice enhances brain activity bilaterally in the superior temporal sulcus. *Brain Research, 1075*, 142–150.
- Allison, T., Puce, A., & McCarthy, G. (2000). Social perception from visual cues: role of the STS region. *Trends in Cognitive Sciences, 4*, 267–278.
- Amunts, K., Schleicher, A., Burgel, U., Mohlberg, H., Uylings, H. B., & Zilles, K. (1999). Broca's region revisited: cytoarchitecture and intersubject variability. *Journal of Comparative Neurology, 412*, 319–341.
- Amunts, K., Weiss, P. H., Mohlberg, H., Pieperhoff, P., Eickhoff, S., Gurd, J. M., Marshall, J. C., Shah, N. J., Fink, G. R., & Zilles, K. (2004). Analysis of verbal fluency in cytoarchitecturally defined stereotaxic space—the roles of Brodmann's areas 44 and 45. *NeuroImage, 22*, 42–56.
- Ashtari, M., Lencz, T., Zuffante, P., Bilder, R., Clarke, T., Diamond, A., Kane, J., & Szeszko, P. (2004). Left middle temporal gyrus activation during a phonemic discrimination task. *NeuroReport, 15*, 389–393.
- Aziz-Zadeh, L., Iacoboni, M., Zaidel, E., Wilson, S., & Mazziotta, J. (2004). Left hemisphere motor facilitation in response to manual action sounds. *European Journal of Neuroscience, 19*, 2609–2612.

- Barch, D. M., Sabb, F. W., Carter, C. S., Braver, T. S., Noll, D. C., & Cohen, J. D. (1999). Overt verbal responding during fMRI scanning: empirical investigations of problems and potential solutions. *NeuroImage*, *10*, 642–657.
- Bartels, A., & Zeki, S. (2005). Brain dynamics during natural viewing conditions—a new guide for mapping connectivity in vivo. *NeuroImage*, *24*, 339–49.
- Basso, A., Casati, G., & Vignolo, L. A. (1977). Phonemic identification defect in aphasia. *Cortex*, *13*, 85–95.
- Bechara, A., Damasio, H., Tranel, D., & Damasio, A. R. (1997). Deciding advantageously before knowing the advantageous strategy. *Science*, *275*, 1293–1295.
- Ben-Shachar, M., Palti, D., & Grodzinsky, Y. (2004). Neural correlates of syntactic movement: converging evidence from two fMRI experiments. *NeuroImage*, *21*, 1320–1336.
- Benson, R. R., Whalen, D. H., Richardson, M., Swainson, B., Clark, V. P., Lai, S., & Liberman, A. M. (2001). Parametrically dissociating speech and nonspeech perception in the brain using fMRI. *Brain and Language*, *78*, 364–396.
- Binder, J. R., Frost, J. A., Hammeke, T. A., Bellgowan, P. S., Rao, S. M., & Cox, R. W. (1999). Conceptual processing during the conscious resting state. A functional MRI study. *Journal of Cognitive Neuroscience*, *11*, 80–95.
- Binder, J. R., Frost, J. A., Hammeke, T. A., Bellgowan, P. S., Springer, J. A., Kaufman, J. N., & Possing, E. T. (2000). Human temporal lobe activation by speech and nonspeech sounds. *Cerebral Cortex*, *10*, 512–528.
- Binder, J. R., Frost, J. A., Hammeke, T. A., Rao, S. M., & Cox, R. W. (1996). Function of the left planum temporale in auditory and linguistic processing. *Brain*, *119*, 1239–1247.
- Binder, J. R., Liebenthal, E., Possing, E. T., Medler, D. A., Ward, B. D. (2004). Neural correlates of sensory and decision processes in auditory object identification. *Nature Neuroscience*, *7*, 295–301.
- Birn, R. M., Bandettini, P. A., Cox, R. W., & Shaker, R. (1999). Event-related fMRI of tasks involving brief motion. *Human Brain Mapping*, *7*, 106–114.
- Blank, S. C., Scott, S. K., Murphy, K., Warburton, E., & Wise, R. J. S. (2002). Speech production: Wernicke, Broca and beyond. *Brain*, *125*, 1829–1838.
- Blumstein, S. E., Baker, E., & Goodlass, H. (1977a). Phonological factors in auditory comprehension in aphasia. *Neuropsychologia*, *15*, 19–30.

- Blumstein, S. E., Cooper, W., Zurif, E., & Caramazza, A. (1977b). The perception and production of voice-onset time in aphasia. *Neuropsychologia*, *15*, 371–383.
- Blumstein, S. E., Myers, E. B., & Rissman, J. (2005). The perception of voice onset time: an fMRI investigation of phonetic category structure. *Journal of Cognitive Neuroscience*, *17*, 1353–1366.
- Boatman, D. (2004). Cortical bases of speech perception: evidence from functional lesion studies. *Cognition*, *92*, 47–65.
- Boatman, D., Lesser, R., & Gordon, B. (1995). Auditory speech processing in the left temporal lobe: an electrical interference study. *Brain and Language*, *51*, 269–290.
- Bookheimer, S. (2002). Functional MRI of language: new approaches to understanding the cortical organization of semantic processing. *Annual Review of Neuroscience*, *25*, 151–188.
- Bookheimer, S. Y., Zeffiro, T. A., Blaxton, T. A., Gaillard, W. D., Malow, B., & Theodore, W. H. (1998). Regional cerebral blood flow during auditory responsive naming: evidence for cross-modality neural activation. *NeuroReport*, *9*, 2409–2413.
- Bookheimer, S. Y., Zeffiro, T. A., Blaxton, T., Gaillard, W., & Theodore, W. (1995). Regional cerebral blood flow during object naming and word reading. *Human Brain Mapping*, *3*, 93–106.
- Botvinick, M., Nystrom, L. E., Fissell, K., Carter, C. S., & Cohen, J. D. (1999). Conflict monitoring versus selection-for-action in anterior cingulate cortex. *Nature*, *402*, 179–181.
- Brainard, D. H. (1997). The psychophysics toolbox. *Spatial Vision*, *10*, 433–436.
- Brass, M., Derrfuss, J., Forstmann, B., & von Cramon, D. Y. (2005). The role of the inferior frontal junction area in cognitive control. *Trends in Cognitive Sciences*, *9*, 314–316.
- Braun, A. R., Guillemin, A., Hosey, L., & Varga, M. (2001). The neural organization of discourse: an H<sub>2</sub><sup>15</sup>O-PET study of narrative production in English and American sign language. *Brain*, *124*, 2028–2044.
- Braun, A. R., Varga, M., Stager, S., Schulz, G., Selbie, S., Maisog, J. M., Carson, R. E., & Ludlow, C. L. (1997). Altered patterns of cerebral activity during speech and language production in developmental stuttering. An H<sub>2</sub><sup>15</sup>O positron emission tomography study. *Brain*, *120*, 761–784.

