

# Alexander L. Francis

## Curriculum Vitae

Summer, 2019

### Work

Speech, Language & Hearing Sciences  
Purdue University  
Lyles-Porder Hall  
715 Clinic Drive  
West Lafayette, IN 47907  
USA  
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### EDUCATION

Ph.D. in Linguistics and in Psychology (with Distinction), The University of Chicago, 1999  
Dissertation Title: “Perceptual Learning, Attention, and Phonetic Categorization”  
Committee: Howard C. Nusbaum, Karen L. Landahl (co-supervisors), David McNeill,  
Terry Regier, Janellen Huttenlocher (reader)  
M.A. in Linguistics, The University of Chicago, June, 1993  
B.A. in Linguistics (with Honors), University of Illinois at Urbana-Champaign, 1991

### ACADEMIC EMPLOYMENT

Associate Professor, Dept. of Speech, Language & Hearing Sciences, Purdue University, August  
2008–present  
Assistant Professor, Dept. of Speech, Language & Hearing Sciences, Purdue University, August  
2002–2008  
Post-doctoral Fellow, Dept. of Speech and Hearing, University of Hong Kong, August, 1999–  
July, 2002  
Research Assistant (Part-time), Dept. of Psychology, University of Chicago, 1995–1999  
Graduate Research Assistant, C-3 Group (Computer Research and Applications), Los Alamos  
National Laboratories, Summer 1993

### RESEARCH INTEREST

I study the cognitive systems and affective responses associated with listening to speech in adverse circumstances. I use behavioral and psychophysiological measures to assess speech understanding, cognitive effort, affect, and stress in younger and older adults with and without hearing impairment under a range of listening conditions. Results of this research provide insight into the cognitive foundations of spoken language understanding, and will contribute to research on better accommodating the needs of older listeners and those with hearing impairment in a variety of contexts and conditions.

## FUNDED RESEARCH

*NIH New R01 Program Award: Does effortful listening induce physiological stress?* PI. Purdue University Office of Research and Partnerships and Office of the Provost. \$29,928. December 1, 2015-June 30, 2017.

*Provost's Fellowship for Study in a Second Discipline: Psychophysiology of Listening Effort.* PI. Purdue University. \$7,000. August 15, 2014 – May 15, 2015.

*Do older adults attend to speech differently than younger adults?* PI (with Joshua Alexander). Kinley Foundation Trust. \$20,000. May 1, 2012 – July 31, 2013.

*Effects of neurocognitive training on regional patterns of brain metabolism in older adults with hearing impairment.* PI. Indiana Clinical and Translational Sciences Institute. Pilot funding for use of core facilities. \$9,600. January 1, 2010-December 31, 2011.

*Selective Attention and Perceptual Learning of Speech.* NIH R03DC006811. National Institutes of Health, National Institute on Deafness and Other Communication Disorders (NIH NIDCD), June 1, 2004 – November 30, 2008, \$150,000.

*Electrophysiological indices of perceptual restoration of filtered and noise-masked vowels.* Co-PI (with Ravi Krishnan). Purdue University Research Incentive Award, September 2004 – August 2005, \$1000.

*The role of tonal context in the learning of lexical tone categories by speakers of tonal and nontonal languages.* Co-PI (with Valter Ciocca). Hong Kong Research Grants Council, January 2004 – December, 2005. HK \$707,000 (approx. US \$90,640).

*Effects of linguistic experience on attention to tones.* Co-PI (with V. Ciocca and L. Ma). Hong Kong University Research Grants Committee Seed Funding for Basic Research, February 2001 – March, 2002. HK \$120,000 (approx. US \$15,000).

## HONORS AND AWARDS

Fellowship for Study in a Second Discipline (Psychophysiology), Purdue University, August 2014-May 2015

Student Paper Award (Speech Communication), 136th meeting of the Acoustical Society of America, Norfolk VA, 1998

Dewey Lecture Fellowship, Social Sciences Collegiate Division, The University of Chicago, 1998-1999

Alternate recipient of the Fujimura Fellowship to the 1993 Linguistic Summer Institute at The Ohio State University

National Science Foundation New Graduate Student Fellowship Honorable Mention, 1992

Four-year, Merit Based Graduate Fellowship (Unendowed Funds), University of Chicago, 1991

## PUBLICATIONS

### REFEREED JOURNAL ARTICLES

Francis, A.L. & Love, J. (accepted). Listening Effort: Are we measuring cognition, affect, or both? Invited review article, *WIREs Cognitive Science*.

Xu, D., & Francis, A.L. (in press) Psychological distress mediates the relationship between hearing impairment and cardiovascular disease. *Journal of Speech, Language and Hearing Research*.

Keehn, B., Kadlaskar, G., McNally Keehn, R., & Francis, A.L. (accepted). Auditory attentional disengagement in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*.

Law, W. L., Dmitrieva, O., & Francis, A. L. (accepted). Language attitudes modulate phonetic convergence and divergence in bilingual speakers in diglossic settings. *Linguistic Approaches to Bilingualism*.

Francis, A.L., & Oliver, J. (2018). Psychophysiological measurement of affective responses during speech perception. *Hearing Research*, 369, 103-119.

Francis, A.L., Tigchelaar, L.J. Zhang, R., & Zekveld, A. (2018). Effects of second language proficiency and linguistic uncertainty on recognition of speech in native and non-native competing speech. *Journal of Speech, Language and Hearing Research*, 61(7), 1815-1830.

Strauss, D.J. & Francis, A.L. (2017). Toward a taxonomic model of attention in listening effort. *Cognitive, Affective, & Behavioral Neuroscience*, 17(4), 809-825.

Francis, A.L., MacPherson, M.K., Chandrasekaran, B., & Alvar, A.M. (2016). Autonomic nervous system responses during perception of masked speech may reflect constructs other than subjective listening effort. *Frontiers in Psychology: Cognitive Hearing Mechanisms of Language Understanding: Short- and Long-term Perspectives*, 7(263), 1-15.

