# Zhe-chen Guo

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## 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.**, & Chandrasekaran, B. (in review). Extended high frequency information in automatic speech recognition. *The Journal of the Acoustical Society of America*.
2. McHaney, J. R., **Guo, Z.-C.**, Gnanateja, N. G, Parthasarathy, A., & Chandrasekaran, B. (in review). Neural coding of fundamental frequency and processing of discrete pitch accents in middle-age. *European Journal of Neuroscience*.
3. Xiong, S., & **Guo, Z.-C**., Roark, C. L., Feng, G., & Chandrasekaran, B. (in review). Dual learning systems in talker identification: The effects of language, accent, and feedback. *Attention, Perception, & Psychophysics*.
4. **Guo, Z.-C.**, & Smiljanic, R. (in preparation). When top-down meets bottom-up: The interaction of semantic context and clear speech in real-time word segmentation.
5. Xiong, S., **Guo, Z.-C.**, Chandrasekaran, B. (in preparation). Dynamic shifts in the use of acoustic cues during talker identification: The role of language familiarity.

### Peer-reviewed journal articles:

6. **Guo, Z.-C.**, McHaney, J. R., Parthasarathy, A., McFarlane, K. A., & Chandrasekaran, B. (2025). Reduced neural distinctiveness of speech representations in the middle-aged brain. *Neurobiology of Language*. 10.1162/nol_a_00169
7. **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
8. **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

9. 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
10. **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
11. **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
12. 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
13. 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
14. **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
15. 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.,** & Chandrasekaran, B. (2025). Extended high-frequency cues to phoneme recognition: Insights from ASR. Paper to be presented at *Interspeech 2025*, Rotterdam, the Netherlands.
2. Xiong, S., **Guo, Z.-C.,** & Chandrasekaran, B. (2025). Language and accent familiarity effects on the use of acoustic cues in talker identification. Paper to be presented at *Interspeech 2025*, Rotterdam, the Netherlands.
3. **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)
4. 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)
5. **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)
6. 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)
7. **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)
8. 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)
9. 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. Langenstein, J., Morton-Jones, M. E., **Guo, Z.-C**., Bromfield, J., Lee, K., & Stein, A. (submitted) Voice outcomes of direct vocal fold testosterone injections in testosterone-naïve individuals: A pilot clinical study. *Fall Voice Conference*. Charlotte, NC.

2. Stanley, K., Wong, D., Kwon, J., **Guo, Z.-C.**, Ferrari, P., Babajani-Feremi, A., & Wang, J. (2025). Neuromagnetic patterns of imagined and overt speech. Paper to be presented at the *69th Annual Convention of Texas Speech-Language-Hearing Association (TSHA)*, May 1–3, San Antonio.

3. **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.

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

5. 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. Poster presented at the *Advances and Perspectives in Auditory Neuroscience (APAN)* meeting, Chicago, October 4.

6. **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.

7. *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)

8. 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)

9. **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)

10. ***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)

11. ***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)

12. ***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)

13. 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).

14. **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).

15. 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).
16. ***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).
17. *__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)
18. 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).
19. ***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)
20. 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).
21. ***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)
22. 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).
23. 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).
24. 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).
25. 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).
26. **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* (2024, 2025)
*JASA Express Letters* (2022, 2023)
*Journal of Phonetics* (2024)
*Speech Communication* (2024, 2024)
*Quarterly Journal of Experimental Psychology* (2022, 2023)
*The 20th International Congress of Phonetic Sciences* (2023)
*Interspeech* (2024, 2025)
*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

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|---|---|
| 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

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|---|---|
| Taiwan Mandarin | Native |
| Taiwanese Southern Min | Native |
| English | Proficient |
| Japanese | Beginner |