

## **Benjamin Zinszer**

bzinszer@gmail.com

www.benjaminz.com

www.conelab.net

Whittier Hall  
Swarthmore College  
Swarthmore, PA 19081

### **Current Appointment**

Visiting Assistant Professor of Cognitive Neuroscience (2020 - present)

Department of Psychology, Swarthmore College

(previous affiliations [here](#))

### **Open Science Framework registered studies in progress**

Phone-based literacy curriculum intervention in Côte d'Ivoire

Semantic classification of fNIRS data in adults and infants

Continuous speech encoding in Chinese and English

Statistical learning and second language literacy in Côte d'Ivoire: <https://osf.io/9ek6f/>

(some of these studies are still embargoed and may not be available yet on OSF.io)

### **Current Grant Funding**

Open Project Grant, Beijing Normal University – *Effects of immersion and aging on continuous speech encoding of L1 and L2 in Chinese-English bilinguals* – CN¥ 90,000 (2018 - present)

Bill and Melinda Gates Foundation – *Early Predictors of Neurodevelopmental Outcomes (NIRS)*; as co-investigator (2020-present)

(previous funding and unfunded grants [here](#))

### **Teaching for Fall 2020**

Research Design & Analysis (PSYC 025)

Cognitive Neuroscience (J-term; PSYC 031)

(past courses listed [here](#))

### **Recent & Submitted Publications**

McHaney, J.R., Gnanateja, G.N., Smayda, K.E., **Zinszer, B.D.**, & Chandrasekaran, B. (2020). Cortical tracking of speech in delta band relates to individual differences in speech in noise comprehension in older adults. In press at *Ear and Hearing*. [PubMed: <https://pubmed.ncbi.nlm.nih.gov/32826508/>]

Bayet, L., **Zinszer, B. D.**, Reilly, E., Cataldo, J., Pruitt, Z., Cichy, R. M., Nelson, C. A., & Aslin, R. N. (2020). Temporal dynamics of visual representations in the infant brain. In press at *Developmental Cognitive Neuroscience*. [Preprint: <https://www.biorxiv.org/content/10.1101/2020.02.26.947911v3>]

**Zinszer, B. D.**, Hannon, J., Kouadio, A. E., Akpé, H., Tanoh, F., Hu, A., Qi, Z., & Jasińska, K. Statistical learning in children's emergent L2 literacy: Cross-cultural insights from rural Côte d'Ivoire. Under review. [Preprint: <https://osf.io/preprints/africarxiv/q8k5w/>]

Seri, A. B., **Zinszer, B. D.**, Hannon, J., Tanoh, F., Akpe, H., & Jasinska, K. The mediating role of executive function development in the impact of poverty on literacy: New insights from rural sub-Saharan Africa. Under revision.

Jasinska, K., Akpe, Y. H., Blahoua, A. S., **Zinszer, B. D.**, Yoffo, R., Mulford, K., Curran, E., Ball, M.-C. & Tanoh, F. Evaluating children's mother tongue language abilities in Côte d'Ivoire: Introducing the Ivorian Children's Language Assessment Toolkit for Attié, Abidji, Baoulé, and Bété. Under review.

Weiss, D. J., **Zinszer, B. D.**, Bulgarelli, F., Poepsel, T. J., & Aslin, R. N. Stay or switch: The impact of consistency on statistical learning of multiple structures. Under review.

## **Previous Employment**

- 2018 - 2020    Research Associate  
                  BOLD Lab, Dept of Linguistics and Cognitive Science, University of Delaware (80%)  
                  Princeton Baby Lab, Dept of Psychology, Princeton University (20%)
- Spring 2018    Technical Director, Multimodal Neuroimaging Initiative  
                  University of Texas at Austin
- 2017 - 2018    Research Associate, SoundBrain Lab  
                  Department of Communication Sciences and Disorders, University of Texas at Austin
- 2014-17        Postdoctoral Associate, Rochester Baby Lab & Raizada Lab  
                  Department of Brain and Cognitive Sciences, University of Rochester

## **Education**

- 2014            Ph.D., Psychology, Pennsylvania State University
- 2014            M.A.S., Applied Statistics, Pennsylvania State University
- 2012            M.S., Psychology, Pennsylvania State University
- 2008            B.A., Psychology, Wheaton College (IL)

