

Dear EOM committee,

I am Koorosh Ariyae, a PhD candidate (ABD), at the Department of Linguistics of the University of Toronto. The 2022-2023 academic year will be the fifth year of my PhD program, and currently I am writing my PhD dissertation. Thus, I am writing to be considered for the EOM Dissertation Completion Fellowship.

Since I started my graduate studies at U of T's Department of Linguistics as an MA student, I have been working on Iranian languages. My Master's thesis project investigated vowels and nasal consonants in Tehrani variety of Persian. My research on Iranian languages expanded after I was admitted into the PhD program of the Department of Linguistics. For instance, during the past few years, I have been collecting data via experimental methods to describe and document the understudied aspects of the sound inventory of Kurdish, a Northwestern Iranian language. Furthermore, my first and second General papers have been, respectively, dedicated to the study of vowels and consonants in Persian. During the process of conducting these studies, with the purpose of documenting empirically reliable data, I collected a considerable amount of Spoken Persian data via online and lab-based methods. Throughout my graduate studies, I have been actively presenting and publishing the results of my research at prestigious conferences and publications highlighting the lesser-known and underrepresented properties of Iranian languages (please see my CV attached to this letter for a complete list of my presentations and publications).

I am currently at the stage of writing my PhD dissertation which investigates how Persian speakers comprehend and process Persian sounds in daily speech. To address this question, I conduct a number of online experiments on Persian speaking participants. The results of these experiments help to have a better understanding how human cognitive system comprehends and processes sounds, and what factors are at play that facilitate or impede the comprehension procedure.

I plan to complete my dissertation in the coming year which requires a substantial amount of work. The EOM Dissertation Completion Fellowship will be a major support and will provide me this opportunity to complete my dissertation in a timely manner. So, I will be grateful if my application is considered for this award.

Sincerely,  
Koorosh Ariyae

# Koorosh Ariyae

## Curriculum Vitae

University of Toronto, Department of Linguistics,  
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## Education

- 2018 – **Ph.D. of Linguistics**, *University of Toronto*, Toronto, Canada.
- 2018 **M.A. of Linguistics**, *University of Toronto*, Toronto, Canada.
- 2013 **M.A. of English Literature**, *Kharazmi University*, Tehran, Iran.
- 2011 **B.A. of English**, *Razi University*, Kermanshah, Iran.

## Other Education

- Summer 2017 **Summer Institute, Linguistic Society of America**, *University of Kentucky*, Lexington, USA.

## Publications

- Under review **Ariyae, Koorosh**. Persian vowel hiatus. In *The Handbook of Phonetics and Phonology of Modern Iranian Languages*, eds. R. Falahati & Z. Ghane. Springer.
- Under review **Ariyae, Koorosh**. Triggers and targets: Nasals and vowels in Tehrani Persian. Invited contribution to *The Handbook of Persian Dialects and Dialectology*, eds. A. Korangy, B. Mahmoodi-Bakhtiari & P. Shabani-Jadidi. Springer.
- Under review **Ariyae, Koorosh**. Persian. In *Nominal Linkers in Iranian languages*, eds. S. Taghipour & A. Kahnemuyipour. Toronto Working Papers in Linguistics.
- 2022 **Ariyae, Koorosh** & Alexei Kochetov. Acoustics of Persian uvular lenition in consonant clusters. *Proceedings of the annual meeting of the 39th Canadian Linguistics Association*.
- 2021 **Ariyae, Koorosh**, Chahla Ben-Ammar, Talia Tahtadjian, Alexei Kochetov. Acoustics of guttural fricatives in three languages. *Proceedings of Acoustics Week in Canada*.
- 2021 **Ariyae, Koorosh** & Peter Jurgec. Variable hiatus in Persian is affected by suffix length. *Proceedings of the 2020 Annual Meeting on Phonology*, eds. R. Bennett, R. Bibbs, M. L. Brinkerhoff, M. J. Kaplan, S. Rich, N. Van Handel & M. W. Cavallaro. Washington, DC: Linguistic Society of America.
- 2019 **Ariyae, Koorosh**. The need for indexed markedness: evidence from spoken Persian. *Proceedings of the annual meeting of the 37th Canadian Linguistics Association*.

- 2019 **Ariyae, Koorosh**. Loanword adaption in Persian; A Core-Periphery model approach. *Toronto Working Papers in Linguistics 41: Proceedings of Montreal-Ottawa-Toronto Phonology/Phonetics Workshop 2019*.

## Manuscripts (in progress)

### *Peer-reviewed Journal Articles*

- In prep **Ariyae, Koorosh**, Chahla Ben-Ammar, Talia Tahtadjian, Alexei Kochetov. Acoustic classification of guttural fricatives in Arabic, Armenian, and Kurdish.

