Zhe-chen Guo

zcguo@northwestern.edu
+1 737-465-2930
Frances Searle Building, 2240 Campus Drive, Evanston, IL 60208
zc-guo.github.io
osf.io/4pq2c
0000-0003-0870-8321

Academic Appointments

Postdoctoral Scholar Oct. 2023 –
Department of Communication Sciences and Disorders, Northwestern University
PI: Bharath Chandrasekaran

Visiting Scholar (0% FTE) Sep. 2023 –
Department of Speech, Language, and Hearing Sciences, University of Texas at Austin
PI: Jun Wang

Education

Ph.D. in Linguistics, University of Texas at Austin 2023
Dissertation: The effects of speaking style, noise, and semantic context on speech segmentation: Evidence from artificial language learning and eye-tracking experiments
Committee: Rajka Smiljanic (chair), Scott Myers, Fernando Llanos, Georgia Zellou (UC Davis)

M.A in Applied Linguistics, National Sun Yat-sen University 2017
Thesis: *The cue of rising tone to spoken word segmentation: A study of listeners of Taiwanese Southern Min*
Committee: Shu-chen Ou (chair), Aleck Shih-wei Chen, Yung-hsiang Shawn Chang

B.A. in Foreign Languages and Literature, National Sun Yat-sen University 2014

Publications

Works in progress:

1. **Guo, Z.-C.**, McHaney, J. R., Parthasarathy, A., & Chandrasekaran, B. (preprint). Reduced neural distinctiveness of speech representations in the middle-aged brain. 10.1101/2024.08.28.609778
2. Xiong, S., & **Guo, Z.-C**., Roark, C. L., Feng, G., & Chandrasekaran, B. (in preparation). Dual-learning systems in talker identification: Effects of language, accent, and feedback.

Peer-reviewed journal articles:

3. **Guo, Z.-C.**, & Smiljanic, R. (2024). Ham or hamster? Eye-tracking evidence of clear speech benefit for word segmentation in quiet and in noise. *Language, Cognition and Neuroscience,* 39(5), 609–631. 10.1080/23273798.2024.2345300
4. **Guo, Z.-C.**, & Smiljanic, R. (2023). Speakers coarticulate less in response to both real and imagined communicative challenges: An acoustic analysis of the LUCID corpus. *Journal of Phonetics*, *97*, 101210. 10.1016/j.wocn.2022.101210
5. Ou, S.-C., & **Guo, Z.-C.** (2022). The effect of lengthening aspiration on speech segmentation. *JASA Express Letters*, *2*(4), 045202. 10.1121/10.0010242
6. **Guo, Z.-C.**, & Smiljanic, R. (2021). Speaking clearly improves speech segmentation by statistical learning under optimal listening conditions. *Laboratory Phonology*, *12*(1), 14. 10.5334/labphon.310
7. **Guo, Z.-C.**, & Ou, S.-C. (2021). The use of tonal coarticulation in segmentation of artificial language speech: A study with Mandarin listeners. *Applied Psycholinguistics*, *42*(3), 631–655. 10.1017/S0142716420000818
8. Ou, S.-C., & **Guo, Z.-C.** (2021). The language-specific use of F0 rise in segmentation of an artificial language: Evidence from listeners of Taiwanese Southern Min. *Language and Speech*, *64*(2), 437–466. 10.1177/0023830919886604

9. Ou, S.-C., & **Guo, Z.-C.** (2021). The differential effects of vowel and onset consonant lengthening on speech segmentation: Evidence from Taiwanese Southern Min. *The Journal of Acoustical Society of America*, *149*(3), 1866–1877. 10.1121/10.0003751

10. **Guo, Z.-C.**, & Ou, S.-C. (2014). Perception of articulatorily different Mandarin retroflexes by Japanese speakers: A pilot study. *NTU Working Papers in Chinese Language Teaching*, *2*, 1–28. Taipei: National Taiwan University. 10.6664/NTUTCSL.201408_(2).0004

11. Ou, S.-C., & **Guo, Z.-C.** (2014). Mandarin retroflex sounds perceived by non-native speakers. *Journal of Language and Literature Studies*, *26*, 41–76.