Llanos, F. & Francis, A.L. (2016). The effects of language experience and speech context on the phonetic accommodation of English-accented Spanish voicing. *Language & Speech*, 60(1), 3-26.

Dmitrieva, O., Llanos, F., Shultz, A.A., & Francis, A.L. (2015). Phonological status, not voice onset time, determines the acoustic realization of onset f0 as a secondary voicing cue in Spanish and English. *Journal of Phonetics*, 49, 77-95.

Lin, M. & Francis, A.L. (2014). Effects of language experience and expectations on attention to consonants and tones in English and Mandarin Chinese. *Journal of the Acoustical Society of America*, 136(5), 2827-2838.

Llanos, F., Dmitrieva, O., Shultz, A.A., & Francis, A.L. (2013). Auditory enhancement and second language experience in Spanish and English weighting of secondary voicing cues. *Journal of the Acoustical Society of America*, 134(3), 2213-2224.

*REFEREED JOURNAL ARTICLES (continued)*

- Roberts, F. & Francis, A.L. (2013). Identifying a temporal threshold of tolerance for silent gaps after requests. *Journal of the Acoustical Society of America*, 133(6), EL471-EL477.
- Shultz, A.A., Francis, A.L., & Llanos, F. (2012). Differential cue weighting in perception and production of consonant voicing. *Journal of the Acoustical Society of America*, 132(2), EL95-EL101.
- Cristià, A., McGuire, G., Seidl, A., & Francis, A. (2011). Effects of the distribution of cues on infants' perception of speech sounds. *Journal of Phonetics*, 39, 388-402.
- Kondaurova, M.V. & Francis, A.L. (2010). The role of selective attention in the acquisition of English tense and lax vowels by native Spanish listeners: Comparison of three training methods. *Journal of Phonetics*, 38(4), 569-587.
- Zhang, Y. & Francis, A.L. (2010). The weighting of vowel quality in native and non-native listeners' perception of English lexical stress. *Journal of Phonetics*, 38(2), 260-271.
- Francis, A.L. (2010). Improved segregation of simultaneous talkers differentially affects perceptual and cognitive capacity demands for recognizing speech in competing speech. *Attention, Perception and Psychophysics*, 72(2), 501-516.
- Francis, A.L., & Nusbaum, H.C. (2009). Effects of intelligibility on working memory demand for speech perception. *Attention, Perception and Psychophysics*, 71(6), 1360-1374.
- Finneran, D., Francis, A.L., & Leonard, L. (2009). Sustained attention in preschool-age children with specific language impairment. *Journal of Speech, Language and Hearing Research*, 52, 915-929.
- Kondaurova, M.V., & Francis, A.L. (2008). The relationship between native allophonic experience with vowel duration and perception of the English tense/lax vowel contrast by Spanish and Russian listeners. *Journal of the Acoustical Society of America*, 124(6), 3959-3971.
- Francis, A.L., Kaganovich, N., & Driscoll-Huber, C.J. (2008). Cue-specific effects of categorization training on the relative weighting of acoustic cues to consonant voicing in English. *Journal of the Acoustical Society of America*, 124 (2), 1234-1251.
- Zhang, Y., Nissen, S.L., & Francis, A.L. (2008). Acoustic characteristics of English lexical stress produced by native Mandarin speakers. *Journal of the Acoustical Society of America*, 123(6), 4498-4513.
- Francis, A.L., Ciocca, V., Ma, L., & Fenn, K. (2008). Perceptual learning of Cantonese lexical tones by tone and non-tone language speakers. *Journal of Phonetics*, 36, 268-294.
- Tong, Y., Francis, A.L. & Gandour, J.T. (2007). Perceptual processing dependencies between segmental and suprasegmental features of a tone language. *Language and Cognitive Processes*, 23(5), 689-708.

*REFEREED JOURNAL ARTICLES (continued)*

- Francis, A.L., Nusbaum, H.C., & Fenn, K. (2007). Effects of training on the acoustic phonetic representation of synthetic speech. *Journal of Speech, Language and Hearing Research*, 50(6), 1445-1465.
- Francis, A.L., Ciocca, V., Wong, V.K.M., & Chan, J.K.L. (2006). Is fundamental frequency a cue to aspiration in initial stops? *Journal of the Acoustical Society of America*, 120(5), 2884-2896.
- Kaganovich, N., Francis, A.L., & Melara, R.D. (2006). Electrophysiological evidence for early interaction between talker and linguistic information during speech perception. *Brain Research*, 1114, 161-172.
- Francis, A.L., & Driscoll, C.J. (2006). Training to use voice onset time as a cue to talker identification induces a left ear/right hemisphere processing advantage. *Brain and Language*, 98, 310-318.
- Xu, Y., Gandour, J.T., & Francis, A.L. (2006). Effects of language experience and stimulus complexity on the categorical perception of pitch direction. *Journal of the Acoustical Society of America*, 120(2), 1063-1074.
- Roberts, F., Francis, A.L., & Morgan, M. (2006). The interaction of inter-turn silence with prosodic cues in listener perception of 'trouble' in conversation. *Speech Communication*, 48, 1079-1093.
- Francis, A.L., Ciocca, V.C., Wong, N.K.U., Leung, W.H.Y., & Chu, P.C.Y. (2006). Extrinsic context affects perceptual normalization of lexical tone. *Journal of the Acoustical Society of America*, 119(3), 1712-1726.
- Francis, A.L., Ciocca, V.C., & Ng, B.K.C. (2003). On the (non)categorical perception of lexical tones. *Perception & Psychophysics*, 65(6), 1029-1044.
- Francis, A.L. & Ciocca, V. (2003). Stimulus presentation order and the perception of lexical tones in Cantonese. *Journal of the Acoustical Society of America*, 114(3), 1611-1621.
- Francis, A.L., & Ho, D.W.L. (2003). Acquisition of three spoken languages by a child with a cochlear implant. *Cochlear Implants International*, 4(1), 31-47.
- Francis, A.L., Ciocca, V., & Yu, J.M.C. (2003). Accuracy and variability of acoustic measures of voicing onset. *Journal of the Acoustical Society of America*, 113(2), 1025-1032.
- Whitehill, T.L., Francis, A.L., & Ching, C. K.-Y. (2003). Perception of stop placement by children with cleft palate and posterior placement. *Journal of Speech, Language & Hearing Research*, 46, 451-461.
- Ciocca, V., Francis, A.L., Aisha, R., & Wong, L. (2002). The perception of Cantonese lexical tones by prelingually deaf cochlear implantees. *Journal of the Acoustical Society of America*, 111(5), 2250-2256.

