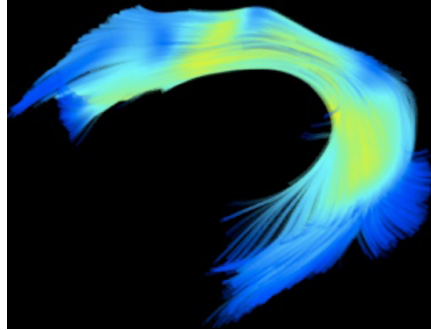


Neurobiology of Language Special Issue

The white matter connectome supporting speech and language in the human brain.



Guest Editors: Anthony Steven Dick and Pascale Tremblay

The fiber pathways supporting speech and language in the human brain—the putative “language connectome”—have been the subject of intense study over the last two decades. The major reason for this is the expanded use of diffusion-weighted imaging (DWI) and functional magnetic resonance imaging (fMRI) methods. This allows the indirect investigation of fiber pathway structure and connectivity *in vivo*, thus allowing the association of DWI indices to speech and language behaviors in children and adults, and in people with developmental or acquired speech and language deficits. Research on lesioned white matter following stroke or other focal brain injury, and investigations of post-mortem brains using polarized light imaging or blunt fiber dissection, complement human DWI investigations. Finally, studies of animals (most prominently non-human primates) allow more invasive investigations using tract-tracing methods and allow the validation of anatomical connectivity that cannot be directly validated in humans. Results from these research lines have been incorporated into many contemporary models of language neurobiology, but many questions about the nature of connectivity for language networks remain to be addressed. This proposed Special Issue is designed to address questions about the speech and language connectome that have not been thoroughly addressed in the contemporary literature. Some of the potential outstanding questions are:

1. How does knowledge of fiber pathway connectivity inform contemporary models of language neurobiology?
2. How do fiber pathways supporting speech and language develop in typical populations? How do they evolve in aging?
3. How does interhemispheric connectivity contribute to speech and language?
4. How can we integrate behavioral and neurobiological measures to advance our knowledge about the relationship between white matter connectivity and language?
5. Do developmental speech and language disorders, or degenerative disorders appearing in older adults, have associations with specific white matter connectivity profiles?
6. What are the specific connectivity profiles of long association fiber pathways associated with language, especially for controversial pathways such as the superior longitudinal fasciculus, or the inferior fronto-occipital fasciculus?
7. What measurement issues, at both the behavioral and neurobiological level, are central to the investigation of questions about language connectivity?
8. How do structural and functional connectivity relate to one another and how can this inform the study of the neurobiology of speech and language?
9. How can we combine DWI and the knowledge derived from task-based fMRI to further our understanding of speech/language neurobiology?

10. Are individual differences in connectivity associated with speech/language performance differences?

Proposed articles can be theoretical contributions (reviews, new hypotheses, models), meta-analyses, or empirical papers that either focus on one or two specific questions, or for comprehensive reviews focus on most or all questions. We are most interested in focused papers that “dig down” into these more specific issues. We welcome multi-lab and/or pre-registered analyses.

All contributions will be peer-reviewed and will be published on a rolling basis if considered acceptable. Final versions of the manuscripts will be assembled into a special issue to be published online in a single volume. The journal is fully open access, with article processing charges (APCs) of \$850 (US Dollar) for members of the Society for the Neurobiology of Language (first and last authors must be members) and \$1150 (US Dollar) for non-members. Fee waivers are granted to authors from low-income countries and may be available by request of the Editors-in-Chief for others with limited access to resources.

Deadline for Submissions: July 31, 2024