- Brodmann, K. (1909). *Vergleichende localisationslehre der grosshirnrinde in ihren prinzipien dargestellt auf grund des zellenbaues*. Leipzig: Barth.
- Brown, S., Ingham, R. J., Ingham, J. C., Laird, A. R., & Fox, P. T. (2005). Stuttered and fluent speech production: an ALE meta-analysis of functional neuroimaging studies. *Human Brain Mapping, 25*, 105–117.
- Bruce, C., Desimone, R., & Gross, C. G. (1981). Visual properties of neurons in a polysensory area in superior temporal sulcus of the macaque. *Journal of Neurophysiology, 46*, 369–384.
- Buccino, G., Lui, F., Canessa, N., Patteri, I., Lagravinese, G., Benuzzi, F., Porro, C.A., & Rizzolatti, G. (2004). Neural circuits involved in the recognition of actions performed by nonconspecifics: an FMRI study. *Journal of Cognitive Neuroscience, 16*, 114–126.
- Buchsbaum, B., Hickok, G., & Humphries, C. (2001). Role of left posterior superior temporal gyrus in phonological processing for speech perception and production. *Cognitive Science, 25*, 663–678.
- Burton, M. W. (2001). The role of inferior frontal cortex in phonological processing. *Cognitive Science, 25*, 695–709.
- Burton, M. W., & Small, S. L. (2006). Functional neuroanatomy of segmenting speech and nonspeech. *Cortex, 42*, 644–651.
- Burton, M. W., Small, S. L., & Blumstein, S. E. (2000). The role of segmentation in phonological processing: An fMRI investigation. *Journal of Cognitive Neuroscience, 12*, 679–690.
- Bush, G., Luu, P., & Posner, M. I. (2000). Cognitive and emotional influences in anterior cingulate cortex. *Trends in Cognitive Sciences, 4*, 215–222.
- Callan, D. E., Jones, J. A., Callan, A. M., & Akahane-Yamada, R. (2004). Phonetic perceptual identification by native- and second-language speakers differentially activates brain regions involved with acoustic phonetic processing and those involved with articulatory-auditory/orosensory internal models. *NeuroImage, 22*, 1182–1194.
- Callan, D. E., Jones, J. A., Munhall, K., Callan, A. M., Kroos, C., & Vatikiotis-Bateson, E. (2003). Neural processes underlying perceptual enhancement by visual speech gestures. *NeuroReport, 14*, 2213–2218.
- Callan, D.E., Tajima, K., Callan, A.M., Kubo, R., Masaki, S., & Akahane-Yamada, R. (2003). Learning-induced neural plasticity associated with improved identification performance after training of a difficult second-language phonetic contrast. *NeuroImage, 19*, 113–124.

- Calvert, G. A., Campbell, R., & Brammer, M. J. (2000). Evidence from functional magnetic resonance imaging of crossmodal binding in human heteromodal cortex. *Current Biology, 10*, 649–657.
- Calvert, G. A. (2001). Crossmodal processing in the human brain: insights from functional neuroimaging studies. *Cerebral Cortex, 11*, 1110–1123.
- Calvo-Merino, B., Glaser, D. E., Grezes, J., Passingham, R. E., & Haggard, P. (2005). Action observation and acquired motor skills: an fMRI study with expert dancers. *Cerebral Cortex, 15*, 1243–1249.
- Caplan, D., Gow, D., & Makris, N. (1995). Analysis of lesions by MRI in stroke patients with acoustic-phonetic processing deficits. *Neurology, 45*, 293–298.
- Coleman, J. (1998). Cognitive reality and the phonological lexicon: A review. *Journal of Neurolinguistics, 11*, 295–320.
- Collins, D. L., Neelin, P., Peters, T. M., Evans, A. C. (1994). Automatic 3D intersubject registration of MR volumetric data in standardized Talairach space. *Journal of Computer Assisted Tomography, 18*, 192–205.
- Costantini, M., Galati, G., Ferretti, A., Caulo, M., Tartaro, A., Romani, G. L., & Aglioti, S. M. (2005). Neural systems underlying observation of humanly impossible movements: an fMRI study. *Cerebral Cortex, 15*, 1761–1767.
- Cox, R. W. (1996). AFNI: software for analysis and visualization of functional magnetic resonance NeuroImages. *Computers and Biomedical Research, 29*, 162–173.
- Crinion, J. T., Lambon-Ralph, M. A., Warburton, E. A., Howard, D., & Wise, R. J. (2003). Temporal lobe regions engaged during normal speech comprehension. *Brain, 126*, 1193–1201.
- Crinion, J., & Price, C. J. (2005). Right anterior superior temporal activation predicts auditory sentence comprehension following aphasic stroke. *Brain, 128*, 2858–2871.
- Dapretto, M., & Bookheimer, S. Y. (1999). Form and content: dissociating syntax and semantics in sentence comprehension. *Neuron, 24*, 427–432.
- Davis, M. H., & Johnsrude, I. S. (2003). Hierarchical processing in spoken language comprehension. *Journal of Neuroscience, 23*, 3423–3431.
- Deacon, T. W. (1992). Cortical connections of the inferior arcuate sulcus cortex in the macaque brain. *Brain Research, 573*, 8–26.
- Degerman, A., Rinne, T., Salmi, J., Salonen, O., & Alho, K. (2006). Selective attention to sound location or pitch studied with fMRI. *Brain Research, 1077*, 123–134.

- Dehaene, S., Dupoux, E., Mehler, J., Cohen, L., Paulesu, E., Perani, D., van de Moortele, P. F., Lehericy, S., & Le Bihan, D. (1997). Anatomical variability in the cortical representation of first and second language. *NeuroReport*, *8*, 3809–3815.
- Dehaene-Lambertz, G. (1997). Electrophysiological correlates of categorical phoneme perception in adults. *NeuroReport*, *8*, 919–924.
- Dehaene-Lambertz, G., Dehaene, S., Anton, J. L., Campagne, A., Ciuciu, P., Dehaene, G. P., Degenhien, I., Jobert, A., Lebihan, D., Sigman, M., Pallier, C., & Poline, J. B. (2006). Functional segregation of cortical language areas by sentence repetition. *Human Brain Mapping*, *27*, 360–371.
- Démonet, J.-F., Chollet, F., Ramsay, S., Cardebat, D., Nespoulous, J.-L., Wise, R., Rascol, A., & Frackowiak, R. (1992). The anatomy of phonological and semantic processing in normal subjects. *Brain*, *115*, 1753–1768.
- Démonet, J.-F., Price, C., Wise, R., & Frackowiak, R. J. (1994). A PET study of cognitive strategies in normal subjects during language tasks: influence of phonetic ambiguity and sequence processing on phoneme monitoring. *Brain*, *117*, 671–682.
- Di Pellegrino, G., Fadiga, L., Fogassi, L., Gallese, V., & Rizzolatti, G. (1992). Understanding motor events: a neurophysiological study. *Experimental Brain Research*, *91*, 176–180.
- Doeller, C. F., Opitz, B., Mecklinger, A., Krick, C., Reith, W., & Schroger, E. (2003). Prefrontal cortex involvement in preattentive auditory deviance detection: neuroimaging and electrophysiological evidence. *NeuroImage*, *20*, 1270–1282.
- Dronkers, N. F. (1996). A new brain region for coordinating speech articulation. *Nature*, *384*, 159–161.
- Duffau, H., Capelle, L., Denvil, D., Gatignol, P., Sichez, N., Lopes, M., Sichez, J. P., & Van Effenterre, R. (2003). The role of dominant premotor cortex in language: a study using intraoperative functional mapping in awake patients. *NeuroImage*, *20*, 1903–1914.
- Duvernoy, H. M. (1999). *The human brain: surface, three-dimensional sectional anatomy with MRI, and blood supply*. New York: Springer.
- Edwards, E. (2006, January). *The electrocorticogram: mapping the human brain with high spatial and temporal resolution*. Paper presented at the University of California, Los Angeles Brain Mapping Seminar, Los Angeles, CA.