**REFEREED JOURNAL ARTICLES (continued)**

- Francis, A.L., & Nusbaum, H. C. (2002). Selective attention and the acquisition of new phonetic categories. *Journal of Experimental Psychology: Human Perception and Performance*, 28(2), 349–366.
- Francis, A. L., Baldwin, K., & Nusbaum, H. C. (2000). Effects of training on attention to acoustic cues. *Perception and Psychophysics*, 62(8), 1668-1680.
- Francis, A. L., & Nusbaum, H. C. (1999). The effect of lexical complexity on intelligibility. *International Journal of Speech Technology*, 3, 15-25.
- Nusbaum, H. C., Francis, A. L., & Henly, A.S. (1995). Measuring the naturalness of synthetic speech. *International Journal of Speech Technology*, 1, 7-19.

**BOOK CHAPTERS**

- Cristià, A., Seidl, A., and Francis, A. (2011). Phonological features in infancy. In G. N. Clements and R. Ridouane (Eds.), *Where do features come from? The nature and sources of phonological primitives* (pp. 306-326). Elsevier.
- Francis, A. L., & Nusbaum, H. C. (1999). Evaluating the Quality of Synthetic Speech. In D. Gardner-Bonneau (Ed.), *Human Factors and Voice Interactive Systems* (pp. 63-97). Boston: Kluwer Academic Publishers.

**CONFERENCE PROCEEDINGS**

- Love, J. Sollman, L., Niehl, A., & Francis, A.L. (in press). Physiological orienting response, noise sensitivity, and annoyance from irrelevant background sound. *Proceedings of Meetings on Acoustics*. Accepted Feb. 9, 2019.
- Schneider, E.N., Bernarding, C., Francis, A.L., Honrsby, B.W.Y., & Strauss, D.J. (2019). A quantitative model of listening related fatigue. *9<sup>th</sup> International IEEE EMBS Neural Engineering Conference*. March 20-23, San Francisco, CA, USA.
- Kondaurova M.V., & Francis A.L., (2008). Training to ignore vs. training to attend while learning a foreign phonetic contrast. *Proceedings from the Annual Meeting of the Chicago Linguistic Society*, 44 (1), 169-177. Chicago Linguistic Society.
- Ciocca, V., Rani, A., Francis, A., & Wong, L. (2000). Can Cantonese children with cochlear implants perceive lexical tones?" *Proceedings of the 6<sup>th</sup> International Conference on Speech and Language Processing*. Beijing, China.
- Nusbaum, H. C., Francis, A. L., & Luks, T. L. (1997). Speech Perception: A Special Mechanism or a Specialized Cognitive Process? In K. Singer, R. Eggert, and G. Anderson (Eds.), *Proceedings of the 33rd Regional Meeting of the Chicago Linguistic Society (CLS 33)*, vol. 2, *The Parasession on Phonetics* (pp. 415-434). Chicago: Chicago Linguistic Society. 1997.
- Francis, A. L., & Nusbaum, H. C. (1996). Paying attention to speaking rate. *Proceedings: International Conference on Speech and Language Processing (ICSLP) '96*, vol. 3, SaA2L2.

## REVIEWS

Francis, A. L. (1998). *Voice Recognition* by Richard L. Klevans and Robert D. Rodman. *International Journal of Speech Technology*, 2:3, 249-253.

Francis, A. L., & Jones, E. (1996). Phonetics and phonological theory. *Language and Communication*, 16, 381-391.

Francis, A. L. (1994). Parser 1.0: An elementary parsing program for the DOS environment. *Computers and the Humanities*, 27, 406-409.

## INVITED PRESENTATIONS

“Using physiological measures to assess distraction and annoyance from background noise.” Presented at the *5th International Conference on Cognitive Hearing Science for Communication*, Linköping, Sweden, June 9-12, 2019.

Oliver, J., Sollmann, L., Niehl, A., & Francis, A.L. (2018). Do orienting responses predict annoyance from irrelevant sounds? Invited talk presented by Jordan Oliver at the *176th Meeting of the Acoustical Society of America*, Victoria, British Columbia, Canada. November 5-9, 2018.

“Using psychophysiological measures to assess affective response to communication challenges across the lifespan.” Invited talk presented at the *7th International and Interdisciplinary Research Conference on Aging and Speech Communication*. University of South Florida, Tampa FL, November 5-8<sup>th</sup>, 2017.

“Listening effort: Phenomenology, psychology, physiology and application.” Invited talk presented at the University of Connecticut and Haskins Labs, March 2 & 3, 2017.

“Psychophysiological measures associated with listening effort.” Talk presented at the *5th Ear Day at Rush University*, Chicago, IL, January 27, 2017.

“Effects of age and hearing impairment on the perceptual weighting of acoustic cues.” Alexander L. Francis & Joshua Alexander. Talk presented at the *2nd Annual Rush Ear Day*, Chicago, IL, October 25, 2013.