## Invited Talks

- 2021 Tolerance and resolution of hiatus in Persian. June 21. Razi University, Kermanshah, Iran.
- 2021 Socioculturally induced language barrier: Stigmas and resolution strategies. Invited speaker series workshop on language barrier at *Youth 4 Success Organization*. February 27. Toronto, Canada.

## Conferences

### *Peer-reviewed Conference Presentations*

- 2022 **Ariyae, Koorosh**, Chahla Ben-Ammar, Talia Tahtadjian, Alexei Kochetov. Acoustic classification of guttural fricatives in Arabic, Armenian, and Kurdish. Oral presentation at *The 18th Conference on Laboratory Phonology (LabPhon 18)*. June 23-25.
- 2021 **Ariyae, Koorosh**, Chahla Ben-Ammar, Talia Tahtadjian, Alexei Kochetov. Acoustics of guttural fricatives in three languages. Oral presentation at *Acoustics Week in Canada (AWC 21)*. October 5-7. Université de Sherbrooke.
- 2021 **Ariyae, Koorosh** & Alexei Kochetov. Acoustics of Persian uvular lenition. Oral presentation at *Canadian Linguistics Association (CLA 39)*. June 5-7. University of Alberta.
- 2020 **Ariyae, Koorosh** & Peter Jurgec. Variable hiatus in Persian. Flash Talk at *North East Linguistic Society (NELS 51)*. November 6-8. Université du Québec à Montréal.
- 2020 **Ariyae, Koorosh** & Peter Jurgec. Variable hiatus in Persian is affected by suffix length. Oral presentation at the *Annual Meeting on Phonology (AMP 8)*. September 18-20. University of California at Santa Cruz.
- 2020 **Ariyae, Koorosh** & Peter Jurgec. Persian elides the second vowel. Oral presentation at *Canadian Linguistics Association (CLA 38)*. May 30-June 1. Western University.

- 2020 **Ariyae, Koorosh** & Peter Jurgec. Hiatus resolution in Persian depends on suffix length. Accepted for oral presentation at *Montreal-Ottawa-Toronto Phonology/Phonetics (MOT) Workshop*. March 27-29, 2020. University of Ottawa (cancelled due to COVID-19 pandemic).
- 2019 **Ariyae, Koorosh**. The need for indexed markedness: evidence from spoken Persian. Oral presentation at *Canadian Linguistics Association (CLA 37)*. June 1-3. University of British Columbia.
- 2019 **Ariyae, Koorosh** & Ali Salehi. Does Persian prefer Arabic to French and English? Poster presentation at *Canadian Linguistics Association (CLA 37)*. June 1-3. University of British Columbia.
- 2019 **Ariyae, Koorosh**. Loanword adaption in Persian; a Core-Periphery model approach. Oral presentation at *Montreal-Ottawa-Toronto Phonology/Phonetics (MOT) Workshop*. March 29-30. University of Toronto.
- 2019 **Ariyae, Koorosh**. Exceptions of pre-nasal vowel raising in spoken Persian; an indexed constraint approach. Oral presentation at *North American Conference in Iranian Linguistics (NACIL 2)*. April 19-21. University of Arizona (virtually).
- 2017 **Ariyae, Koorosh**. Imperative marking in Southern Kurdish. Poster presentation at *Linguistics Summer Institute of America (LSA)*. August 8. University of Kentucky.
- 2017 **Ariyae, Koorosh**. Morphological tense marking operations in Kalhori Kurdish. Oral presentation at *Southeastern Conference on Linguistics (SECOL 84)*. March 8-11. College of Charleston.

### ***Non-refereed Conference Presentations***

- 2021 **Ariyae, Koorosh**, Chahla Ben-Ammar, Talia Tahtadjian, Alexei Kochetov. Oral presentation at *Summer Phonology Forum 2021 (SPF 2021)*. July 27. University of Toronto.
- 2019 **Ariyae, Koorosh**. Hiatus resolution strategies in Persian. Oral presentation at *Summer Phonology Forum 2019 (SPF 2019)*. August 2. University of Toronto.
- 2018 **Ariyae, Koorosh**. Loanword adaptation patterns in Persian. Oral presentation at *Iranian Languages Workshop*. December 5. University of Toronto.
- 2018 **Ariyae, Koorosh**. Pre-nasal vowel Raising in vernacular Tehrani Persian. Oral presentation at *Summer Phonology Forum 2018 (SPF 2018)*. August 2. University of Toronto.
- 2017 **Ariyae, Koorosh**. Copular constructions in Malagasy. Oral presentation at *Malagasy Workshop*. December 11. University of Toronto.
- 2017 **Ariyae, Koorosh**. Concatenative and nonconcatenative morphology in tense-marking. Oral presentation at *Central Kentucky Linguistics Conference (CKLiC)*. February 18. University of Kentucky.