## **Previous Fellowships & Grant Funding**

- 2013-14        Pennsylvania Space Grant Consortium Graduate Fellow – \$10,000
- 2012            NSF East Asia and Pacific Summer Institutes Fellow to Beijing, China – \$5,836
- 2012            Confucius Institute Scholarship – \$1000
- 2011            Center for Language Science PIRE Graduate Fellow to Beijing, China
- 2009-12        University Graduate Fellowship, Pennsylvania State University

## **Not funded**

- 2018            ConTex Collaboration Grant, University of Texas & CONACYT – *Portable brain imaging for measuring language knowledge in speakers of Spanish and English*
- 2018            NIH NIDCD R21 – *Continuous speech processing in normal aging and primary progressive aphasia*
- 2016            NIH NICHD K99 – *How semantic representations unfold in the developing brain: Computational innovations to transform infant and child neuroimaging with fMRI, fNIRS, and EEG*
- 2015            Open Project Grant, Beijing Normal University – *Aligning neural semantic spaces of Chinese and English: Using multivariate neuroimaging methods to compare semantic representations across languages*
- 2015            NIH NICHD F32 – *Discovering the changes in neural representations of words for language learners using fNIRS+EEG decoding*

## **Additional Papers Published**

Xie, Z., **Zinszer, B. D.**, Riggs, M., Beevers, C. G., & Chandrasekaran, B. (2019) Impact of depression on speech perception in noise. *PLoS ONE*, 14(8), e0220928. doi: 10.1371/journal.pone.0220928  
[Open dataset: <https://spin-scorcerer.github.io>]

**Zinszer, B. D.**, Riggs, M., Reetzke, R., & Chandrasekaran, B. (2019). Error patterns of native and non-native listeners' perception of speech in noise. *The Journal of the Acoustical Society of America*,

145(2), EL129-EL135. doi: 10.1121/1.5087271

[Open dataset, analysis code, & statistical supplement: <https://spin-scorcerer.github.io>]

Bayet, L., **Zinszer, B. D.**, Pruitt, Z., Aslin, R. N., & Wu, R. (2018). Dynamics of neural representations when searching for exemplars and categories of human and non-human faces. *Scientific Reports*, 8(1), 13277. doi: 10.1038/s41598-018-31526-y.

[Open datasets: <https://doi.org/10.6084/m9.figshare.5119966>]

Wu, R., McGee, B., Ecchiveri, C., & **Zinszer, B. D.** (2018). Prior knowledge of category scope impacts visual search. *Psychophysiology*. doi: 10.1111/psyp.13075

**Zinszer, B. D.**, Rolotti, S. V., Li, F. Li, P. (2018). Bayesian word learning in multiple language environments. *Cognitive Science*, 42(S2): 439-462. doi:10.1111/cogs.12567

[Open dataset: <https://github.com/bzinszer/Bayes-Learn-Multi-Lang>]

**Zinszer, B. D.**, Bayet, L., Emberson, L. E., Raizada, R. D. S., & Aslin, R. N. (2018). Decoding semantic representations from fNIRS signals. *Neurophotonics*, 5(1), 011003. doi:10.1117/1.NPh.5.1.011003

[Open dataset & analysis code: <https://teammcpa.github.io>]

Emberson, L.\*, **Zinszer, B. D.\***, Raizada, R. D. S., & Aslin, R. (2017). Decoding the infant mind: Multivariate pattern analysis (MVPA) using fNIRS. *PLoS ONE*, 12(4): e0172500.

doi:10.1371/journal.pone.0172500 (\*co-first authors)

[Open datasets & analysis code: <https://teammcpa.github.io>]

Wu, R., Pruitt, Z., **Zinszer, B. D.**, & Cheung, O. S. (2017). Increased experience amplifies the activation of task-irrelevant category representations. *Attention, Perception, & Psychophysics*, 79(2), 522-532. doi: 10.3758/s13414-016-1254-9

**Zinszer, B. D.**, Anderson, A. J., Kang, O., Wheatley, T., & Raizada, R.D.S. (2016). Semantic structural alignment of neural representational spaces enables translation between English and Chinese words. *Journal of Cognitive Neuroscience*, 28(11), 1749-1759. doi:10.1162/jocn\_a\_01000.