“Some factors that probably affect acoustic cue weighting in speech perception.” Talk presented at the *7th Annual Meeting of the Auditory Cognitive Neuroscience Society*, Tucson, AZ, January 3-5, 2013.

“Some effects of real and simulated cognitive and auditory aging on speech perception.” Talk presented at the *6th Annual Meeting of the Auditory Cognitive Neuroscience Society*, Tucson, AZ, January 3-6, 2012.

“How does spatial separation of sound sources interact with cognitive capacity limitations on speech perception?” Talk presented at the *5th Annual Meeting of the Auditory Cognitive Neuroscience Society*, Tucson, AZ, January 6-7, 2011.

*INVITED PRESENTATIONS (continued)*

“Perceptual learning of non-native speech sounds: The importance of features from an attention to dimensions perspective.” Talk presented at the *158<sup>th</sup> Meeting of the Acoustical Society of America, San Antonio, TX, October 29, 2009.*

“The role(s) of capacity limitations in speech perception.” Talk presented at the *157<sup>th</sup> Meeting of the Acoustical Society of America, Portland, OR, May 19, 2009.*

“Studies on the role of attention in speech perception: From perceptual learning to training attention.” Talk presented at the *DeVault Otologic Research Laboratory Colloquium of the Indiana University School of Medicine, Indianapolis, IN, February 11, 2009.*

“Features, not phonemes: Implications of studies of perceptual learning for L2 acquisition.” Alexander L. Francis, Talk presented at the *Indiana University Linguistics Colloquium, April 11, 2008.*

“Should we pay attention to attention?” Talk presented at the *2<sup>nd</sup> Annual Meeting of the Auditory Cognitive Science Society, Tucson AZ, January 11-12, 2008.*

“On babies and bathwater in the motor theory ‘debate’: The importance of active theories of perception.” Rebuttal/discussion presented at the *2<sup>nd</sup> Annual Meeting of the Auditory Cognitive Science Society, Tucson AZ, January 11-12, 2008.*

“What is attention, and what is it doing in speech perception?” Talk presented at the *154<sup>th</sup> Meeting of the Acoustical Society of America, New Orleans, LA, November 27-30, 2007.*

“Is the part greater than the whole? Experience, attention and the role of features in phonetic learning.” Talk presented to the *Department of Linguistics, University of Illinois at Urbana-Champaign, Urbana, IL, November, 2006.*

“Some experiments on the perception of lexical tones in Cantonese.” Talk presented to the *Department of Linguistics, Northwestern University, Evanston, IL, February, 2004.*

“Lexical tone and cochlear implants: Basic issues, preliminary results, and future directions.” Alexander L. Francis & Valter Ciocca. Talk presented at the *DeVault Otologic Research Laboratory Colloquium of the Indiana University School of Medicine, Indianapolis, IN, July, 2003.*

*CONFERENCE PRESENTATIONS (presented by me unless otherwise noted)*

Love, J. Sollmann, L., Niehl, A., & Francis, A.L. (2019). Does noise sensitivity or attentional capacity predict cardiovascular responses to distracting sound? Talk to be presented at the *177<sup>th</sup> Meeting of the Acoustical Society of America, May 13-17, 2019, Louisville, KY.*

Francis, A.L., Alabed, D., Mues, S., Herbig, M.-C., & Boutin, M. (2018). Identifying affective responses in individual blood volume pulse data. Poster presented at the *58<sup>th</sup> Annual Meeting of the Society for Psychophysiological Research (SPR), October 3-7 2018, Quebec City, Quebec, Canada.*



*CONFERENCE PRESENTATIONS (continued)*

Oliver, J.N., Sung, W., Davies, P. & Francis, A.L. (2018). Psychophysiological responses during cognitively demanding work in subjectively annoying background noise. Talk presented by Jordan Oliver at the *175<sup>th</sup> Meeting of the Acoustical Society of America*, May 7-11, 2018, Minneapolis, MN.

Francis, A.L., Schumaker, J., Bent, T., Zhang, R., & Oliver, J. (2017). Individual differences predicting autonomic responses associated with listening effort. Poster presented at the *57<sup>th</sup> Annual Meeting, Society for Psychophysiological Research*, 11-15 October, 2017, Vienna, Austria.

Francis, A.L., Schumaker, J., Bent, T., & Zhang, R. (2017). Psychophysiological indices of listening effort due to noise masking and nonnative-accent. Poster presented at the *173rd Meeting of the Acoustical Society of America*, Boston, MA, June 25-29, 2017.

Abu-Zhaya, R., Tonnsen, B., Francis, A., Seidl, A. (2017). Infants' physiological responses to cross-modal touch+speech input. Poster presented by Rana Abu-Zhaya at the *Workshop on Infant Language Development*, Bilbao, Spain, June 2017.

Law, W. L. & Francis, A.L. (2016). Degree of bilingualism modulates interaction between L1 and L2 in code-switching. Paper presented by Wai Ling Law at the *8th International Symposium on the Acquisition of Second Language Speech*, Aarhus, Denmark, June, 2016.

Francis, A.L., Schumacher, J., & Zhang, R. (2016). Psychophysiological responses to listening to speech in intermittent noise. Poster presented at the *171<sup>st</sup> Meeting of the Acoustical Society of America*, Salt Lake City, UT, May 23-27, 2016.

Zekveld, A., Tigchelaar, L.J. & Francis, A.L. (2015). A little knowledge is a dangerous thing: Foreign language proficiency increases susceptibility to interference from that language. Poster presented by Adriana Zekveld at the *Third International Conference on Cognitive Hearing Science for Communication*, Linköping, Sweden, June 14-17, 2015.

Law, W.L. & Francis, A.L. (2015). Phonetic divergence in bilingual speakers is modulated by language attitude. Poster presented by Wai Ling Law at the *170<sup>th</sup> Meeting of the Acoustical Society of America*, Jacksonville, FL, November 2-6, 2015.