Peer-reviewed conference proceedings:

1. **Guo, Z.-C.**, & Smiljanic, R. (2023). Clear speech facilitates word segmentation: Evidence from eye-tracking. In Radek Skarnitzl & Jan Volín (Eds.), *Proceedings of the 20th International Congress of Phonetic Sciences* (pp. 177–181). Guarant International. (presented orally, Prague, Czech Republic, August 7–11)

2. Ou, S.-C., & **Guo, Z.-C**. (2023). The effect of shortening onset consonants on speech segmentation by Taiwanese Southern Min listeners. In Radek Skarnitzl & Jan Volín (Eds.), *Proceedings of the 20th International Congress of Phonetic Sciences* (pp. 167–171). Guarant International. (poster, Prague, Czech Republic, August 7–11)

3. **Guo, Z.-C.**, & Smiljanic, R. (2021). Speakers coarticulate less when facing real and imagined communicative difficulties: An analysis of read and spontaneous speech from the LUCID corpus. In *Proceedings of Interspeech 2021* (pp. 4009–4013). 10.21437/Interspeech.2021-1640 (presented virtually, Brno, Czech Republic, August 30–September 3)

4. Ou, S.-C., & **Guo, Z.-C**. (2020). The opposite effects of vowel and onset consonant lengthening on speech segmentation. In *Proceedings of the 10th International Conference on Speech Prosody*. 10.21437/SpeechProsody.2020-16 (presented virtually, Tokyo, Japan, May 24–28)

5. **Guo, Z.-C.**, & Ou, S.-C. (2019). The use of tonal coarticulation in speech segmentation by listeners of Mandarin. In *Proceedings of the 19th International Congress of Phonetic Sciences*. (presented orally, Melbourne, Australia, August 4–10)

6. Ou, S.-C., & **Guo, Z.-C.** (2019). The role of initial F0 rise in speech segmentation: A cross-linguistic study. In *Proceedings of the 19th International Congress of Phonetic Sciences.* (poster, Melbourne, Australia, August 4–10)

7. Ou, S.-C., & **Guo, Z.-C.** (2015). The effect of stress on English word recognition by native speakers of typologically different languages. In *Proceedings of the 18th International Congress of Phonetic Sciences*. (presented orally, Glasgow, UK, August 10–14)

Conference Presentations

*: listed as citable abstract

1. **Guo, Z.-C.**, Babajani-Feremi, A., Cao, B., Harwath, D., Ferrari, P., Borna, A., Wang, J. (2024). Identifying speech modalities from neuromagnetic signals using machine learning. Paper to be presented at the *2024 American Speech-Language-Hearing Association (ASHA) Convention*, Seattle, December 5–7.

2. **Guo, Z.-C.**, McHaney, J. R., Xie, Z., & Chandrasekaran, B. (2024). Reduced neural encoding of phonemes in middle-aged adults. Paper to be presented at the *Advances and Perspectives in Auditory Neuroscience (APAN)* meeting, Chicago, October 4.

3. McHaney, J. R., **Guo, Z.-C.**, Gnanateja, G. N., Parthasarathy, A., & Chandrasekaran, B. (2024). Reduced temporal processing of fundamental frequency in middle-age impacts higher-level linguistic features for speech perception. Paper to be presented at the *Advances and Perspectives in Auditory Neuroscience (APAN)* meeting, Chicago, October 4.

4. **Guo, Z.-C.**, McHaney, J. R., Xiong, S., & Chandrasekaran, B., & Parthasarathy, A. (2024). Decoding single-trial frequency-following responses to speech stimuli using an animal model. Poster presented at the *2024 Frequency Following Response Workshop*, Chicago, June 12–14.

5. *Smith, M., **Guo, Z.-C.**, & Smiljanic, R. (2024). Non-native clear speech increases intelligibility but not through improved word segmentation: Evidence from a visual-world eye-tracking study. *The Journal of the Acoustical Society of America*, *155*(3_Supplement), A271–A272. 10.1121/10.0027472 (poster at the *186th Meeting of the Acoustical Society of America*, Ottawa, May 13–17)

6. Ou, S.-C., & **Guo, Z.-C.** (2024). Shorter vowel duration as a potential word segmentation cue: A study with listeners of Taiwanese Southern Min. The *19th Conference on Laboratory Phonology* (LabPhon 19). (poster presentation, Seoul, South Korea, June 27–29)

7. **Guo, Z.-C.**, & Smiljanic, R. (2023). Clear speech benefit for word segmentation is modulated by contextual-semantic cues: Evidence from eye-tracking. The *Psychonomic Society 64th Annual Meeting.* (poster presentation, San Francisco, California, November 16–19)

8. ***Guo, Z.-C.**, Pangottil, K., Chandrasekaran, B., & Llanos, F. (2023). Decoding speech envelopes from electroencephalographic recordings: A comparison of regularized linear regression and long short-term memory deep neural network. *The Journal of the Acoustical Society of America*, *153*(3), A158. 10.1121/10.0018496 (poster at the *184th Meeting of the Acoustical Society of America*, Chicago, May 8–12)