Karuza, E., Li, P., Weiss, D. J., Bulgarelli, F., **Zinszer, B. D.**, & Aslin, R. (2016). Sampling over non-uniform distributions: A neural efficiency account of the primacy effect in statistical learning. *Journal of Cognitive Neuroscience*, 28(10), 1484-1500. doi:10.1162/jocn\_a\_00990.

Fang, S., **Zinszer, B. D.**, Malt, B.C., & Li, P. (2016). Bilingual object naming: A connectionist model. *Frontiers in Psychology: Cognitive Science*. doi:10.3389/fpsyg.2016.00644

Anderson, A. J., **Zinszer, B. D.**, & Raizada, R. (2015). Representational similarity encoding for fMRI: Pattern-based synthesis to predict brain activity using stimulus-model-similarities. *Neuroimage*, 128, 44-53. doi:10.1016/j.neuroimage.2015.12.035

**Zinszer, B. D.**, Chen, P., Wu, H., Shu, H., & Li, P. (2015). Second language experience modulates neural specialization for L1 lexical tones. *Journal of Neurolinguistics*, 33, 50-66. doi:10.1016/j.jneuroling.2014.09.005

**Zinszer, B. D.**, Malt, B., Ameel, E., Li, P. (2014). Native-likeness in second language lexical

categorization reflects individual language history and linguistic community norms. *Frontiers in Psychology*, 5(01203). doi:10.3389/fpsyg.2014.01203.

Zou, L., Abutalebi, J., **Zinszer, B.**, Yan, X., Shu, H., Peng, D., Ding, G. (2012). Second language experience modulates functional brain network for the native language production in bimodal bilinguals. *Neuroimage*, 62(3), 1367-75.

### **Refereed Conference Papers**

- Madaio, M., Yarzebinski, E., Kamath, V., **Zinszer, B. D.**, Hannon, J., Tanoh, F., Akpe, Y. H., Seri, A. B., Jasinska, K., & Ogan, A. Collective Support and independent learning with a voice-based literacy technology in rural communities. *Proceedings of Computer Human Interaction 2020*.
- Chen, D., Jew, C. A., **Zinszer, B. D.**, & Raizada, R.D.S. (2017). Anticipation effect after implicit distributional learning. *Proceedings of the 39th Annual Conference of the Cognitive Science Society*.
- Zinszer, B. D.**, Anderson, A. J., Raizada, R.D.S. (2016). Chinese and English speakers' neural representations of word meaning offer a different picture of cross-language semantics than corpus and behavioral measures. *Proceedings of the 38th Annual Conference of the Cognitive Science Society*.
- Zinszer, B. D.**, Anderson, A. J., Kang, O., Wheatley, T., & Raizada, R.D.S. (2015). You say potato, I say tudou: How speakers of different languages can share the same concept. *Proceedings of the 37th Annual Conference of the Cognitive Science Society*.
- Fang, S., **Zinszer, B. D.**, Malt, B.C., & Li, P. (2015). A computational model of object naming convergence in the bilingual lexicon. *Proceedings of the 37th Annual Conference of the Cognitive Science Society*.
- Zinszer, B. D.** & Weiss, D. J. (2013). When to hold and when to fold: Detecting structural changes in statistical learning. *Proceedings of the 35th Annual Conference of the Cognitive Science Society*.
- Zinszer, B. D.** & Li, P. (2010). A SOM model of first language lexical attrition. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