Law, W. L. & Francis, A. L. (2015). Common Phonetic Space of L1 and L2 Suprasegmentals: The Case of Speech Rhythm and Tonality in Cantonese-English Bilinguals. Talk presented by Wai Ling Law at the *20th meeting of the Mid-Continental Phonetics & Phonology Conference*, Indiana University, Bloomington, IN, September 11-13, 2015.

Lin, M. & Francis, A.L. (2015). The effect of pausing on listening effort and the intelligibility and acceptability of L2 English. Poster presented by Mengxi Lin at the *2015 Conference of the American Association for Applied Linguistics*, Toronto, Ontario, Canada, March 21-24, 2015.

Llanos, F. & Francis, A.L. (2014). Language switching and sub-phonemic processing in English-accented Spanish. Talk presented by Fernando Llanos at the *Hispanic Linguistics Symposium 2014*, West Lafayette, IN, November 13-16, 2014.

*CONFERENCE PRESENTATIONS (continued)*

Llanos, F. & Francis, A.L. (2014). Processing of English-accented Spanish voice onset time by Spanish speakers with low English experience. Poster presented by Fernando Llanos at the 168<sup>th</sup> *Meeting of the Acoustical Society of America*, Indianapolis, IN, October 27-31, 2014.

Law, W. L. & Francis, A. L. (2014). Acoustic correlates of bilingualism: Relating phonetic production to language experience and attitudes. Poster presented by Christie Wai Ling Law at the 168<sup>th</sup> *Meeting of the Acoustical Society of America*, Indianapolis, IN, October 27-31, 2014.

Francis, A.L., MacPherson, M.K., Chandrasekaran, B., Alvar, A.M., & Llanos, F. (2013). Psychophysiological indices of effortful listening in younger and older adults. Talk presented at the 166<sup>th</sup> Meeting of the Acoustical Society of America, San Francisco, CA, December 2-6, 2013.

Francis, A.L. & Alexander, J.M. (2013). Effects of Age and Hearing Impairment on Perceptual Weighting of Acoustic Cues. Poster presented at the *Aging and Speech Communication 5<sup>th</sup> International and Interdisciplinary Research Conference*, Bloomington, IN, October 6-9, 2013.

Lin, M., Francis, A.L., Llanos, F., Dmitrieva, O., & Chapman, R. (2012). Processing interactions between segmental and suprasegmental information in English and Mandarin Chinese. Poster presented at the 164<sup>th</sup> *Meeting of the Acoustical Society of America*, Kansas City, MO, October 22-26, 2012.

Llanos, F., Francis, A.L., Dmitrieva, O., Shultz, A.A., & Chapman, R. (2012). Modeling learning of the English voicing contrast by Spanish listeners living in the US." Poster presented at the 164<sup>th</sup> *Meeting of the Acoustical Society of America*, Kansas City, MO, October 22-26, 2012.

Dmitrieva, O., Shultz, A.A., Llanos, F., & Francis, A.L. (2012). Acoustic correlates of stop consonant voicing in English and Spanish. Poster presented at the 164<sup>th</sup> *Meeting of the Acoustical Society of America*, Kansas City, MO, October 22-26, 2012.

Francis, A.L. (2011). Spatial release from masking may be more significant for listeners with poor working memory capacity." Poster presented at the *1<sup>st</sup> International Conference on Cognitive Hearing Science for Communication*, Linköping, Sweden, June 19-22, 2011.

Francis, A.L., Connell, K., & Anderson, L. (2011). Does spatial release from masking interact with working memory capacity in speech perception? Poster presented at the 161<sup>st</sup> *Meeting of the Acoustical Society of America*, Seattle, WA, May 23-27, 2011.

Llanos, F., Francis, A.L., Dmitrieva, O., & Chapman, R. (2011). Do language-specific differences in primary acoustic cues affect relative weighting of secondary cues to phonological contrasts? Poster presented by Fernando Llanos at the 161<sup>st</sup> *Meeting of the Acoustical Society of America*, Seattle, WA, May 23-27, 2011.

Francis, A.L., Ranaweera, R.D., Olulade, O., & Talavage, T.M. (2009). Differential effects of perceptual and working memory load on neural correlates of selective attention to speech in competing speech." Poster presented at the 15<sup>th</sup> *Annual Meeting of the Organization for Human Brain Mapping*, San Francisco, CA, June 18-23, 2009.

*CONFERENCE PRESENTATIONS (continued)*

“The role of selective attention in the acquisition of English tense and lax vowels by native Spanish listeners: Comparison of three training methods.” Maria Kondaurova and Alexander L. Francis. Talk presented by Maria Kondaurova at the *157<sup>th</sup> Meeting of the Acoustical Society of America*, Portland, OR, May 22, 2009.

“Effects of capacity limitations on the perception of words in competing speech.” Alexander L. Francis. Poster presented at the 2008 ASHA Convention, Chicago, IL. November 20-22, 2008.

“Levels of selective attention in speech perception.” Alexander L. Francis. Poster presented at the *154<sup>th</sup> Meeting of the Acoustical Society of America*, New Orleans, LA, November 27-30, 2007.

“Talkers are more difficult to inhibit than vowels: Dimension-specific effects on inhibitory processes during a dual-channel selective attention task, an ERP study.” Natalya Kaganovich, Robert M. Melara, and Alexander L. Francis. Poster presented by Natalya Kaganovich at the *13th Annual Meeting of the Organization for Human Brain Mapping*, Chicago, IL, June 10-14, 2007.

“The Role of Sustained Attention in Language Learning for Children With SLI.” Denise Finneran, Alexander L. Francis, and Lawrence L. Leonard. Poster presented by Denise Finneran at the *28th Annual Symposium on Research in Child Language Disorders* in Madison, Wisconsin June 7-9, 2007.