- Edwards, E., Soltani, M., Deouell, L. Y., Berger, M. S., & Knight, R. T. (2005). High gamma activity in response to deviant auditory stimuli recorded directly from human cortex. *Journal of Neurophysiology*, *94*, 4269–4280.
- Ehrsson, H. H., Geyer, S., & Naito, E. (2003). Imagery of voluntary movement of fingers, toes, and tongue activates corresponding body-part-specific motor representations. *Journal of Neurophysiology*, *90*, 3304–3316.
- Eickhoff, S. B., Lotze, M., Wietek, B., Amunts, K., Enck, P., & Zilles, K. (2006a). Segregation of visceral and somatosensory afferents: an fMRI and cytoarchitectonic mapping study. *NeuroImage*, *31*, 1004–1014.
- Eickhoff, S. B., Schleicher, A., Zilles, K., & Amunts, K. (2006b). The human parietal operculum. I. Cytoarchitectonic mapping of subdivisions. *Cerebral Cortex*, *16*, 254–267.
- Eickhoff, S. B., Stephan, K. E., Mohlberg, H., Grefkes, C., Fink, G. R., Amunts, K., & Zilles, K. (2005). A new SPM toolbox for combining probabilistic cytoarchitectonic maps and functional imaging data. *NeuroImage*, *25*, 1325–1335.
- Eimas, P. D., Siqueland, E. R., Jusczyk, P., & Vigorito, J. (1971). Speech perception in infants. *Science*, *171*, 303–306.
- Engel, S. A., Rumelhart, D. E., Wandell, B. A., Lee, A. T., Glover, G. H., Chichilnisky, E. J., & Shadlen, M. N. (1994). fMRI of human visual cortex. *Nature*, *369*, 525.
- Fadiga, L., Craighero, L., Buccino, G., & Rizzolatti, G. (2002). Speech listening specifically modulates the excitability of tongue muscles: a TMS study. *European Journal of Neuroscience*, *15*, 399–402.
- Fadiga, L., Fogassi, L., Pavesi, G., & Rizzolatti, G. (1995). Motor facilitation during action observation: a magnetic stimulation study. *Journal of Neurophysiology*, *73*, 2608–2611.
- Fiez, J. A., Raichle, M. E., Balota, D. A., Tallal, P., & Petersen, S. E. (1996). PET activation of posterior temporal regions during auditory word presentation and verb generation. *Cerebral Cortex*, *6*, 1–10.
- Fiez, J., Raichle, M., Miezen, F., Petersen, S., Tallal, P., & Katz, W. (1995). PET studies of auditory and phonological processing: effects of stimulus characteristics and task demands. *Journal of Cognitive Neuroscience*, *7*, 357–375.
- Fink, G. R., Frackowiak, R. S., Pietrzyk, U., & Passingham, R. E. (1997). Multiple nonprimary motor areas in the human cortex. *Journal of Neurophysiology*, *77*, 2164–2174.

- Fink, M., Churan, J., & Wittman, M. (2006). Temporal processing and context dependency of phoneme discrimination in patients with aphasia. *Brain and Language*, *98*, 1–11.
- Fowler, C. A., & Rosenblum, L. D. (1991). The perception of phonetic gestures. In I. G. Mattingly & M. Studdert-Kennedy (Eds.), *Modularity and the motor theory of speech perception* (pp. 33–59). Hillsdale, NJ: Lawrence Erlbaum.
- Fox, P. T., Huang, A., Parsons, L. M., Xiong, J. H., Zamarippa, F., Rainey, L., & Lancaster, J. L. (2001). Location-probability profiles for the mouth region of human primary motor-sensory cortex: model and validation. *NeuroImage*, *13*, 196–209.
- Frith, C. D., & Frith, U. (1999). Interacting minds—a biological basis. *Science*, *286*, 1692–1695.
- Gainotti, G., Miceli, G., Silveri, M. C., & Villa, G. (1982). Some anatomo-clinical aspects of phonemic and semantic comprehension disorders in aphasia. *Acta Neurologica Scandinavica*, *66*, 652–665.
- Gallese, V., Fadiga, L., Fogassi, L., & Rizzolatti, G. (1996). Action recognition in the premotor cortex. *Brain*, *119*, 593–609.
- Geschwind, N. (1965). Disconnection syndromes in animals and man. *Brain*, *88*, 237–294.
- Geyer, S. (2004). *The microstructural border between the motor and the cognitive domain in the human cerebral cortex*. Berlin: Springer.
- Geyer, S., Ledberg, A., Schleicher, A., Kinomura, S., Schormann, T., Burgel, U., Klingberg, T., Larsson, J., Zilles, K., & Roland, P. E. (1996). Two different areas within the primary motor cortex of man. *Nature*, *382*, 805–807.
- Giard, M.-H., Perrin, F., Pernier, J., & Bouchet, P. (1990). Brain generators implicated in the processing of auditory stimulus deviance: A topographic event-related potential study. *Psychophysiology*, *27*, 627–640.
- Giraud, A. L., Kell, C., Thierfelder, C., Sterzer, P., Russ, M. O., Preibisch, C., & Kleinschmidt, A. (2004). Contributions of sensory input, auditory search and verbal comprehension to cortical activity during speech processing. *Cerebral Cortex*, *14*, 247–255.
- Giraud, A. L., Truy, E., Frackowiak, R. S., Gregoire, M. C., Pujol, J. F., & Collet, L. (2000). Differential recruitment of the speech processing system in healthy subjects and rehabilitated cochlear implant patients. *Brain*, *123*, 1391–1402.



