



ANNUAL REPORT

2022

SCHOOL OF COMMUNICATION SCIENCES AND DISORDERS

FACULTY OF MEDICINE AND HEALTH SCIENCES



Submitted by:

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Unit Overview

The School of Communication Sciences and Disorders promotes excellence in scholarship and professional service in the domains of human communication and its disorders. We provide graduate-level professional training in Speech-Language Pathology and advanced research training in this field. Our fundamental research informs issues in speech and language development, the neurocognitive basis of human communication, multilingualism, literacy development, and other aspects of communication sciences. Our applied research on the nature of communication disorders across the lifespan supports speech-language pathology practice. In particular, the fundamental and applied research together provides a rationale for best practices in the identification and treatment of speech, language, and voice disorders. These educational and research initiatives are implemented in partnership with the broader community, including the bilingual and multicultural network of healthcare centres in Montreal and the stimulating system of research partners that we link to in Montreal and around the world.

In 2022 the school finalized a new strategic plan for the period 2022 through 2027. The plan has a tripartite structure, focusing on Clinical Training, Research, and the Scholarly Environment. In the area of Clinical Training the primary goals are to implement the revised M.Sc.(A) program while supporting the inclusion of a competency-based approach to assessment and teaching. Regarding Research, enhancing the combined research program and increasing the numbers of students who are pursuing clinical and research training is a paramount goal. Continuing to enhance the visibility of our research in order to attract the best research students to doctoral training also remains a key goal. The Scholarly Environment has been an over-riding preoccupation for faculty and students within the school. The goals in this area include supporting faculty and lecturers to integrate Equity, Diversity, and Inclusion throughout the curriculum. New programs are in progress to ensure anti-oppressive and trauma informed practices when working with indigenous and marginalized communities, whether in an educational, clinical, or research context.

Research and Publications

Nine tenure track faculty contributed 32 publications with most in leading international journals. These publications report research conducted with doctoral students, research fellows and associates, and collaborators that include researchers in across our international networks.

- Ahooja, A., Brouillard, M., Quirk, E., Ballinger, S., Polka, L., Byers-Heinlein, K., & Kircher, R. (2022). Family language policy among Québec-based parents raising multilingual infants and toddlers: A study of resources as a form of language management. *Journal of Multilingual and Multicultural Development*. doi:10.1080/01434632.2022.2050918
- An, G., Döllinger, M., & Li-Jessen, N. Y. K. (2022). Editorial: Integration of Machine Learning and Computer Simulation in Solving Complex Physiological and Medical Questions. *Frontiers in Physiology*, 13. doi:10.3389/fphys.2022.949771