“Learning of non-native tonal contrasts with or without tonal context.” Valter Ciocca, Alexander L. Francis and Yanhong Zhang. Poster presented by Valter Ciocca at the *4th Joint Meeting of the Acoustical Society of American and the Acoustical Society of Japan*, Honolulu, HI, November 28-December 2, 2006.

“Selective attention and perceptual learning of speech.” Alexander L. Francis, Natalya Kaganovich and Courtney Driscoll. Poster presented at the *4th Joint Meeting of the Acoustical Society of American and the Acoustical Society of Japan*, Honolulu, HI, November 28-December 2, 2006.

Russian and Spanish listeners’ perception of the English tense/lax vowel contrast: Contributions of native language allophony and individual experience.” Maria V. Kondaurova and Alexander L. Francis. Poster presented at the *4th Joint Meeting of the Acoustical Society of American and the Acoustical Society of Japan*, Honolulu, HI, November 28-December 2, 2006. [Winner, Best Student Paper in Speech Communication]

“Acoustic correlates of English lexical stress produced by native speakers of Mandarin Chinese.” Yanhong Zhang and Alexander L. Francis. Poster presented at the *4th Joint Meeting of the Acoustical Society of American and the Acoustical Society of Japan*, Honolulu, HI, November 28-December 2, 2006.

“Hemispheric Processing and Attentional Effects on Phonetic and Talker Identification.” Courtney Driscoll & Alexander L. Francis. Presented by Courtney Driscoll at the *2005 ASHA Convention*, San Diego, CA, November 19, 2005.

*CONFERENCE PRESENTATIONS (continued)*

“Temporal patterns of processing vowel and talker information: An electrophysiological study.” Natalya Kaganovich, Alexander L. Francis & Robert D. Melara. Poster presented by Natalya Kaganovich at *TENNET*, Montreal, Canada, June 23-25, 2005.

“Perception of the English tense/lax vowel contrast by native speakers of Russian.” Maria V. Kondaurova & Alexander L. Francis. Poster presented by Maria Kondaurova & Alex Francis at the 148<sup>th</sup> *Meeting of the Acoustical Society of America*, San Diego, CA, November 15-19, 2004.

“Effects of native language experience on perceptual learning of Cantonese lexical tones.” Alexander L. Francis, Valter Ciocca, and Lian Ma. Poster presented at the 147<sup>th</sup> *Meeting of the Acoustical Society of America*, New York, NY, May 24-28, 2004.

“Duration of context limits talker normalization in Cantonese tone perception.” Alexander L. Francis, Valter Ciocca, and Elaine Eramela. Presented at the *2003 Annual Meeting of the Linguistic Society of America*, Atlanta, GA, January 2-5, 2003.

“Neurophysiological indices of pitch rise and fall.” Karen G.S. Garrido, Valerie L. Shafer, Richard G. Schwartz, & Alexander L. Francis. Poster presented by Karen Garrido at the *2002 ASHA Convention*, Atlanta, GA, November 21-24, 2002.

“On the flexibility of phonetic category systems.” Alexander L. Francis & Howard C. Nusbaum. Invited paper presented at the *143<sup>rd</sup> Meeting of the Acoustical Society of America*, Pittsburgh, PA, June, 2002.

“Accuracy of acoustic measures of voicing onset.” Alexander L. Francis, Valter Ciocca, and Jojo Man-Ching Yu. Presented at the *9<sup>th</sup> Meeting of the International Clinical Linguistics and Phonetics Association*, Hong Kong, China, May 1-4, 2002.

“A case study of the acquisition of multiple languages via cochlear implant.” Alexander L. Francis and Diana Wai Lam Ho. Poster presented at the *9<sup>th</sup> meeting of the International Clinical Linguistics and Phonetics Association*, Hong Kong, China, May 1-4, 2002.

“Electrophysiological correlates of pitch perception differences between tone language and non-tone language speakers: Preliminary results.” Alexander L. Francis, Karen Garrido, Valter Ciocca, and Valerie Shafer. Presented at the *International Symposium on Cognitive Neuroscience*, Hong Kong, China, April 21-23, 2002.

“Perception of Lexical Tone by Postlingually Deaf Cochlear Implantees.” Valter Ciocca, Alexander L. Francis, and Tsz Kwan Chan. Poster presented at the *2001 ASHA Convention*, New Orleans, LA, November 16, 2001.

“Perception of stop placement by children with cleft palate.” Tara L. Whitehill, Alexander L. Francis, and Christine K.-Y. Ching. Poster presented by Tara L. Whitehill at the *2001 ASHA Convention*, New Orleans, LA, November 16, 2001.

*CONFERENCE PRESENTATIONS (continued)*

“Lexical tone contrast effects and linguistic experience.” Alexander L. Francis and Valter Ciocca. Poster presented at the *141<sup>st</sup> Meeting of the Acoustical Society of America*, Chicago, IL, June 7, 2001.

“Perception of stop consonant aspiration in Cantonese.” Valter Ciocca, Alexander L. Francis, and May Poon Man Wai. Presented at the *2<sup>nd</sup> Asia-Pacific Conference on Speech, Language and Hearing (XICA)*, Queensland, Australia, July 7, 2000.

“On the (non)categorical perception of Cantonese level tones.” Alexander L. Francis, Brenda Ng Kei Chit, and Valter Ciocca. Poster presented at the *139<sup>th</sup> meeting of the Acoustical Society of America*, Atlanta, Georgia, May 30, 2000.

“Cortical localization of linguistic expectations.” Howard Nusbaum, Noam Alperin, Vernon Towle, Alexander Francis, Neal Barsches, and Richard Yarger. Presented by Howard Nusbaum at the *40th Annual Meeting of the Psychonomic Society*, Los Angeles, CA, November 21st, 1999.