- Golestani, N., & Zatorre, R. J. (2004). Learning new sounds of speech: reallocation of neural substrates. *NeuroImage*, *21*, 494–506.
- Golland, Y., Bentin, S., Gelbard, H., Benjamini, Y., Heller, R., Nir, Y., Hasson, U., & Malach, R. (2006). Extrinsic and intrinsic systems in the posterior cortex of the human brain revealed during natural sensory stimulation. *Cerebral Cortex*. doi:10.1093/cercor/bhk030.
- Goodglass, H. (1993). *Understanding aphasia*. San Diego: Academic Press.
- Gough, P. M., Nobre, A. C., & Devlin, J. T. (2005). Dissociating linguistic processes in the left inferior frontal cortex with transcranial magnetic stimulation. *Journal of Neuroscience*, *25*, 8010–8016.
- Green, E., & Howes, D. H. (1978). The nature of conduction aphasia: A study of anatomic and clinical features and of underlying mechanisms. In A. Whitaker & H. A. Whitaker (Eds.), *Studies in neurolinguistics* (vol. 3, pp. 123–156). New York: Academic Press.
- Greicius, M. D., & Menon, V. (2004). Default-mode activity during a passive sensory task: uncoupled from deactivation but impacting activation. *Journal of Cognitive Neuroscience*, *16*, 1484–1492.
- Guenther, F. H., Hampson, M., & Johnson, D. (1998). A theoretical investigation of reference frames for the planning of speech movements. *Psychological Review*, *105*, 611–633.
- Guenther, F. H., Nieto-Castanon, A., Ghosh, S. S., & Tourville, J. A. (2004). Representation of sound categories in auditory cortical maps. *Journal of Speech Language and Hearing Research*, *47*, 46–57.
- Gusnard, D. A., & Raichle, M. E. (2001). Searching for a baseline: functional imaging and the resting human brain. *Nature Reviews Neuroscience*, *2*, 685–694.
- Hagoort, P. (2005). On Broca, brain, and binding: a new framework. *Trends in Cognitive Sciences*, *9*, 416–423.
- Haruno, M., Wolpert, D. M., & Kawato, M. (2001). MOSAIC model for sensorimotor learning and control. *Neural Computation*, *13*, 2201–2220.
- Hasson, U., Nir, Y., Levy, I., Fuhrmann, G., & Malach, R. (2004). Intersubject synchronization of cortical activity during natural vision. *Science*, *303*, 1634–1640.

- He, S. Q., Dum, R. P., & Strick, P. L. (1993). Topographic organization of corticospinal projections from the frontal lobe: motor areas on the lateral surface of the hemisphere. *Journal of Neuroscience*, *13*, 952–980.
- Hickok, G., & Poeppel, D. (2000). Towards a functional neuroanatomy of speech perception. *Trends in Cognitive Sciences*, *4*, 131–138.
- Hickok, G., & Poeppel, D. (2004). Dorsal and ventral streams: a framework for understanding aspects of the functional anatomy of language. *Cognition*, *92*, 67–99.
- Hickok, G., Buchsbaum, B., Humphries, C., & Muftuler, T. (2003). Auditory-motor interaction revealed by fMRI: speech, music, and working memory in area Spt. *Journal of Cognitive Neuroscience*, *15*, 673–682.
- Holmes, C. J., Hoge, R., Collins, L., Woods, R., Toga, A. W., & Evans, A. C. (1998). Enhancement of MR images using registration for signal averaging. *Journal of Computer Assisted Tomography*, *22*, 324–333.
- Horwitz, B., Amunts, K., Bhattacharyya, R., Patkin, D., Jeffries, K., Zilles, K., & Braun, A. R. (2003). Activation of Broca's area during the production of spoken and signed language: a combined cytoarchitectonic mapping and PET analysis. *Neuropsychologia*, *41*, 1868–1876.
- Huang, J., Carr, T. H., & Cao, Y. (2002). Comparing cortical activations for silent and overt speech using event-related fMRI. *Human Brain Mapping*, *15*, 30–53.
- Humphries, C., Binder, J. R., Medler, D. A., & Liebenthal, E. (2006). Syntactic and semantic modulation of neural activity during auditory sentence comprehension. *Journal of Cognitive Neuroscience*, *18*, 665–679.
- Humphries, C., Love, T., Swinney, D., & Hickok, G. (2005). Response of anterior temporal cortex to syntactic and prosodic manipulations during sentence processing. *Human Brain Mapping*, *26*, 128–138.
- Humphries, C., Willard, K., Buchsbaum, B., & Hickok, G. (2001). Role of anterior temporal cortex in auditory sentence comprehension: an fMRI study. *NeuroReport*, *12*, 1749–1752.
- Iacoboni, M., Molnar-Szakacs, I., Gallese, V., Buccino, G., Mazziotta, J. C., & Rizzolatti, G. (2005). Grasping the intentions of others with one's own mirror neuron system. *PLoS Biology*, *3*(3), e79.
- Iacoboni, M., Woods, R. P., Brass, M., Bekkering, H., Mazziotta, J. C., & Rizzolatti, G. (1999). Cortical mechanisms of human imitation. *Science*, *286*, 2526–2528.

- Indefrey, P., Brown, C. M., Hellwig, F., Amunts, K., Herzog, H., Seitz, R. J., & Hagoort, P. (2001). A neural correlate of syntactic encoding during speech production. *Proceedings of the National Academy of Sciences of the USA*, *98*, 5933–5936.
- Indefrey, P., & Cutler, A. (2004). Prelexical and lexical processing in listening. In M. S. Gazzaniga (Ed.), *The Cognitive Neurosciences* (3rd ed.) (pp. 759–774). Cambridge, MA: MIT Press.
- Ivry, R. B., & Keele, S. W. (1989). Timing functions of the cerebellum. *Journal of Cognitive Neuroscience*, *1*, 136–152.
- Jancke, L., Wustenberg, T., Scheich, H., & Heinze, H. J. (2002). Phonetic perception and the temporal cortex. *NeuroImage*, *15*, 733–746.
- Jansen, A., Floel, A., Van Randenborgh, J., Konrad, C., Rotte, M., Forster, A. F., Deppe, M., & Knecht, S. (2005). Crossed cerebro-cerebellar language dominance. *Human Brain Mapping*, *24*, 165–72.
- Joanisse, M. F., & Gati, J. S. (2003). Overlapping neural regions for processing rapid temporal cues in speech and nonspeech signals. *NeuroImage*, *19*, 64–79.
- Johnsrude, I. S., Zatorre, R. J., Milner, B. A., & Evans, A. C. (1997). Left-hemisphere specialization for the processing of acoustic transients. *NeuroReport*, *8*, 1761–1765.
- Jones, E. G., & Powell, T. P. (1970). An anatomical study of converging sensory pathways within the cerebral cortex of the monkey. *Brain*, *93*, 793–820.
- Jung-Beeman, M. (2005). Bilateral brain processes for comprehending natural language. *Trends in Cognitive Sciences*, *9*, 512–518.
- Jusczyk, P. (1997). *The discovery of spoken language*. Cambridge, MA: MIT Press.
- Kemeny, S., Ye, F. Q., Birn, R., & Braun, A. R. (2005). Comparison of continuous overt speech fMRI using BOLD and arterial spin labeling. *Human Brain Mapping*, *24*, 173–183.
- Kenstowicz, M. (1994). *Phonology in generative grammar*. Cambridge: Blackwell.
- Kohler, E., Keysers, C., Umiltà, M. A., Fogassi, L., Gallese, V., & Rizzolatti, G. (2002). Hearing sounds, understanding actions: action representation in mirror neurons. *Science*, *297*, 846–848.
- Kollias, S. S., Alkadhi, H., Jaermann, T., Crelier, G., & Hepp-Reymond, M. C. (2001). Identification of multiple nonprimary motor cortical areas with simple movements. *Brain Research Reviews*, *36*, 185–195.