### **Refereed Presentations**

- Hannon, J., **Zinszer, B.**, Earle, S., Seri, A., Tanoh, F., Akpe, H., & Jasinska, K. (2020, October 21-24). The Role of Procedural Learning for Emergent Reading: Insights from Côte d'Ivoire [Poster session]. The Twelfth Annual Meeting of the Society for the Neurobiology of Language, Philadelphia, PA.
- Nematova, S., **Zinszer, B.**, Morlet, T., Morini, G., Petitto, L.A., Jasinska, K. (2020, October 21-24). Early-life signed language exposure does not impede the development of spoken language: A functional near infrared spectroscopy investigation of phonemic discrimination in cochlear implant (CI) users [Poster session]. The Twelfth Annual Meeting of the Society for the Neurobiology of Language, Philadelphia, PA.
- Zinszer, B.**, Yuan, Q., Zhang, Z., Chandrasekaran, B., & Guo, T. (2020). Acoustic entrainment of speech supports comprehension under moderate noise, but degrades under more severe adversity. Poster presented at the 2020 Cognitive Neuroscience Society, Boston, MA.
- Nematova, S., **Zinszer, B.**, Morlet, T., Morini, G., Petitto, L.A., Jasinska, K. (2020). Early signed language exposure does not harm phonemic discrimination for individuals with cochlear implants (CIs). Poster presented at the annual meeting of the Cognitive Neuroscience Society, Boston, MA.
- Wang, D., Wang, S., **Zinszer, B.**, Sheng, L., Jasinska, K. (2020). L1 Morphological Typology Influences Patterns of Neural Activation for L2 Inflectional Processing: An fNIRS study. Poster

- presented at the annual meeting of the Cognitive Neuroscience Society, Boston, MA.
- Matteson, J., Wang, J., Bobowska, V., **Zinszer, B. D.**, & Jasinska, K. (2020) Deep learning model of field imaging data provides insight on neurobiology of childhood literacy in rural Ivory Coast. Poster presented at the 2020 Cognitive Neuroscience Society, Boston, MA.
- Kampa, A., **Zinszer, B.**, Papafragou, A., & Jasinska, K. Neural generation of scalar implicatures in preschool children and adults. Talk to be presented at the 44th Boston University Conference on Language Development, November 7-10, 2019.
- Hannon, J., **Zinszer, B.**, Earle, S., Seri, A., Tanoh, F., Akpe, H., & Jasinska, K. The impact of declarative and procedural memory systems on late childhood literacy development. Poster presented at the 2019 Society for Research in Child Development. Baltimore, Maryland, USA.
- Robertson, C., Reuter, T., **Zinszer, B.**, & Emberson, L. Decoding infants' pre-activation of lexical representations via fNIRS. Poster presented at the 2019 Society for Research in Child Development. Baltimore, Maryland, USA.
- Dial, H. R., **Zinszer, B. D.**, Chandrasekaran, B., & Henry, M. L. Neural encoding of phonetic features relates to phonological processing in PPA. Poster presented at the 56th Annual Meeting of the Academy of Aphasia. Montreal, Canada.
- Emberson, L. L., Reuter, T., Robertson, C., Mazzei, C., Lew-Williams, C., & **Zinszer, B.** Decoding pre-activation of lexical representations during language comprehension in infancy. Poster presented at the Society for Functional Near-Infrared Spectroscopy. Tokyo, Japan.
- Zinszer, B. D.**, Hay, T. A., Athey, A., & Chandrasekaran, B. Lexical tone classification in frontal and posterior regions using fNIRS. Poster presented at the 10th Annual Meeting of the Society for the Neurobiology of Language, Québec City, Québec, Canada.
- Dial, H. R., **Zinszer, B. D.**, Chandrasekaran, B., & Henry, M. L. Cortical entrainment of continuous speech envelope is preserved in non-fluent PPA. Poster presented at the 10th Annual Meeting of the Society for the Neurobiology of Language, Québec City, Québec, Canada.
- Zinszer, B. D.**, Hay, T. A., Athey, A., & Chandrasekaran, B. Quality of frequency-following response to speech sounds linked with left prefrontal hemodynamic activity using fNIRS+EEG. Talk presented at 2nd International Neuroergonomics Conference, June 27-29, 2018, Philadelphia, PA.
- McHaney, J. R., **Zinszer, B. D.**, Smayda, K. E., & Chandrasekaran, B. Effect of listening environment on cortical entrainment to continuous speech in older adults. Poster presented at the Cognitive Neuroscience Society, March 24-27, 2018, Boston, MA.
- Shay, E. A., **Zinszer, B. D.**, & Raizada, R. D. S. Between-subjects neural decoding of phrase representations outperforms Word2Vec decoding. Poster presented at the Cognitive Computational Neuroscience conference, September 6, 2017, New York, NY.
- McGee, B., Ecchiveri, C., **Zinszer, B.**, & Wu, R. Prior knowledge of category size impacts search. Poster presented at the Cognitive Neuroscience Society, March 2017, San Francisco, CA.
- Zinszer, B. D.**, Bayet, L., Emberson, L., & Aslin, R. Decoding semantic representations from fNIRS signals. Poster presented at the Society for Functional Near-Infrared Spectroscopy, Oct 13-16, 2016.
- Emberson, L., **Zinszer, B. D.**, Raizada, R.D.S., & Aslin, R. Decoding the infant mind: Multichannel pattern analysis (MCPA) using fNIRS. Poster presented at the Society for Functional Near-infrared Spectroscopy, Oct 13-16, 2016.
- Zinszer, B. D.**, Emberson, L., Raizada, R. D. S., & Aslin, R. Decoding the infant mind: Multichannel pattern analysis (MCPA) using fNIRS. Poster presented at the Cognitive Neuroscience Society, April 4, 2016.
- Zinszer, B. D.**, Anderson, A. J., Kang, O., Wheatley, T., & Raizada, R.D.S. Chinese and English speakers share representations for word-elicited concepts, but semantic models struggle to capture this similarity. Poster presented at the Society for the Neurobiology of Language, October 16, 2015.