“Perceptual learning of synthetic speech.” Alexander L. Francis and Howard C. Nusbaum. Presented at the *136th Meeting of the Acoustical Society of America*, Norfolk, VA, October 15th, 1998. [Winner, Best Student Paper in Speech Communication]

“Attentional effects of variability in phonetic context.” Howard C. Nusbaum and Alexander L. Francis. Presented at the *136th Meeting of the Acoustical Society of America*, Norfolk, VA, October 13th, 1998.

“Computational constraints on spoken language understanding.” Alexander L. Francis and Howard C. Nusbaum. Poster presented at *Computational Psycholinguistics 1997*, Berkeley, CA, August 11, 1997.

“Paying attention to speaking rate.” Alexander L. Francis and Howard C. Nusbaum. Presented at the *Fourth International Conference on Spoken Language Processing (ICSLP 96)*, Philadelphia, PA, October 5th, 1996.

“The effect of lexical complexity on segmental intelligibility.” Howard C. Nusbaum and Alexander L. Francis. Presented at the *131st meeting of the Acoustical Society of America*, Indianapolis, IN, May 14th, 1996.

“I see what you're saying: Investigating the role of conceptual knowledge in speech perception.” Alexander L. Francis and Rodolfo Celis. Presented at the *23rd meeting of the International Cognitive Linguistics Association*, Albuquerque, NM, July 17-21st, 1995.

“An investigation of Italian closed-syllable vowel shortening.” Presented at the *Fifth Meeting of the American Association for Italian Studies*, Tempe, AZ, April 20-23, 1995.

“Connecting the Dots – or – Sound considerations in digital audio recording for language learning.” Workshop presented by Karen Landahl, Mike Ziolkowski and Alex Francis at the *Biennial Meeting of the International Association for Language Learning*, Kansas City, June 2-5, 1993.

**CONFERENCE PRESENTATIONS** (*continued*)

“Representing Kabardian harmonic clusters in non-linear phonology.” Presented at the *Eighth International Non-Slavic Languages Conference*, University of Chicago, May 13-15, 1993.

**OTHER PUBLICATIONS**

*Tcl/Tk for Dummies*. Tim Webster with Alex Francis, IDG Press, 1997.

**MANUSCRIPTS IN PROGRESS**

Lin, M. & Francis, A.L. (submitted) The effort of listening to non-native accented English depends on talker fluency and listener working memory capacity. Book chapter invited for inclusion in a volume honoring the life and work of Susan Guion Anderson. Ed. by Rtree Wayland (Cambridge University Press). Submitted June 1, 2019.

Francis, A.L., Schumaker, J., Bent, T., Silbert, N., Zhang, R. Oliver, J. (manuscript in progress). Psychophysiological indices of listening effort due to noise masking and nonnative-accent.

Francis, A.L., Oliver, J., Sung, W., Davies, P. & (data analysis in progress). Psychophysiological responses during cognitively demanding work in subjectively annoying background noise.

Law, W. L. Dmitrieva, O., & Francis, A. L. (in revision). Common phonetic space of L1 and L2 suprasegmentals: the case of speech rhythm and tonality in Cantonese-English bilinguals.

## TEACHING EXPERIENCE

### *Purdue University*

#### PhD Supervisor

Jordan Love (nee Oliver) (SLHS)

Wai Ling Christie Law: *The effects of social and experiential factors on the interactions between the phonetic systems of diglossic bilinguals* (Linguistics, awarded August, 2017)

Fernando Llanos Lucas: *The role of experience in processing foreign-accented speech* (SLC, with Bob Hammond: Spanish, awarded August, 2016)

Mengxi Lin: *The relationship between acoustic features of second language speech and listener evaluation of speech quality.* (Linguistics, awarded August, 2015)

Wei Grace Zhang: *Quantifying Fricatives and Affricates in Chinese-Accented English.* (Linguistics, awarded December, 2010)

Yanhong Zhang: *English lexical stress production and perception by native Mandarin speakers* (Linguistics, awarded, May 2008)

Maria Kondaurova: *Training to ignore vs. training to attend: An investigation of the interaction between native language experience and training methods in the acquisition of a foreign phonetic contrast* (Linguistics, awarded, December 2008)

Natalya Kaganovich: *Interaction between talker's voice, linguistic information, and attention during speech perception.* (Linguistics Ph.D. awarded, August 2007)

Audiology Doctoral Research Supervision: Katie Connell (primary, 2010-2011), Kelly Rich (primary, 2010-2011), Caitlin Rinehart (primary, 2011-2012), Kelsie Johnson (primary, 2011-12), Diana True (secondary, 2011-2012), Alyson Gearhart (primary, 2013-2014)

Master's Thesis Supervisor: Maria Kondaurova (Linguistics, M.A., 2004), Courtney Driscoll (SLHS, M.Sc., 2005), Amanda A. Shultz (Linguistics, M.A., 2011).

Dean's Scholar Supervisor: Ross Nelson (2009-2010), Leigh Anderson (2010-2011)

Lecturer: Current: SLHS 306/ LING 315 *Introduction to Phonetics*; SLHS 502 *Speech Science*  
Past: SLHS 302 *Acoustic Bases of Speech and Hearing* (multiple semesters); AUS/SLHS 419A/519A/LING 598C *Honors Acoustics* (multiple semesters); SLHS 519A/511 *Aging and Communication* (multiple semesters); PSYC 520 *Attention and Performance* (Fall, 2010); SLHS 606 *Experimental Phonetics* (multiple semesters); SLHS 444, *Introduction To Research In Communication Sciences And Disorders* (Fall, 2011); AUS/SLHS & LING 490/590/498/598/698 *Supervised Reading Course* (multiple semesters)

### *University of Hong Kong*

Dissertation Supervisor: Speech and Hearing Sciences B.Sc. program

PBL Tutor: Speech and Hearing Sciences problem-based learning curriculum

Lecturer: Speech & Hearing Sciences: *Master Class on Neurological Bases of Communication Disorders, Statistics Skills Labs*; Committee on Cognitive Science: *Introduction to Cognitive Science*; English Department: *American English*