- Knecht, S., Jansen, A., Frank, A., van Randenborgh, J., Sommer, J., Kanowski, M., & Heinze, H. J. (2003). How atypical is atypical language dominance? *NeuroImage*, *18*, 917–927.
- Kuhl, P. K., & Miller, J. D. (1975). Speech perception by the chinchilla: voiced–voiceless distinction in alveolar plosive consonants. *Science*, *190*, 69–72.
- Ladefoged, P., & Maddieson, I. (1996). *The sounds of the world's languages*. Oxford: Blackwell.
- Liberman, A. M., Harris, K. S., Hoffman, H. S., & Griffith, B. C. (1957). The discrimination of speech sounds within and across phoneme boundaries. *Journal of Experimental Psychology*, *54*, 358–368.
- Liberman, A. M., & Mattingly, I. G. (1985). The motor theory of speech perception revised. *Cognition*, *21*, 1–36.
- Liberman, A. M., Cooper, F. S., Shankweiler, D. P., Studdert-Kennedy, M. (1967). Perception of the speech code. *Psychological Review*, *74*, 431–461.
- Liebenthal, E., Binder, J. R., Spitzer, S. M., Possing, E. T., & Medler, D. A. (2005). Neural substrates of phonemic perception. *Cerebral Cortex*, *15*, 1621–1631.
- Lipschutz, B., Kolinsky, R., Damhaut, P., Wikler, D., & Goldman, S. (2002). Attention-dependent changes of activation and connectivity in dichotic listening. *NeuroImage*, *17*, 643–656.
- Longcamp, M., Anton, J. L., Roth, M., & Velay, J. L. (2003). Visual presentation of single letters activates a premotor area involved in writing. *NeuroImage*, *19*, 1492–1500.
- Longcamp, M., Anton, J. L., Roth, M., & Velay, J. L. (2005). Premotor activations in response to visually presented single letters depend on the hand used to write: a study on left-handers. *Neuropsychologia*, *43*, 1801–1809.
- Lotze, M., Seggewies, G., Erb, M., Grodd, W., & Birbaumer, N. (2000). The representation of articulation in the primary sensorimotor cortex. *NeuroReport*, *11*, 2985–2989.
- Luria, A. R. (1966). *Higher cortical functions in man*. New York: Basic Books.
- Luria, A. R. (1970). *Traumatic aphasia*. The Hague: Mouton.
- Macaluso, E., George, N., Dolan, R., Spence, C., & Driver, J. (2004). Spatial and temporal factors during processing of audiovisual speech: a PET study. *NeuroImage*, *21*, 725–732.

- MacNeilage, P. F. (1972). Speech physiology. In J. H. Gilbert (Ed.), *Speech and cortical functioning* (pp. 1–72). New York: Academic Press.
- Marien, P., Engelborghs, S., Fabbro, F., & De Deyn, P. P. (2001). The lateralized linguistic cerebellum: a review and a new hypothesis. *Brain and Language, 79*, 580–600.
- Mathiak, K., Hertrich, I., Grodd, W., & Ackermann, H. (2002). Cerebellum and speech perception: a functional magnetic resonance imaging study. *Journal of Cognitive Neuroscience, 14*, 902–912.
- Mazoyer, B., Zago, L., Mellet, E., Bricogne, S., Etard, O., Houde, O., Crivello, F., Joliot, M., Petit, L., & Tzourio-Mazoyer, N. (2001). Cortical networks for working memory and executive functions sustain the conscious resting state in man. *Brain Research Bulletin, 54*, 287–298.
- Mazoyer, B. M., Tzourio, N., Frak, V., Syrota, A., Murayama, N., Levrier, O., Salamon, G., Dehaene, S., Cohen, L., & Mehler, J. (1993). The cortical representation of speech. *Journal of Cognitive Neuroscience, 5*, 467–479.
- Mazziotta, J., Toga, A., Evans, A., Fox, P., Lancaster, J., Zilles, K., Woods, R., et al. (2001). A probabilistic atlas and reference system for the human brain: International Consortium for Brain Mapping (ICBM). *Philosophical Transactions of the Royal Society, B, 356*, 1293–1322.
- McGuigan, F. J., & Winstead, C. L., Jr. (1974). Discriminative relationship between covert oral behavior and the phonemic system in internal information processing. *Journal of Experimental Psychology, 103*, 885–890.
- McGuigan, F. J. (1973). Conditioning of covert behavior: Some problems and some hopes. In F. J. McGuigan & D. B. Lumsden (Eds.), *Contemporary Approaches to Conditioning and Learning*. Washington, DC: Winston.
- McGuigan, F. J. (1979). Electrical measurement of internal information processing during silent reading and listening. *Pavlovian Journal of Biological Science, 14*, 218–225.
- McKiernan, K. A., D'Angelo, B. R., Kaufman, J. N., & Binder, J. R. (2006). Interrupting the “stream of consciousness”: an fMRI investigation. *NeuroImage, 29*, 1185–1191.
- McKiernan, K. A., Kaufman, J. N., Kucera-Thompson, J., & Binder, J. R. (2003). A parametric manipulation of factors affecting task-induced deactivation: an fMRI study. *Journal of Cognitive Neuroscience, 15*, 394–408.

- McNealy, K., Mazziotta, J. C., & Dapretto, M. (2006). Cracking the language code: neural mechanisms underlying speech parsing. *Journal of Neuroscience*, *26*, 7629–7639.
- McNeill, D. (1992). *Hand and mind*. Chicago: University of Chicago Press.
- Meister, I. G., Wilson, S. M., Wu, A., & Iacoboni, M. (submitted) Premotor cortex is crucial for speech perception. Manuscript submitted for publication.
- Mellet, E., Tzourio, N., Crivello, F., Joliot, M., Denis, M., & Mazoyer, B. (1996). Functional anatomy of spatial mental imagery generated from verbal instructions. *Journal of Neuroscience*, *16*, 6504–6512.
- Meyer, M., Steinhauer, K., Alter, K., Friederici, A. D., & von Cramon, D. Y. (2004). Brain activity varies with modulation of dynamic pitch variance in sentence melody. *Brain and Language*, *89*, 277–289.
- Meyer, M., Zysset, S., von Cramon, D. Y., & Alter, K. (2005). Distinct fMRI responses to laughter, speech, and sounds along the human peri-sylvian cortex. *Cognitive Brain Research*, *24*, 291–306.
- Miceli, G., Caltagirone, C., Gainotti, G., & Payer-Rigo, P. (1978). Discrimination of voice versus place contrasts in aphasia. *Brain and Language*, *6*, 47–51.
- Mohlberg, H., Lerch, J., Amunts, K., Evans, A. C., & Zilles, K. (2003). Probabilistic cytoarchitectonic maps transformed into MNI space [Abstract]. *NeuroImage*, *19*(2), e1763–e1764.
- Mohr, J. P. (1976). Broca's area and Broca's aphasia. In H. Whitaker & H. A. Whitaker (Eds.), *Studies in neurolinguistics* (vol. 1, pp. 201–235). New York: Academic Press.
- Moineau, S., Dronkers, N. F., & Bates, E. (2005). Exploring the processing continuum of single-word comprehension in aphasia. *Journal of Speech Language and Hearing Research*, *48*, 884–896.
- Molnar-Szakacs, I., Iacoboni, M., Koski, L., & Mazziotta, J. C. (2005). Functional segregation within pars opercularis of the inferior frontal gyrus: evidence from fMRI studies of imitation and action observation. *Cerebral Cortex*, *15*, 986–994.
- Molnar-Szakacs, I., Kaplan, J. T., Greenfield, P. M., & Iacoboni, M. (in press). Observing complex action sequences: The role of the fronto-parietal mirror neuron system. *NeuroImage*.
- Müller, R.-A., Rothermel, R. D., Behen, M. E., Muzik, O., Mangner, T. J., & Chugani, H. T. (1997). Receptive and expressive language activations for sentences: A PET study. *NeuroReport*, *8*, 3767–3770.

