

Guided Research Seminar: Flexibility and adaptation in speech perception

Semester 2, Spring 2025

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Seminar overview

This page is the course overview for the seminar. If you prefer a pdf, that can be accessed [here](#). We will have occasional weekly activities to complete at home, which will appear in the tabs at left left.

This seminar will survey research on how adult listeners adapt perceptual categories in speech perception. The goal is to equip students with a foundational knowledge of relevant speech perception methods, their use in understanding perceptual flexibility, and what flexibility in speech perception tells us about linguistic representations and the way that listeners process speech. The common thread across topics and phenomena will be the finding that speech perception is a dynamic process, and that listeners actively track and learn about speech as they experience it. This seminar presupposes some knowledge of phonetics and phonology: LEL2A + 2B or MSc Introduction to Phonetics and Phonology, or equivalent.

- **Time** Thursdays 14:10-15:00
- **Place** 9.01 40GS
- Meetings can be booked with me [here](#). If the availability there doesn't work for you, get in touch and we can set up another time.

Seminar Format

Some more details and format for the discussion will be introduced at our first meeting, however, broadly, in each Seminar we will discuss a reading, revolving around several questions.

- What is the big picture question about speech perception? What are the relevant theories/models?
- What are the methods like and how do they address the big picture question?
- What connections to your own research interests do you see in the paper?

Before each Thursday meeting you can **submit a brief reflection on the paper** [here](#). The goal of these is just to help put your thoughts down, and also for me to see if there are questions about each paper before we meet, which I can hopefully address in the seminar.

Assessment

Assignment 1: Due 17 March

Assignment 1 will be a literature review of a phenomenon of your choice, with the goal of orienting towards research questions that can be part of Assignment 2. The Seminar is focused around four core phenomena, one of which can be selected for this assignment; **but another one can be chosen if discussed with me.**

More details will be discussed Week 6.

- Distributional learning for cues
- Cue weighting and cue shifting
- Selective adaptation
- Lexically-guided perceptual re-tuning

Requirements

- Honours and 10cr MSc students: 1500 words (30% of final mark)
- 20cr MSc students: 1500 words (20% of final mark)

Assignment 2: Due 24 April

A research project proposal. This can build directly on a previous study, or be anything of interest to you. It would be easier to make this close to, or the same as, the topic you did a literature review for in Assignment 1, however this is not required. More details will be discussed Week 7.

Requirements

- Honours and 10cr MSc students: 2500 words (70% of final mark)
- 20cr MSc students: 4000 words (80% of final mark)

Timetable

| Week | Topic | Reading | Other activity |
|--------|---|--|--|
| Jan 23 | Methods/basics | Schertz and Clare (2020) | Perceptual categorisation experiment |
| Jan 30 | Distributional learning | Theodore, Monto, and Graham (2020) | |
| Feb 6 | Cue weight-ing/shifting I | Idemaru and Holt (2011) | Cue shifting experiment |
| Feb 13 | Cue weight-ing/shifting II | Lehet and Holt (2017) OR Liu and Holt (2015) | |
| Feb 20 | Flexible learning week | | |
| Feb 27 | Selective adaptation I | Ades (1974) | Assignment 1 discussion |
| Mar 6 | Selective adaptation II | Samuel (2020) | Selective adaptation experiment |
| Mar 13 | Lexically-guided perceptual retuning I | Norris, McQueen, and Cutler (2003) | |
| Mar 20 | Lexically-guided perceptual retuning II | Caudrelier et al. (2023) | |
| Mar 27 | Assignment ideas and discussion | | |
| Apr 3 | Assignment ideas and discussion | | |

Readings

Below, the readings from the course are complemented by others which are organised by topic - you can consider that these a possible starting point for your assignments. There are

also some sort of random included readings. Hover over the reading to see the reference, or find it in the full reference list below.

General: cues and methods

Schertz and Clare (2020)

Holt and Lotto (2010)

Apfelbaum et al. (2022)

Distributional learning

Clayards et al. (2008)

Kleinschmidt and Jaeger (2015)

Theodore, Monto, and Graham (2020)

Selective Adaptation

Ades (1974)

Dias, Cook, and Rosenblum (2016)

Kleinschmidt and Jaeger (2016)

Mitterer, Reinisch, and McQueen (2018)

Samuel (1986)

Samuel (2020)

Sussman (1993)

Cue weighting and shifting - “dimension-based statistical learning”

Idemaru and Holt (2011)

Idemaru and Holt (2020)

Jasmin et al. (2023)

Lehet and Holt (2017)

Liu and Holt (2015)

Severijnen et al. (2023)

Lexically-guided perceptual retuning

Caudrelier et al. (2023)

Charoy and Samuel (2023)

Cummings and Theodore (2022)

Kraljic and Samuel (2006)

McQueen, Cutler, and Norris (2006)

Norris, McQueen, and Cutler (2003)

Tzeng, Nygaard, and Theodore (2021)

Other recommended readings

These didn't fit into the above categories really, check them out if they are on a topic of interest.