### *University of Chicago*

Lecturer: Psychology Department: *Computers, Brains and Behavior*

Teaching Assistant: Psychology Department: *Connectionist Modeling; Speech Perception*; Linguistics Department: *Phonetics*

## PROFESSIONAL SERVICE

Acoustical Society of America Panel on Public Policy, 2018-present  
Editor (Hearing), *Journal of Speech, Language & Hearing Research*, 2019-present  
Editorial Board, *Journal of Speech, Language & Hearing Research*, 2018-2019  
Associate Editor, *Language and Speech*, 2014-2017  
Technical Program Organizing Committee Representative, Speech Communication 2014-2016  
Associate Editor (Speech Perception), *Journal of the Acoustical Society of America*, 2004-2005  
Ad hoc Action Editor (Speech), *Journal of Speech, Language & Hearing Research*  
Local Organizing Committee Member, 168<sup>th</sup> Meeting of the Acoustical Society of America,  
Indianapolis, IN, October 27-31, 2014  
Reviewer/Editorial Consultant (Journals): Frequently: *American Journal of Speech-Language Pathology, Attention, Perception & Psychophysics, Bilingualism: Language & Cognition, Brain and Language, Ear and Hearing, Journal of the Acoustical Society of America, Journal of the Acoustical Society of America – Express Letters, Journal of Experimental Psychology: Human Perception and Performance, Journal of Memory and Language, Journal of Phonetics, Journal of Speech, Language & Hearing Research, Language & Speech, Second Language Research, Speech Communication*  
Occasionally: *Acta Psychologica, Applied Psycholinguistics, Cerebral Cortex, Cognition, Current Directions in Psychology, Journal of Communication Disorders, Language and Cognitive Processes, Mathematical Biosciences, PLoSOne, Psychological Bulletin*  
Reviewer/Editorial Consultant (Grants): *American Speech, Language and Hearing Association, Natural Sciences and Engineering Research Council of Canada, Indiana Clinical and Translational Sciences Institute (CTSI), Social Science and Humanities Research Council of Canada; National Science Foundation; National Institutes of Health; Research Grants Council of Hong Kong; Israeli Science Foundation; Veteran's Administration; The Wellcome Trust;*  
Reviewer/Editorial Consultant (Other): *Educational Testing Service (ETS)*  
Symposium Committee, *Center on Aging and the Life Course*, 2009  
Organizer, Special Session on “The Role of Attention in Speech Perception,” 154<sup>th</sup> Meeting of the Acoustical Society of America, New Orleans, LA, November 27-December 1, 2007  
Steering Committee Member, *Asia Pacific Society for the Study of Speech, Language, and Hearing*, 2001-2002  
External Reviewer, Ph.D. Thesis Committee, University of Hong Kong, 2019; University of Canterbury, New Zealand, 2011

## DEPARTMENT, COLLEGE, AND UNIVERSITY SERVICE

### *Current*

AAUP Representative, Committee A (Academic Freedom and Tenure), 2018-present  
SLHS Department Head Search Committee, 2018  
SLHS Undergraduate Success Committee Chair, 2018-present  
SLHS Graduate Admissions Committee (MS-SLP), 2017-present  
Purdue University Senate, 2017-present  
Purdue University Senate Faculty Affairs Committee, 2017-present  
Clifford B. Kinley Trust Committee, 2014-2019



## DEPARTMENT, COLLEGE, AND UNIVERSITY SERVICE (continued)

### *Past*

Purdue MLK Planning Committee, 2015-2017  
HHS Career Advisory Council, 2016-2017  
Purdue Clifford B. Kinley Trust Committee, 2014-2016  
Purdue IRB Executive Committee, 2012-2014  
Purdue IRB Biomedical Review Committee, 2012-2014  
Purdue Center on Aging and the Life Course (CALC) Steering Committee, 2010-2012  
Purdue University Senate Committee for Student Excellence, 2009-2011  
Purdue University Working Group on Neurologic Disorders Advisory Group, 2009  
HHS Undergraduate Curriculum Committee representative for SLHS, 2014-216  
HHS Grade Appeals Committee, 2014-2015  
HHS Faculty Affairs Committee, SLHS Representative, 2011-2014  
HHS Representative, Faculty Advisory Committee to the IRB, 2011-2014  
HHS Interdisciplinary Programs Task Force, 2011-2012  
SLHS Brownbag Seminar Convener, 2016  
SLHS Undergraduate Committee Chair, 2014-2016  
SLHS Advisory Committee to the Head, 2009-2010, 2013-2014  
SLHS Undergraduate Website Committee Chair, 2012-2014  
SLHS Undergraduate Curriculum Committee member, 2012-2014  
SLHS ad hoc Committee on Studying Abroad, 2010-2011  
SLHS Graduate Committee member, 2003-2004; 2009-2012  
SLHS NSSLHA (Purdue Chapter) Faculty Advisor, 2007-2010  
SLHS Ombudsperson, 2005-2006  
SLHS College of Liberal Arts Honors Committee representative, 2004-2006, 2007-2010  
CLA Faculty Senate representative for SLHS, 2004-2007  
Program in Linguistics Policy Committee member, 2003-2005

## INTERDISCIPLINARY ACTIVITY

Linguistics Program Faculty Member, 2003-Present  
Department of Psychological Sciences, Courtesy Appointment, 2006-Present  
Faculty Associate, Center on Aging and the Life Course, 2008-Present  
Faculty Associate, Purdue Institute for Integrative Neuroscience, 2018-Present

## ASSOCIATION MEMBERSHIPS

Acoustical Society of America (ASA)  
American Association of University Professors (AAUP)  
American Speech, Language, and Hearing Association (ASHA) (without certification)  
Psychonomic Society (Full Member)  
Society for Psychophysiological Research (Full Member)

## REFERENCES

*Available on request*