- Mummary, C. J., Ashburner, J., Scott, S. K., & Wise, R. J. S. (1999). Functional neuroimaging of speech perception in six normal and two aphasic subjects. *Journal of the Acoustical Society of America*, *106*, 449–457.
- Näätänen, R. (2001). The perception of speech sounds by the human brain as reflected by the mismatch negativity (MMN) and its magnetic equivalent (MMNm). *Psychophysiology*, *38*, 1–21.
- Näätänen, R., & Picton, T. (1987). The N1 wave of the human electric and magnetic response to sound: A review and analysis of component structure. *Psychophysiology*, *24*, 375–425.
- Näätänen, R., Lehtokovski, A., Lennes, M., Cheour, M., Huotilainen, M., Iivonen, A., Vainio, M., Alku, P., Ilmoniemi, R. J., Luuk, A., Allik, J., Sinkkonen, J., & Alho, K. (1997). Language-specific phoneme representations revealed by electric and magnetic brain responses. *Nature*, *385*, 432–434.
- Narain, C., Scott, S. K., Wise, R. J., Rosen, S., Leff, A., Iversen, S. D., & Matthews, P. M. (2003). Defining a left-lateralized response specific to intelligible speech using fMRI. *Cerebral Cortex*, *13*, 1362–1368.
- Nishitani, N., & Hari, R. (2002). Viewing lip forms: cortical dynamics. *Neuron*, *36*, 1211–1220.
- Ojemann, G. A. (1981). Interrelationships in the localization of language, memory and motor mechanism in human cortex and thalamus. In B. Thompson (Ed.), *New perspectives in cerebral localization* (pp. 157–175). New York: Raven Press.
- Ojemann, G. A. (1983). Brain organization for language from the perspective of electrical stimulation mapping. *Behavioral and Brain Sciences*, *2*, 189–230.
- Ojemann, G., & Mateer, C. (1979). Human language cortex: localization of memory, syntax, and sequential motor-phoneme identification systems. *Science*, *205*, 1401–1403.
- Okada, K., & Hickok, G. (2006). Left posterior auditory-related cortices participate both in speech perception and speech production: Neural overlap revealed by fMRI. *Brain and Language*, *98*, 112–117.
- Opitz, B., Mecklinger, A., Friederici, A. D., & von Cramon, D. Y. (1999). The functional neuroanatomy of novelty processing: integrating ERP and fMRI results. *Cerebral Cortex*, *9*, 379–391.

- Opitz, B., Rinne, T., Mecklinger, A., von Cramon, D. Y., & Schroger, E. (2002). Differential contribution of frontal and temporal cortices to auditory change detection: fMRI and ERP results. *NeuroImage*, *15*, 167–174.
- Papathanassiou, D., Etard, O., Mellet, E., Zago, L., Mazoyer, B., & Tzourio-Mazoyer, N. (2000). A common language network for comprehension and production: a contribution to the definition of language epicenters with PET. *NeuroImage*, *11*, 347–357.
- Paus, T., Marrett, S., Worsley, K., & Evans, A. (1996). Imaging motor-to-sensory discharges in the human brain: an experimental tool for the assessment of functional connectivity. *NeuroImage*, *4*, 78–86.
- Paus, T., Petrides, M., Evans, A. C., & Meyer, E. (1993). Role of the human anterior cingulate cortex in the control of oculomotor, manual, and speech responses: a positron emission tomography study. *Journal of Neurophysiology*, *70*, 453–469.
- Peelle, J. E., McMillan, C., Moore, P., Grossman, M., Wingfield, A. (2004). Dissociable patterns of brain activity during comprehension of rapid and syntactically complex speech: evidence from fMRI. *Brain and Language*, *91*, 315–325.
- Pelli, D. G. (1997). The VideoToolbox software for visual psychophysics: transforming numbers into movies. *Spatial Vision*, *10*, 437–442.
- Pelphrey, K. A., Morris, J. P., Michelich, C. R., Allison, T., & McCarthy, G. (2005). Functional anatomy of biological motion perception in posterior temporal cortex: an FMRI study of eye, mouth and hand movements. *Cerebral Cortex*, *15*, 1866–1876.
- Penfield, W. (1950). The supplementary motor area in the cerebral cortex of man. *Archiv fuer Psychiatrie und Nervenkrankheiten*, *185*, 670–674.
- Penfield, W., & Roberts, L. (1959). *Speech and brain-mechanisms*. Princeton, NJ: Princeton University Press.
- Perani, D., Paulesu, E., Galles, N. S., Dupoux, E., Dehaene, S., Bettinardi, V., Cappa, S. F., Fazio, F., & Mehler, J. (1998). The bilingual brain: Proficiency and age of acquisition of the second language. *Brain*, *121*, 1841–1852.
- Petersen, S. E., Fox, P. T., Posner, M. I., Mintun, M., & Raichle, M. E. (1988). Positron emission tomographic studies of the cortical anatomy of single-word processing. *Nature*, *331*, 585–589.
- Petersen, S. E., Fox, P. T., Posner, M. I., Mintun, M., & Raichle, M. E. (1989). Positron emission tomographic studies of the processing of single words. *Journal of Cognitive Neuroscience*, *1*, 153–170.



- Petrides, M. (2005). Lateral prefrontal cortex: Architectonic and functional organization. *Philosophical Transactions of the Royal Society, B*, 360, 781–795.
- Poeppl, D. (2001). Pure word deafness and the bilateral processing of the speech code. *Cognitive Science*, 25, 679–693.
- Poldrack, R. A., Temple, E., Protopapas, A., Nagarajan, S., Tallal, P., Merzenich, M., & Gabrieli, J. D. (2001). Relations between the neural bases of dynamic auditory processing and phonological processing: evidence from fMRI. *Journal of Cognitive Neuroscience*, 13, 687–697.
- Poldrack, R. A., Wagner, A. D., Prull, M. W., Desmond, J. E., Glover, G. H., & Gabrieli, J. D. (1999). Functional specialization for semantic and phonological processing in the left inferior prefrontal cortex. *NeuroImage*, 10, 15–35.
- Price, C., Wise, R., Warburton, E., Moore, C., Howard, D., Patterson, K., Frackowiak, R., & Friston, K. (1996). Hearing and saying: the functional neuro-anatomy of auditory word processing. *Brain*, 119, 919–931.
- Pugh, K. R., Shaywitz, B. A., Shaywitz, S. E., Fulbright, R. K., Byrd, D., Skudlarski, P., Shankweiler, D. P., Katz, L., Constable, R. T., Fletcher, J., Lacadie, C., Marchione, K., & Gore, J. C. (1996). Auditory selective attention: an fMRI investigation. *NeuroImage*, 4, 159–173.
- Pulvermüller, F., Huss, M., Kherif, F., Moscoso del Prado Martin, F., Hauk, O., & Shtyrov, Y. (2006). Motor cortex maps articulatory features of speech sounds. *Proceedings of the National Academy of Sciences of the USA*, 103, 7865–7870.
- Pulvermüller, F., Shtyrov, Y., & Ilmoniemi, R. J. (2003). Spatiotemporal dynamics of neural language processing: an MEG study using minimum-norm current estimates. *NeuroImage*, 20, 1020–1025.
- Rademacher, J., Morosan, P., Schormann, T., Schleicher, A., Werner, C., Freund, H. J., & Zilles, K. (2001). Probabilistic mapping and volume measurement of human primary auditory cortex. *NeuroImage*, 13, 669–683.
- Raichle, M. E., MacLeod, A. M., Snyder, A. Z., Powers, W. J., Gusnard, D. A., & Shulman, G. L. (2001). A default mode of brain function. *Proceedings of the National Academy of Sciences of the USA*, 98, 676–682.
- Raij, T., Uutela, K., & Hari, R. (2001). Audiovisual integration of letters in the human brain. *Neuron*, 28, 617–625.