- Zinszer, B. D.**, Wang, R., & Li, P. Bilingual categorization reveals cross-language lexical semantic competition in naming. Talk presented at the 10<sup>th</sup> International Symposium on Bilingualism, May 2015.
- Zhang, T., **Zinszer, B. D.**, Wang, R., & Li, P. Bilinguals' anterior cingulate and *pars triangularis* reflect both native and second language norms during native language production. Poster presented at the 22<sup>nd</sup> annual meeting of the Cognitive Neuroscience Society, March 2015.
- Zinszer, B. D.**, Poepsel, T., Aslin, R., & Weiss, D. J. When to hold and when to fold: Detecting structural changes in statistical learning. Poster presented at the 39<sup>th</sup> annual Boston University Conference on Language Development, November 7, 2014.
- Zinszer, B. D.**, Malt, B., Ameel, E., & Li, P. What is a cup? Effects of immersion, language, and learner variables on lexical category convergence. Poster presented at Psychonomic Society 54<sup>th</sup> Annual Meeting, November 26, 2013.
- Zinszer, B. D.**, Holt, T., Han, W., Shu, H., & Li, P. Age of L2 onset modulates left MTG specialization for L1 lexical tones. Society for the Neurobiology of Language, November 6, 2013.
- Zinszer, B. D.** & Weiss, D. J. When to hold and when to fold: Detecting structural changes in statistical learning. Poster presented at the 35<sup>th</sup> Annual Conference of the Cognitive Science Society, August 3, 2013.
- Rolotti, S. V., **Zinszer, B. D.**, Carlson, E. A. & Li, P. Bayesian Word Learning in Multiple Languages. Poster presented at the 35<sup>th</sup> Annual Conference of the Cognitive Science Society, August 3, 2013.
- Zinszer, B. D.**, Malt, B., Ameel, E., & Li, P. Effects of immersion, language, and learner variables on lexical category convergence. Talk presented at the 9<sup>th</sup> International Symposium of Bilingualism, June 13, 2013.
- Weiss, D.J., Poepsel, T., & **Zinszer, B.** Know when to hold 'em: Detecting structural changes in statistical learning. Talk presented at the Association for Psychological Science, Washington, D.C., May 23-26, 2013.
- Rolotti, S. V., **Zinszer, B. D.**, & Li, P. Bayesian Inference for Bilingual Word Learning. Poster presented at The Society for Computers in Psychology, November 14, 2012.
- Zinszer, B. D.** & Li, P. Predictors of native-like categorization in Chinese learners of English. Talk presented at Second Language Research Forum, October 21, 2012.
- Zinszer, B. D.** & Li, P. Bilingual categorization behavior: internally or externally emergent? Talk presented at the 8<sup>th</sup> International Symposium of Bilingualism, June 15-18, 2011.
- Zinszer, B. D.** & Li, P. Cross-Language Lexical Interaction in Object Naming. Poster presented at Psychonomic Society 51<sup>st</sup> Annual Meeting, November 20, 2010.
- Zinszer, B. D.** & Li, P. Modeling age of onset in first language lexical attrition. Talk presented at Society for Computers in Psychology 40<sup>th</sup> Annual Meeting, November 18, 2010.
- Zinszer, B.** & Li, P. A SOM model of first language lexical attrition. Talk presented at the 32<sup>nd</sup> Annual Conference of the Cognitive Science Society, Portland, Oregon, August, 2010.
- Zinszer, B. D.** & Phinney, R. E. Effects of mask-to-target energy ratio on cyclopean metacontrast masking. Poster presented Vision Sciences Society 9<sup>th</sup> Annual Meeting, May 13-18 2009.