- Ballinger, S., Brouillard, M., Ahooja, A., Kircher, R., Polka, L., & Byers-Heinlein, K. (2022). Intersections of official and family language policy in Quebec. *Journal of Multilingual and Multicultural Development*, 43(7), 614-628. doi:10.1080/01434632.2020.1752699
- Brandeker, M., & Thordardottir, E. (2022). Verbal fluency in bilingual school-age children: Looking at switching, clustering, and the effect of language experience. *International Journal of Bilingualism*. doi:10.1177/13670069211055263
- Brekelmans, G., Lavan, N., Saito, H., Clayards, M., & Wonnacott, E. (2022). Does high variability training improve the learning of non-native phoneme contrasts over low variability training? A replication. *Journal of Memory and Language*, 126. doi:10.1016/j.jml.2022.104352
- Brown, M., Li, J., Moraes, C., Tabrizian, M., & Li-Jessen, N. Y. K. (2022). Decellularized extracellular matrix: New promising and challenging biomaterials for regenerative medicine. *Biomaterials*, 289. doi:10.1016/j.biomaterials.2022.121786
- Brown, M., Zhu, S., Taylor, L., Tabrizian, M., & Li-Jessen, N. Y. K. (2023). Unraveling the Relevance of Tissue-Specific Decellularized Extracellular Matrix Hydrogels for Vocal Fold Regenerative Biomaterials: A Comprehensive Proteomic and In Vitro Study. *Advanced NanoBiomed Research*, 3(4), 2200095. doi:https://doi.org/10.1002/anbr.202200095
- Caballero, J. A., Auclair Ouellet, N., Phillips, N. A., & Pell, M. D. (2022). Social decision-making in Parkinson's disease. *Journal of Clinical and Experimental Neuropsychology*, 44(4), 302-315. doi:10.1080/13803395.2022.2112554
- Courteau, É., Loignon, G., Steinhauer, K., & Royle, P. (2023). Identifying Linguistic Markers of French-Speaking Teenagers With Developmental Language Disorder: Which Tasks Matter? *Journal of Speech, Language, and Hearing Research*, 66(1), 221-238. doi:10.1044/2022_JSLHR-21-00541
- Glick, A. R., Saiyed, F. S., Kutlesa, K., Onishi, K. H., & Nadig, A. S. (2022). Implications of video chat use for young children's learning and social-emotional development: Learning words, taking turns, and fostering familial relationships. *Wiley Interdisciplinary Reviews: Cognitive Science*, 13(5). doi:10.1002/wcs.1599
- Glushko, A., Poeppel, D., & Steinhauer, K. (2022). Overt and implicit prosody contribute to neurophysiological responses previously attributed to grammatical processing. *Scientific Reports*, 12(1). doi:10.1038/s41598-022-18162-3
- Grant, A. M., Kousaie, S., Coulter, K., Gilbert, A. C., Baum, S. R., Gracco, V., . . . Phillips, N. A. (2022). Age of Acquisition Modulates Alpha Power During Bilingual Speech Comprehension in Noise. *Frontiers in Psychology*, 13. doi:10.3389/fpsyg.2022.865857
- Groh, R., Lei, Z., Martignetti, L., Li-Jessen, N. Y. K., & Kist, A. M. (2022). Efficient and Explainable Deep Neural Networks for Airway Symptom Detection in Support of Wearable Health Technology. *Advanced Intelligent Systems*, 4(7), 2100284. doi:https://doi.org/10.1002/aisy.202100284
- Kircher, R., Quirk, E., Brouillard, M., Ahooja, A., Ballinger, S., Polka, L., & Byers-Heinlein, K. (2022). Quebec-based Parents' Attitudes Towards Childhood Multilingualism: Evaluative

- Dimensions and Potential Predictors. *Journal of Language and Social Psychology*, 41(5), 527-552. doi:10.1177/0261927X221078853
- Kremin, L. V., Alves, J., Orena, A. J., Polka, L., & Byers-Heinlein, K. (2022). Code-switching in parents' everyday speech to bilingual infants. *Journal of Child Language*, 49(4), 714-740. doi:10.1017/S0305000921000118
- Landry, V., Coburn, P., Kost, K., Liu, X., & Li-Jessen, N. Y. K. (2022). Diagnostic Accuracy of Liquid Biomarkers in Airway Diseases: Toward Point-of-Care Applications. *Frontiers in Medicine*, 9. doi:10.3389/fmed.2022.855250
- Leach, M., Moore, K., Matthews, T., & Rvachew, S. (2022). Optimizing Childhood Apraxia of Speech treatment in telepractice: A case study. *Cognitive Circuits*, 2, 78-91.
- Lei, Z., Martignetti, L., Ridgway, C., Peacock, S., Sakata, J. T., & Li-Jessen, N. Y. K. (2022). Wearable Neck Surface Accelerometers for Occupational Vocal Health Monitoring: Instrument and Analysis Validation Study. *JMIR Formative Research*, 6(8). doi:10.2196/39789
- Lindsay, S., Clayards, M., Gennari, S., & Gaskell, M. G. (2022). Plasticity of categories in speech perception and production. *Language, Cognition and Neuroscience*, 37(6), 707-731. doi:10.1080/23273798.2021.2018471
- Mauchand, M., & Pell, M. D. (2022). French or Québécois? How Speaker Accents Shape Implicit and Explicit Intergroup Attitudes Among Francophones in Montréal. *Canadian Journal of Behavioural Science*, 54(1), 1-8. doi:10.1037/cbs0000292
- Mauchand, M., & Pell, M. D. (2022). Listen to my feelings! How prosody and accent drive the empathic relevance of complaining speech. *Neuropsychologia*, 175. doi:10.1016/j.neuropsychologia.2022.108356
- Mollaei, F., Shiller, D. M., Baum, S. R., & Gracco, V. L. (2022). Early auditory responses to speech sounds in Parkinson's disease: preliminary data. *Scientific Reports*, 12(1). doi:10.1038/s41598-022-05128-8
- Moya-Garcia, C. R., Okuyama, H., Sadeghi, N., Li, J., Tabrizian, M., & Li-Jessen, N. Y. K. (2022). In vitro models for head and neck cancer: Current status and future perspective. *Frontiers in Oncology*, 12. doi:10.3389/fonc.2022.960340
- Pell, M. D., Sethi, S., Rigoulot, S., Rothermich, K., Liu, P., & Jiang, X. (2022). Emotional voices modulate perception and predictions about an upcoming face. *Cortex*, 149, 148-164. doi:10.1016/j.cortex.2021.12.017
- Polka, L., Masapollo, M., & Ménard, L. (2022). Setting the Stage for Speech Production: Infants Prefer Listening to Speech Sounds With Infant Vocal Resonances. *Journal of Speech, Language, and Hearing Research*, 65(1), 109-120. doi:10.1044/2021_JSLHR-21-00412
- Rothermich, K., Ahn, S., Dannhauer, M., & Pell, M. D. (2022). Social appropriateness perception of dynamic interactions. *Social Neuroscience*, 17(1), 37-57. doi:10.1080/17470919.2022.2032326