- Raos, V., Franchi, G., Gallese, V., & Fogassi, L. (2003). Somatotopic organization of the lateral part of area F2 (dorsal premotor cortex) of the macaque monkey. *Journal of Neurophysiology*, *89*, 1503–1518.
- Reber, P. J., Wong, E. C., Buxton, R. B., & Frank, L. R. (1998). Correction of off resonance-related distortion in echo-planar imaging using EPI-based field maps. *Magnetic Resonance in Medicine*, *39*, 328–330.
- Rimol, L. M., Specht, K., & Hugdahl, K. (2006). Controlling for individual differences in fMRI brain activation to tones, syllables, and words. *NeuroImage*, *30*, 554–562.
- Rimol, L. M., Specht, K., Weis, S., Savoy, R., & Hugdahl, K. (2005). Processing of sub-syllabic speech units in the posterior temporal lobe: an fMRI study. *NeuroImage*, *26*, 1059–1067.
- Rinne, T., Alho, K., Ilmoniemi, R. J., Virtanen, J., & Näätänen, R. (2000). Separate time behaviors of the temporal and frontal mismatch negativity sources. *NeuroImage*, *12*, 14–19.
- Rinne, T., Degerman, A., & Alho, K. (2005). Superior temporal and inferior frontal cortices are activated by infrequent sound duration decrements: an fMRI study. *NeuroImage*, *26*, 66–72.
- Rizzolatti, G., & Craighero, L. (2004). The mirror-neuron system. *Annual Review of Neuroscience*, *27*, 169–192.
- Rizzolatti, G., & Arbib, M. A. (1998). Language within our grasp. *Trends in Neurosciences*, *21*, 188–194.
- Rizzolatti, G., Fadiga, L., Matelli, M., Bettinardi, V., Paulesu, E., Perani, D., Fazio, F. (1996). Localization of grasp representations in humans by PET: 1. Observation versus execution. *Experimental Brain Research*, *111*, 246–252.
- Rizzolatti, G., Fogassi, L., & Gallese, V. (2002). Motor and cognitive functions of the ventral premotor cortex. *Current Opinion in Neurobiology*, *12*, 149–154.
- Rodd, J. M., Davis, M. H., & Johnsrude, I. S. (2005). The neural mechanisms of speech comprehension: fMRI studies of semantic ambiguity. *Cerebral Cortex*, *15*, 1261–1269.
- Romanski, L. M., Tian, B., Fritz, J., Mishkin, M., Goldman-Rakic, P. S., & Rauschecker, J. P. (1999). Dual streams of auditory afferents target multiple domains in the primate prefrontal cortex. *Nature Neuroscience*, *2*, 1131–1136.

- Ross, E. D. (1981). The aprosodias: Functional-anatomic organization of the affective components of language in the right hemisphere. *Archives of Neurology*, *38*, 561–569.
- Sarkissov, S. A., Filimonoff, I. N., Kononowa, E. P., Preobraschenskaja, I. S., & Kukuev, L. A. (1955). *Atlas of the cytoarchitectonics of the human cerebral cortex*. Moscow: Medgiz.
- Schlosser, M. J., Aoyagi, N., Fulbright, R. K., Gore, J. C., & McCarthy, G. (1998). Functional MRI studies of auditory comprehension. *Human Brain Mapping*, *6*, 1–13.
- Schmithorst, V. J., Holland, S. K., & Plante, E. (2006). Cognitive modules utilized for narrative comprehension in children: a functional magnetic resonance imaging study. *NeuroImage*, *29*, 254–266.
- Schubotz, R. I., & von Cramon, D. Y. (2003). Functional–anatomical concepts of human premotor cortex: evidence from fMRI and PET studies. *NeuroImage*, *20*, S120–S131.
- Scott, S. K., Blank, C. C., Rosen, S., & Wise, R. J. (2000). Identification of a pathway for intelligible speech in the left temporal lobe. *Brain*, *123*, 2400–2406.
- Scott, S. K., & Johnsrude, I. S. (2003). The neuroanatomical and functional organization of speech perception. *Trends in Neurosciences*, *26*, 100–107.
- Scott, S. K., Rosen, S., Wickham, L., & Wise, R. J. (2004). A positron emission tomography study of the neural basis of informational and energetic masking effects in speech perception. *Journal of the Acoustical Society of America*, *115*, 813–821.
- Scott, S. K., & Wise, R. J. S. (2004). The functional neuroanatomy of prelexical processing in speech perception. *Cognition*, *92*, 13–45.
- Sergent, J., Zuck, E., Lévesque, M., & MacDonald, B. (1992). Positron emission tomography study of letter and object processing: empirical findings and methodological considerations. *Cerebral Cortex*, *2*, 68–80.
- Shmuel, A., Yacoub, E., Pfeuffer, J., Van de Moortele, P. F., Adriany, G., Hu, X., & Ugurbil, K. (2002). Sustained negative BOLD, blood flow and oxygen consumption response and its coupling to the positive response in the human brain. *Neuron*, *36*, 1195–1210.
- Shtyrov, Y., Kujala, T., Ahveninen, J., Tervaniemi, M., Alku, P., Ilmoniemi, R.J., & Näätänen, R. (1998). Background acoustic noise and the hemispheric lateralization of speech processing in the human brain: magnetic mismatch negativity study. *Neuroscience Letters*, *251*, 141–144.