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## Research Assistantships

- 2020 & 2021 West Asian Uvular Project. PI: Alexei Kochetov. University of Toronto.  
2018 & 2019 LinDoc Project. PI: Keren Rice, Suzi Lima. University of Toronto.

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## Awards & Honors

### *Scholarships*

- 2022 – 2023 Doctoral Completion Award. *University of Toronto*, \$17,750.  
2018 – 2022 Graduate Scholarship. *University of Toronto*, \$18,000/year.  
2017 – 2018 Graduate Scholarship. *University of Toronto*, \$17,000/year.

### *Grants & Awards*

- 219 - 2022 SSHRC Institutional Grant (SIG) Program/Departmental research funds. *University of Toronto*, \$500/year.  
2019 Canadian Linguistics Association (CLA) conference travel grant, \$400.  
2011 Distinguished Student Award. *Razi University*, Iran.  
2008 & 2009 Distinguished Student Award. *Razi University*, Iran.

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## Teaching

### *Teaching Assistantships at University of Toronto*

*Responsibilities:* Delivering weekly in-person/online tutorials, running help labs, grading, creating assignments & exams, weekly meetings with the course instructor & other TAs, exam invigilation.

- 2022 Intro to Linguistics: Sounds of Language (LIN101); Intro to Linguistics (LINA01).  
2021 Phonology I (LINB04); Phonetics (LIN228); Intro to Linguistics (LINA01).  
2020 Phonetics (LIN228); Intro to Linguistics (LINA01); Intro to Linguistics: Sentence Structure (LIN102).  
2019 Intro to Linguistics: Sentence Structure (LIN102); Intro to Linguistics (LINA01).  
2018 Intro to Linguistics: Sound Structure (LIN101); English Grammar (LIN204).  
2017 Introduction to Language (LIN200).

### *Grader at University of Toronto*

- 2020 Phonological theory (LIN322).  
2019 Intro to Linguistics: Sound Structure (LIN101).

### *Instructor*

- 2011 – 2015 English as a foreign language. *Iran Language Institute (ILI)*, Iran.

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## Editorial and Review

- 2020 – *Reviewer:* Toronto Working Papers in Linguistics.

- 2020 *Reviewer*: Sixth Workshop on Turkic and Languages in Contact with Turkic (TU+6).
- 2011 *Editor*: The English section of *Ketabmah* Journal.

## Services

### ***Departmental Services at University of Toronto***

- 2021 – Coordinator of Phonetics and Phonology Research Group.
- 2017 – Teaching Assistant Excellence Award Committee member.
- 2018 – 2020 Welcome Workshop Committee member.

### ***Organizing Conferences***

- 2017 **Local Organizing Committee**, The 24th International Conference on Head driven Phrase Structure Grammar (HPSG 24th), University of Kentucky.
- 2017 **Local Organizing Committee**, The 5th International Conference on Formal Approaches in Creole Studies (FACS 5th), University of Kentucky.

### ***Volunteer***

- 2019 Montreal-Ottawa-Toronto Phonology /Phonetics (MOT) Workshop. University of Toronto.
- 2018 Semantics of Under-Represented Languages in the Americas (SULA 10) Conference. University of Toronto.
- 2018 Morphology in Montreal-Ottawa-Toronto workshop (MoMOT 3). University of Toronto. University of Toronto.
- 2017 Malagasy Workshop. University of Toronto.
- Summer 2017 Linguistic Summer Institute of America. July–August. University of Kentucky.

## Languages

- Persian Native
- Kurdish Native
- English Fluent
- Arabic Basic reading knowledge

## Memberships

- 2022 – Association for Laboratory Phonology (LabPhon)
- 2021 – Canadian Acoustical Association (CAA)
- 2017 – Canadian Linguistic Association (CLA)
- 2017 – 2019 Linguistic Society of America (LSA)
- 2017 – 2018 Southeastern Conference on Linguistics (SECOL)