9. ***Guo, Z.-C.**, Smiljanic, R. (2023). Clear speech improves word segmentation in quiet and in noise: Evidence from visual-world eye-tracking. *The Journal of the Acoustical Society of America*, *153*(3), A168. 10.1121/10.0018543 (poster at the *184th Meeting of the Acoustical Society of America*, Chicago, May 8–12)

10. ***Guo, Z.-C.**, Smiljanic, R. (2022). Coarticulation is reduced in clear speech produced with protective face masks. *The Journal of the Acoustical Society of America*, *152*(4), A286. 10.1121/10.0016295 (poster at the *183rd Meeting of the Acoustical Society of America*, Nashville, December 5–9)

11. Dai, S., Frank, K., Jess, N., **Guo, Z.-C.** (2022). Network effects on Twitter users' language use and issue disposition of CRT: A machine-learning approach investigating the influence model. The *2022 Midwest Sociology of Education Conference* (Indiana, October 27–28).

12. **Guo, Z.-C.,** & Smiljanic, R. (2022). Coarticulatory vowel nasalization in read and listener-directed speech across communicative contexts: An analysis of the LUCID corpus. The *18th Conference on Laboratory Phonology* (presented virtually, June 23–25).

13. Ou, S.-C., & **Guo, Z.-C.** (2022). Is onset-consonant lengthening a universal word beginning cue? A cross-linguistic study of English and French listeners. The *29th Manchester Phonology Meeting* (presented virtually, May 25–27).

14. ***Guo, Z.-C.,** & Smiljanic, R. (2022). The degree and time course of nasal coarticulation across communicative contexts: A study of the LUCID corpus. *The Journal of the Acoustical Society of America*, *151*(4), A65. 10.1121/10.0010676 (poster at the *182nd Meeting of the Acoustical Society of America*, Denver, May 23–27).

15. ***Guo, Z.-C.,** & Smiljanic, R. (2021). Coarticulation across communicative contexts: An acoustic analysis of the LUCID corpus using spectral and temporal measures. *The Journal of the Acoustical Society of America*, *150*(4), A70. 10.1121/10.0007659 (poster at the *181st Meeting of the Acoustical Society of America*, Seattle, November 29–December 3)

16. Ou, S.-C., & **Guo, Z.-C.** (2021). The effect of aspiration lengthening on speech segmentation: An artificial language learning study. The *28th Manchester Phonology Meeting* (presented virtually, May 26–28).

17. ***Guo, Z.-C.** (2020). Tonal carryover assimilation is exploited as a speech segmentation cue in the case of cue conflict. *The Journal of the Acoustical Society of America*, *148*(4), 2504–2504. 10.1121/1.5146952 (presented virtually, December 7–11)

18. Ou, S.-C., & **Guo, Z.-C.** (2020). The effects of segment lengthening on speech segmentation. The *13th International Symposium on Taiwanese Languages and Teaching* (presented orally, Hsinchu, October 16–17).

19. ***Guo, Z.-C.**, & Smiljanic, R. (2019). Speaking clearly improves speech segmentation in optimal listening conditions. *The Journal of the Acoustical Society of America*, *146*(4), 3052–3052. 10.1121/1.5137579 (poster at the *178th Meeting of the Acoustical Society of America*, San Diego, California, December 2–6)

20. Ou, S.-C., & **Guo, Z.-C.** (2018). The role of lexical tone in speech segmentation by listeners of Taiwanese Southern Min: A corpus and experimental study. The *7th International Conference on Phonology and Morphology* (presented orally, Seoul, Korea, June 29–30).
21. Ou, S.-C., & **Guo, Z.-C.** (2017). The language-specific use of F0 rise in speech segmentation by listeners of Taiwanese Southern Min. *ILAS Workshop on Phonetics and Phonology* (presented orally, Taipei, October 23–24).
22. Ou, S.-C., & **Guo, Z.-C.** (2017). Is the cue of pitch rise to spoken word segmentation used in a language-specific or cross-linguistic way? A study of listeners of Taiwanese Southern Min. *Phonetics and Phonology in Europe 2017* (presented orally, Cologne, Germany, June 12–14).
23. Ou, S.-C., & **Guo, Z.-C.** (2016). The use of lexical tone in spoken word segmentation by Taiwanese Southern Min listeners. The *24th Annual Conference of the International Association of Chinese Linguistics* (presented orally, Beijing, China, July 17–19).
24. **Guo, Z.-C.** (2014). Perception of articulatorily different Mandarin retroflexes by Japanese speakers: A pilot study. The *2nd NTU Postgraduate Conference on Teaching Chinese as a Second Language* (presented orally, Taipei, March 29).