- Shulman, G. L., Fiez, J. A., Corbetta, M., Buckner, R. L., Miezin, F. M., Raichle, M. E., & Petersen, S. E. (1997). Common blood flow changes across visual tasks: II. Decreases in cerebral cortex. *Journal of Cognitive Neuroscience*, *9*, 648–663.
- Skipper, J. I., Nusbaum, H. C., & Small, S. L. (2005). Listening to talking faces: motor cortical activation during speech perception. *NeuroImage*, *25*, 76–89.
- Smith, S. M., Jenkinson, M., Woolrich, M. W., Beckmann, C. F., Behrens, T. E., Johansen-Berg, H., Bannister, P. R., De Luca, M., Drobnjak, I., Flitney, D. E., Niazy, R. K., Saunders, J., Vickers, J., Zhang, Y., De Stefano, N., Brady, J. M., Matthews, P. M. (2004). Advances in functional and structural MR image analysis and implementation as FSL. *NeuroImage*, *23*, S208–S219.
- Specht, K., & Reul, J. (2003). Functional segregation of the temporal lobes into highly differentiated subsystems for auditory perception: an auditory rapid event-related fMRI-task. *NeuroImage*, *20*, 1944–1954.
- Stevens, K. N. (1981). Constraints imposed by the auditory system on the properties used to classify speech sounds: evidence from phonology, acoustics, and psychoacoustics. In T. F. Myers, J. Laver, & J. Anderson (Eds.), *The cognitive representation of speech* (pp. 61–74). Amsterdam: North-Holland Publishing Company.
- Stewart, L., Walsh, V., Frith, U., & Rothwell, J. C. (2001). TMS produces two dissociable types of speech disruption. *NeuroImage*, *13*, 472–478.
- Strafella, A. P., & Paus, T. (2000). Modulation of cortical excitability during action observation: a transcranial magnetic stimulation study. *NeuroReport*, *11*, 2289–2292.
- Suzuki, M., Kitano, H., Kitanishi, T., Itou, R., Shiino, A., Nishida, Y., Yazawa, Y., Ogawa, F., & Kitajima, K. (2002). Cortical and subcortical activation with monaural monosyllabic stimulation by functional MRI. *Hearing Research*, *163*, 37–45.
- Taylor, L. B. (1979). Psychological assessment of neurosurgical patients. In T. Rasmussen & R. Marino (Eds.), *Functional neurosurgery* (pp. 165–180). New York: Raven Press.
- Tremblay, K., Kraus, N., Carrell, T.D., & McGee, T. (1997). Central auditory system plasticity: generalization to novel stimuli following listening training. *Journal of the Acoustical Society of America*, *102*, 3762–3773.
- Turkeltaub, P. E., Eden, G. F., Jones, K. M., & Zeffiro, T. A. (2002). Meta-analysis of the functional neuroanatomy of single-word reading: method and validation. *NeuroImage*, *16*, 765–780.

- Tzourio, N., Massiou, F. E., Crivello, F., Joliot, M., Renault, B., & Mazoyer, B. (1997). Functional anatomy of human auditory attention studied with PET. *NeuroImage*, *5*, 53–77.
- Tzourio-Mazoyer, N., Josse, G., Crivello, F., & Mazoyer, B. (2004). Interindividual variability in the hemispheric organization for speech. *NeuroImage*, *21*, 422–435.
- Uppenkamp, S., Johnsrude, I. S., Norris, D., Marslen-Wilson, W., & Patterson, R. D. (2006). Locating the initial stages of speech-sound processing in human temporal cortex. *NeuroImage*, *31*, 1284–1296.
- Vouloumanos, A., Kiehl, K. A., Werker, J. F., & Liddle, P. F. (2001). Detection of sounds in the auditory stream: event-related fMRI evidence for differential activation to speech and nonspeech. *Journal of Cognitive Neuroscience*, *13*, 994–1005.
- Warren, J. E., Wise, R. J., & Warren, J. D. (2005). Sounds do-able: auditory-motor transformations and the posterior temporal plane. *Trends in Neurosciences*, *28*, 636–643.
- Watkins, K. E., Strafella, A. P., & Paus, T. (2003). Seeing and hearing speech excites the motor system involved in speech production. *Neuropsychologia*, *41*, 989–994.
- Watkins, K., & Paus, T. (2004). Modulation of motor excitability during speech perception: the role of Broca's area. *Journal of Cognitive Neuroscience*, *16*, 978–987.
- Wernicke, C. (1874). *Der aphasische symptomcomplex*. Breslau: Cohn and Weigert.
- Wildgruber, D., Riecker, A., Hertrich, I., Erb, M., Grodd, W., Ethofer, T., Ackermann, H. (2005). Identification of emotional intonation evaluated by fMRI. *NeuroImage*, *24*, 1233–1241.
- Wilson, S. M., & Iacoboni, M. (2006). Neural responses to non-native phonemes varying in producibility: evidence for the sensorimotor nature of speech perception. *NeuroImage*, *33*, 316–325.
- Wilson, S. M., Molnar-Szakacs, I., & Iacoboni, M. (submitted). Beyond superior temporal cortex: Intersubject correlations in speech comprehension. Manuscript submitted for publication.
- Wilson, S. M., Saygin, A. P., Sereno, M. I., & Iacoboni, M. (2004). Listening to speech activates motor areas involved in speech production. *Nature Neuroscience*, *7*, 701–702.
- Wise, R. J., Scott, S. K., Blank, S. C., Mummery, C. J., Murphy, K., & Warburton, E. A. (2001). Separate neural subsystems within 'Wernicke's area'. *Brain*, *124*, 83–95.

- Wise, R., Chollet, F., Hadar, U., Friston, K., Hoffner, E., & Frackowiak, R. (1991). Distribution of cortical neural networks involved in word comprehension and word retrieval. *Brain*, *114*, 1803–1817.
- Wong, D., Miyamoto, R. T., Pisoni, D. B., Sehgal, M., Hutchins, G. D. (1999). PET imaging of cochlear-implant and normal-hearing subjects listening to speech and nonspeech. *Hearing Research*, *132*, 34–42.
- Wong, D., Pisoni, D. B., Learn, J., Gandour, J. T., Miyamoto, R. T., & Hutchins, G. D. (2002). PET imaging of differential cortical activation by monaural speech and nonspeech stimuli. *Hearing Research*, *166*, 9–23.
- Worsley, K. J., Liao, C., Aston, J., Petre, V., Duncan, G. H., Morales, F., & Evans, A.C. (2002). A general statistical analysis for fMRI data. *NeuroImage*, *15*, 1–15.
- Xu, J., Kemeny, S., Park, G., Frattali, C., Braun, A. (2005). Language in context: emergent features of word, sentence, and narrative comprehension. *NeuroImage*, *25*, 1002–1015.
- Yucel, G., Petty, C., McCarthy, G., & Belger, A. (2005). Graded visual attention modulates brain responses evoked by task-irrelevant auditory pitch changes. *Journal of Cognitive Neuroscience*, *17*, 1819–1828.
- Zatorre, R., Evans, A., Meyer, E., & Gjedde, A. (1992). Lateralization of phonetic and pitch discrimination in speech processing. *Science*, *256*, 846–849.
- Zatorre, R. J., Mondor, T. A., & Evans, A. C. (1999). Auditory attention to space and frequency activates similar cerebral systems. *NeuroImage*, *10*, 544–554.
- Zatorre, R., Meyer, E., Gjedde, A., & Evans, A. (1996). PET studies of phonetic processing of speech: review, replication and reanalysis. *Cerebral Cortex*, *6*, 21–30.
- Zekveld, A. A., Heslenfeld, D. J., Festen, J. M., Schoonhoven, R. (2006). Top-down and bottom-up processes in speech comprehension. *NeuroImage*, *32*, 1826–1836.
- Zhang, Y., Kuhl, P. K., Imada, T., Kotani, M., Tohkura, Y. (2005). Effects of language experience: neural commitment to language-specific auditory patterns. *NeuroImage*, *26*, 703–720.