- Sander, K., Barbeau, E. B., Chai, X., Kousaie, S., Petrides, M., Baum, S., & Klein, D. (2022). Frontoparietal Anatomical Connectivity Predicts Second Language Learning Success. *Cerebral Cortex*, 32(12), 2602-2610. doi:10.1093/cercor/bhab367
- Thordardottir, E. (2022). Áhrif ensku á íslenskukunáttu unglinga sem hafa lært hana sem annað mál [The impact of English on the Icelandic proficiency of adolescents who have learned Icelandic as a second language]. *Milli mála – Journal of Language and Culture*, 14(1), 89-111. Retrieved from <https://millimala.hi.is/is/forsida/>
- Thordardottir, E., & Reid, H. (2022). Nonword repetition to identify DLD in older school-age children A French nonword repetition test with word-like and nonword-like items from 2 to 8 syllables. *Enfance*, 1(1), 59-79. doi:10.3917/enf2.221.0059
- Zhang, S., & Pell, M. D. (2022). Cultural differences in vocal expression analysis: Effects of task, language, and stimulus-related factors. *PLoS ONE*, 17(10 October). doi:10.1371/journal.pone.0275915
- Zurita, A. I., & Clayards, M. (2022). *Lexical stress in Spanish word segmentation*. Paper presented at the Proceedings of the Annual Conference of the International Speech Communication Association, INTERSPEECH.

These publications would not have been possible without the support of competitive research grants obtained from provincial, national, and international research funders. New grants to support research projects and clinical education were awarded to faculty in 2022, totaling approximately two million in new funding for research.

1. Awardee: PI Megan Clayards, Co-Investigator M. Pell
Awardee: Centre for Research on Brain, Language, and Music Research Incubator
Title: Award (\$10,000) 2022-2023
Perceptual Auditory Adaptation in Parkinson's Disease
2. Awardee: PI Laura Gonnerman
Award: Social Sciences and Humanities Research Council (\$100,000) 2022-26
Title: Supporting first and second language learning using morphology: An integrated approach.
3. Awardee: PI Aparna Nadig
Award: McGill University Internal SSHRC (\$5000) 2022-23
Title: Intergroup social interaction: examining potential in-group facilitation effects in autistic and racialized minority groups
4. Awardee: PI Aparna Nadig w/ Co-Investigators E. Ellyn Smith, G. Luk, M. Elsabbagh, M. Beauchamp
Award: SSHRC Insight Grant (\$199,654) 2022-27
Title: Youth who are language minorities in Quebec: using a Bioecological model to examine language development, access to services, and well-being
5. Awardee: PI March Pell
Award: SSHRC Insight Grant (\$307,258) 2022-2027
Title: Social factors in vocal communication