## Skills

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Updated August 2022

## PhD Dissertation synopsis and completion timeline

### Koorosh Ariyae

**Introduction.** In daily speech, speakers do not always use the canonical pronunciations of words. Instead, non-canonical forms are used frequently (Johnson, 2004). These non-canonical forms are produced when sounds in canonical forms of words are deleted (e.g., **suppose** → **sppose**), altered (e.g., **unbox** → **umbox**) or inserted (e.g., prince → printee), among other changes. The existence of such variable and non-canonical word variants has led to one of the fundamental questions in the field of human language cognition: Does the human brain store different pronunciation variants of each word as independent lexical representations? To address this question, various psycholinguistic models have been developed. More traditional models posit that only one variant (the canonical variant) is stored in the mental lexicon (Chomsky & Halle, 1968). Yet, recent models suggest that human mental lexicon stores different pronunciation variants of the same word (Bürki et al., 2010). However, there is paucity of research to confirm the claims of the recent models, especially that these recent findings are mainly limited to a few languages (e.g., English and French) and on words that usually have only two different pronunciation variants (ibid). To expand the study of storage of words' variants, in my PhD dissertation, I investigate the storage of words that have three variants in Persian which has remained understudied in this domain of language studies. I inspect Persian words that include the uvular consonant (a sound produced when back of the tongue touches the uvula). The reason for choosing this consonant in this language is that the Persian uvular sound is highly variable with three different pronunciation variants, ranging from a sound with complete constriction of the articulators (such as /k/ in *kit*) to a less obstructed sound (such as /h/ in *hit*), up to a vowel-like sound with the least degree of constriction (such as /w/ in *wit*) (Lazard, 1992; Reza-Asa, 2016). This sound variation in Persian, which is a cross-linguistically rare pattern, results in a word's lexical variability providing this opportunity to test the storage of three variants of the same word.

**Background.** Most previous studies on the Persian uvular consonant relied on impressionistic data (ibid). So, for more empirically reliable results, in my second Generals paper, I conducted an audio recording experiment on 14 Persian speakers and quantified the acoustic properties of the Persian uvular consonant. The results confirmed that the uvular consonant has the three abovementioned (*k*-, *h*-, *w*-like) variants and hence words with this sound have three pronunciation forms. Importantly, these results showed that the position of the uvular consonant in words modulates the occurrence frequency of each uvular variant. For example, the uvular sound in word-initial position is pronounced most commonly as the *k*-like variant, but when it appears word-medially, the *w*-like pronunciation is the most frequent variant. Thus, this study showed that the uvular consonant's position in the word determines the frequency of a word's variants.

**My dissertation.** Based on my Generals paper results, for my dissertation, I inspect the effect of frequency of the uvular consonant on the storage of words' variants. To do so, two series of experiments are required to be conducted. The first series of experiments measure the frequency of variants of each word since the frequency of each variant is stored with that variant in human mental lexicon (Bürki et al., 2010). In this series of experiments, on a scale of 1 to 10, participants rate the acceptability of different pronunciation variants of each word presented to them auditorily. It is expected that higher frequency variants would have higher ratings. The preliminary results of these experiments confirmed this hypothesis. In the second series of experiments, I measure the



processing time of variants through Reaction Time experiments. In these experiments the same audio stimuli of the first series of experiments are presented to participants auditorily. I measure the duration of the time it takes for participants to confirm the variant presented to them is a real Persian word. That is, I measure their reaction time to each audio stimulus. Next, the interaction of frequency from the first series of experiments and reaction times from the second series of experiments are tested. The hypothesis is that if there is a negative correlation between reaction time and frequency of the variants, there is evidence that those variants are stored independently because the higher the frequency of a variant is, the shorter should be the reaction time for that variant (i.e., more frequent variants are processed faster). The findings of these experiments will reveal whether multiple pronunciation variants of the same word are stored in lexicon as separate lexical entries.

**Contribution.** Research into the lexical storage of words' variants in Persian provides valuable theoretical and practical outcomes. This research will have significant contribution to various models of speech comprehension and generally the system of human language cognition. In particular, by extending the cross-linguistic study of word comprehension to Persian, as an understudied language with a rare pattern of sound variability, the outcomes of this research will test the generalizability of speech comprehension models. This research will also have contributions to practical applications, such as in automatic speech recognition, speech/language pathology, and learning Persian as a foreign language.

#### **Dissertation completion timeline**

<b>Timeline</b>	<b>Chapters</b>
Summer 2022	Chapter 2
Fall 2022	Chapters 3 & 4
Winter 2023	Chapter 5 & part of Chapter 6
Summer 2023	Chapters 6 & 1
Fall 2023	Dissertation defense

#### **Selected references**

- Bürki, A., Ernestus, M., & Frauenfelder, U. H. (2010). Is there only one “fenêtre” in the production lexicon? *Journal of Memory and Language*, 62(4), 421–437.
- Chomsky, N., & Halle, M. (1968). *The sound pattern of English*. Harper and Row.
- Johnson, K. (2004). Massive reduction in conversational American English. *Spontaneous Speech: Data and Analysis. Proceedings of the 10th International Symposium*, 29–54.
- Lazard, G. (1992). *A grammar of contemporary Persian*. Mazda Publishers.
- Reza-Asa, M. (2016). Acoustic study of standard Persian /g/ (in Persian). *Elme Zaban (Language Science)*, 4(6), 101–130.