### **Invited Talks & Workshops**

- fNIRS Methods and Data Analysis, 3-day workshop at Chinese University of Hong Kong, July 30-August 1, 2018.
- Multivariate pattern analysis and near-infrared spectroscopy: Decoding the developing brain. *IX Congreso Nacional de Tecnología Aplicada a Ciencias de la Salud*, Puebla, MX, June 15, 2018.
- Multivariate pattern analysis (MVPA) for fNIRS. *Introduction to fNIRS workshop* co-hosted by University of Texas at Austin and NIRx Medical Technologies, October 6, 2017.

Semantic models and functional brain imaging. IBM Thomas J. Watson Research Center, Yorktown Heights, NY, September 16, 2016.

Multi-voxel (or multi-variate) pattern analysis. *Jiangsu Normal University Summer School on Neuroimaging Methods, Cognition, and Language*. Xuzhou, Jiangsu, China. August 7, 2015.

### **Previous Teaching Experience**

Language and the Brain (BCS 265; as course instructor), University of Rochester  
Psychology of Language (PSYCH/LING 457; as course instructor), Penn State University  
Introductory Statistics (PSYCH 200; as course instructor), Penn State University World Campus  
Basic Research Methods in Psychology (PSYCH 301W; as lab instructor), Penn State University

### **Computational & Technical Experience**

Matlab (incl. SPM8, SOM Toolbox, HomER2, AnalyzIR Toolbox); Statistical computing (R/R-Studio, SPSS); Python; Functional near-infrared spectroscopy (Hitachi ETG-4000, Shimadzu LABNIRS / LightNIRS, NIRx Scout); Multivariate pattern analysis (MVPA) for fMRI & fNIRS; Effective connectivity modeling of functional neuroimaging data

### **Reviewer**

Behavior Research Methods; Bilingualism: Language and Cognition; Brain & Language; Cerebral Cortex; Cognition; Developmental Cognitive Neuroscience; Frontiers in Communication; Journal of Neurolinguistics; The Modern Language Journal; Neuroimage; Neuropsychologia; PLOS One; Journal of Speech, Language, and Hearing Research

### **Professional Service**

- Maintainer of repositories for free open-source software (FOSS) and datasets:  
<https://teammcpa.github.io> & <https://spin-scorcerer.github.io>
- Brain Day, presenter for Independence School 5th grade, April 2019
- Patch contributor to AnalyzIR Toolbox software (<https://bitbucket.org/huppertt/nirs-toolbox>)
- Communications Team, UT Multimodal Neuroimaging Initiative, Fall 2017 – Spring 2018
- Brain Day, presenter for UT Conversation Club therapy group, Feb 2018
- Workshop co-organizer, Introduction to fNIRS, Univ. of Texas at Austin, Oct 2017
- Brain Awareness Week, presenter in 2<sup>nd</sup> - 6<sup>th</sup> grades (Rochester, NY, USA), 2016 & 2017
- Statistical consultant to Guangwai Brain and Language Lab, Guangdong University of Foreign Studies (Guangzhou, China), Summer & Fall 2013
- Statistical Consulting Center consultant (Penn State Univ.), Spring 2013
- Delegate to The 2<sup>nd</sup> Young Scientist Forum, US-China Consultation on People-to-People Exchange (Beijing, China), Summer 2012
- Judge for Pennsylvania Junior Science and Humanities Symposium (State College, PA), 2011