6. Awardee: PI Marc Pell
Award: NSERC Discovery Grant (\$275,000) 2022-27
Title: Neurocognitive studies of human vocal communication
7. Awardee: PI Shari Baum, Co-Investigator A. Gilbert
Award: SSHRC Insight Grant (\$288,050) 2022-27
Title: Online processing of phonetic and prosodic cues to code-switching in bilinguals
8. Awardee: Co-applicants Titone, Baum, Byers-Heinlein, Chai, Klein, Luk, Phillips, Polka
Award: Fonds de recherche Québec – société et culture, Soutien aux équipes de recherche (\$384,000) 2022-23
Title: Initiative Montréalaise sur le bilinguisme
9. Awardee: Co-Investigators D. Klein and S. Baum
Award: CRBLM Research Incubator Award (\$10,000) 2022-23
Title: Early exposure to Mandarin facilitates relearning: An online training study
10. Awardee: Co-investigators: K. Steinhauer and P. Royle
Award: SSHRC Insight Grant (389,101) 2022-28
Title: Language Acquisition and Processing in Teen and Adult L1 and L2
11. Awardee: Co-PIs: Nicole Li-Jessen and Andreas Kist
Award: FRQS and WKS at BayFOR, Collaborative Bilateral Research Program Bavaria-Québec - Artificial Intelligence in Health, (\$75,000) 2022-2025
Title: AIrway, an AI-Powered Wearable Device for Airway Health Monitoring
12. Awardee: Co-PIs: Nicole Li-Jessen and Karen Kost
Award: Pentax Medical Industrial Contract (\$37,500) 2022-24
Title: AI-informed Diagnostic Utility of iSCAN in Laryngeal Pathologies

These research publications also represent the rich collaborations that faculty have across McGill labs, the Montreal university environment, Canada, and international networks. Besides funding from the primary research funders in Canada (NSERC, SSHRC, and FRQS), collaborations with important international laboratories in the United States, United Kingdom, and Iceland have played a role in this research which frequently touches on bilingual and multicultural aspects of language learning and language use. The connections to industry partners to co-develop wearable devices to assess and monitor laryngeal pathologies is also worthy of mention.

In addition to research funding the team of Coordinators of Clinical Education also brought in funds to support the clinical training of students in the applied program. Lauren Tittley secured \$72,600 from Dialogue McGill to place student speech-language pathologists in internships in regions outside of Montreal. An additional \$5000 was obtained to support supervision of students who participated in the Heart and Hands Clinic, a McGill University initiative to help children with multiple needs. Sophie Vaillancourt succeeded in obtaining \$129,277 from a provincial government program, Soutien aux stages et à la formation pratique dans le domaine de la santé et des services sociaux. These funds will be used to hire a number of consultants to develop, support and enhance clinical training for our MScA students over a two year period. An additional \$22,000 was provided from the CIUSSS ODIM Agir tôt program so that our students could be supervised while they assessed preschool aged children. Winter practicums were supported for 30 year one students as well as final internships for two final year students.

Teaching and Learning (Graduate) – 2021 Highlights

In 2022, 31 students graduated with the M.Sc. (Applied) degree with specialization in Speech-Language Pathology. One additional student graduated with the M.Sc. degree (with thesis) and 2 students were granted the Ph.D. in Communication Sciences and Disorders.

Highlights for the professional training program in Speech-Language pathology were as follows:

- Our M.Sc. (Applied) program continues to be one of the most selective graduate programs at McGill. In 2022 we received 275 applications and accepted 30 students with a mean CGPA of 3.87/4.00.
- The new M.Sc. (Applied) program was implemented in Fall 2022. This change was the culmination of several years of hard work by faculty, administrators, and students. We are very proud to introduce this new program that incorporates a new summer term so that new courses can be taught while lessening workload intensity in each term.
- New on-site clinics were started so that student Speech-Language Pathologists could obtain high-quality clinical practice in the school. In particular, the Pediatric Teaching and Language Teaching Clinic (supported by the Hewitt Foundation) is an exciting opportunity to provide services to preschool aged English-speaking children while permitting our students to learn techniques to help children with developmental language delay and speech sound disorders.

Highlights in the research training program were as follows:

- McGill continues to be recognized as a leader in advanced research training in our field. In 2022, we received 9 applications for the PhD program and admitted 2 new students (yielding a total of 20 doctoral students). These included students from the IPN program and are augmented by post-doctoral fellows, masters students, and undergraduate honours students.
- SCSD professors co-operate extensively in teaching and research student supervision with several McGill departments in different Faculties: Linguistics, Psychology, UGME, Neurology/Neurosurgery, Otolaryngology, Biomedical Engineering, Mechanical Engineering, as well as providing training opportunities to UG students in Cognitive Science (Bachelor of Arts and Science).

Highlights for community involvement:

- The majority of faculty members are serving as editorial board members for important journals in our field (e.g., Journal of Communication Disorders, Language and Cognitive Science, Language, Interaction and Acquisition, Open Journal for Modern Linguistics, Phonetica, Frontiers in Language Science, and Frontiers in Psychology).