Fellowships, Grants, and Honors

IPA Student Travel Award for ICPhS 2023 ($743) — 2023
International Phonetic Association

University Graduate Continuing Fellowship ($46,601) — 2022 – 2023
Full stipend, tuition, and insurance support for 12 months
Graduate School, University of Texas at Austin

Taiwanese Overseas Pioneers Grants ($29,700) — 2022 – 2023
National Science and Technology Council, Taiwan

Dissertation Fellowship for ROC Students Abroad ($20,000, declined) — 2022
Chiang Ching-kuo Foundation for International Scholarly Exchange

Graduate Research Fellowships ($1,000) — 2022
British, Irish and Empire Studies (BIES) program, University of Texas at Austin

Interspeech 2021 travel grant ($141) — 2021
International Speech Communication Association

Carlota Smith Fellowship ($1,231) — 2020
Department of Linguistics, University of Texas at Austin

Government Scholarship to Study Abroad ($32,000) — 2019 – 2021
Ministry of Education, Taiwan

Acoustical Society of America Student Travel Subsidies ($390) — 2019 – 2022

Professional Development Awards ($1,499) — 2019

Spring Supplemental Graduate Fellowship ($5,000) — 2019
Graduate School, University of Texas at Austin

Candidate for Best Master's Thesis of the Year — 2017
Linguistic Society of Taiwan

Five-year B.A./M.A. Combined Degree Program Fellowship ($3,966) — 2014 – 2015
Department of Foreign Languages and Literature, National Sun Yat-sen University

College Student Research Grant ($1,421) — 2013 – 2014
Ministry of Science and Technology, Taiwan (Project ID: 102–2815–C–110–010–H)

NSYSU Excellent Student Award (5 awards, $992 total) — 2011 – 2013

Research Experience

Graduate Research Assistant — 2022
Assistant for Neural Speech Decoding project (full-time: Jul – Aug 2022; PI: Jun Wang)
Department of Computer Science, University of Texas at Austin

Graduate Student Lab Member — 2018 – 2023
UTSoundLab (PI: Rajka Smiljanic)
Department of Linguistics, University of Texas at Austin

Research Assistant — 2013 – 2018
Assistant (full-time: 2017–2018; part-time: 2013–2017) for NSYSU Phonetics and Phonology Lab (PI: Shu-chen Ou)
Department of Foreign Language and Literature, National Sun Yat-sen University

Professional Service

Invited talks/workshops/conferences:

NYCU Phon Brown Bag Series — 2022
Virtual talk at National Yang Ming Chiao Tung University (Dec 16, 2022)

Conference co-organizer — 2019 – 2020
The 19th Meeting of the Texas Linguistics Society (Feb 14–15, 2020)

Co-lecturer of Workshop on Speech Perception Experiments — 2015
Led hands-on tutorial on designing perceptual experiments using E-Prime 2.0 (National Chengchi University, Oct 30, 2015)

Journal/conference reviewer:

Applied Psycholinguistics (2023)
Language and Speech (2021, 2024)
JASA Express Letters (2022, 2023)
Journal of Phonetics (2024)
Speech Communication (2024)
Quarterly Journal of Experimental Psychology (2022, 2023)
The 20th International Congress of Phonetic Sciences (2023)
Interspeech (2024)
PLOS Biology (2024, co-reviewer)

Professional Membership

International Phonetic Association

Association for Laboratory Phonology

Acoustical Society of America

Psychonomic Society

Teaching Assistantships

University of Texas at Austin:

Exploring Accents, Scott Myers (Fall 2020)
Introduction to the Study of Language, Nora England (Spring 2019)
Sound Patterns: Sound to Word, Megan Crowhurst (Fall 2018, Spring 2021) and Scott Myers (Fall 2019; Spring 2020, Fall 2021, Spring 2022)

National Sun Yat-sen University:

Phonetics, Shu-chen Ou (Fall 2015, Fall 2016)
Phonology in English Language Teaching and Learning, Shu-chen Ou (Spring 2016)
Introduction to English Linguistics (I), Shu-chen Ou (Fall 2015)
English Writing I, Shu-chen Ou (Fall 2016, Spring 2016)
General English: Intermediate, Shu-chen Ou (Fall 2016, Spring 2016)

Technical Skills

Programming languages	Python, R/R Markdown
Phonetic analysis	Praat/Praat scripting
Experiment builders	E-Prime 2.0/3.0, PsychoPy, Experiment Builder, Gorilla, Paradigm
Eye-tracker	EyeLink Portable Duo
Statistical software	MATLAB, SPSS, SAS
Audio editor	Audacity, GoldWave

Languages

Taiwan Mandarin	Native
Taiwanese Southern Min	Native
English	Proficient
Japanese	Beginner