Bushong and Jaeger (2019)

Colby et al. (2019)

D'Onofrio (2015)

Gonzales, Byers-Heinlein, and Lotto (2019)

Luo et al. (2024)

Niedzielski (1999)

Xie, Jaeger, and Kurumada (2023)

Full reference list

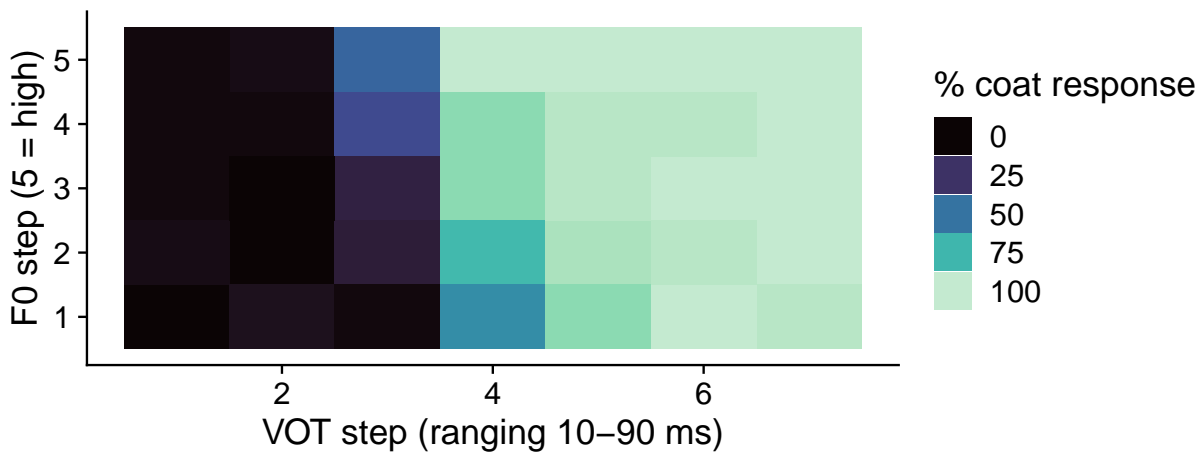
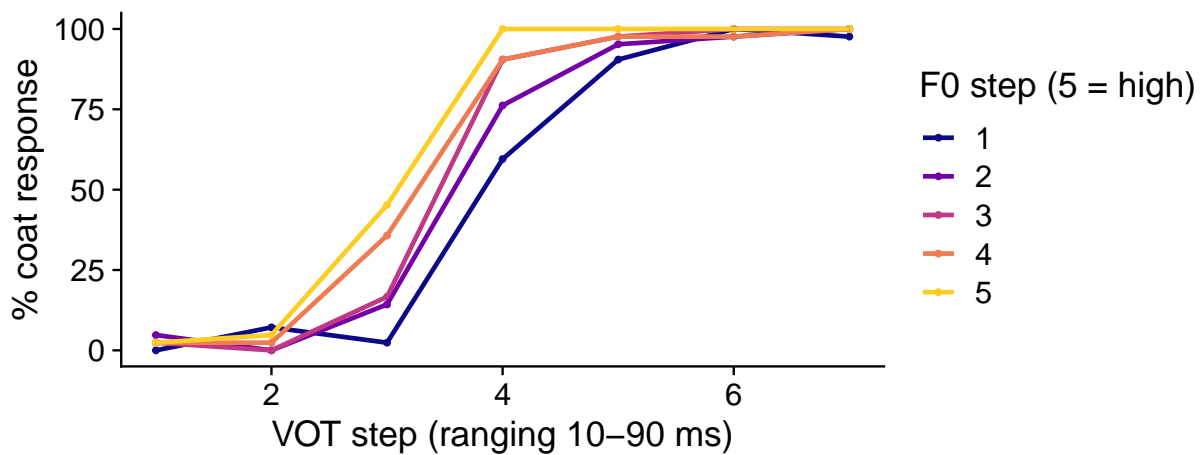
(appears at the very end of the PDF document).

1 Perceptual categorisation experiment

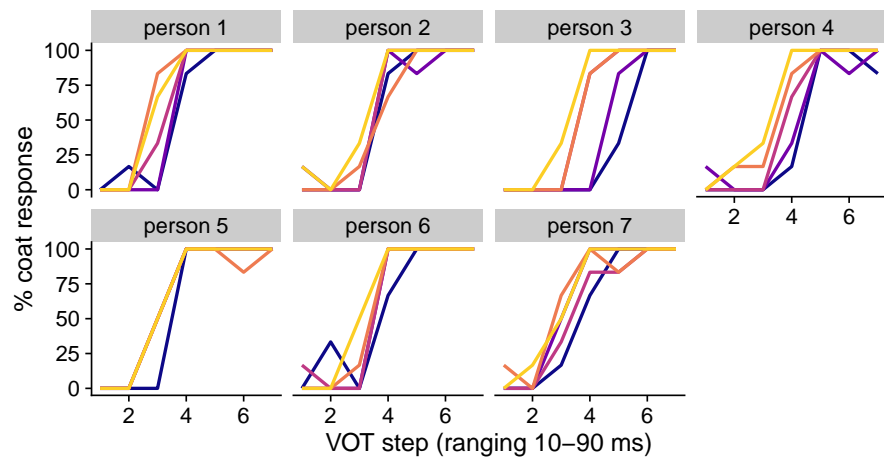
You can find the experiment [here](#).

1.0.1 Results

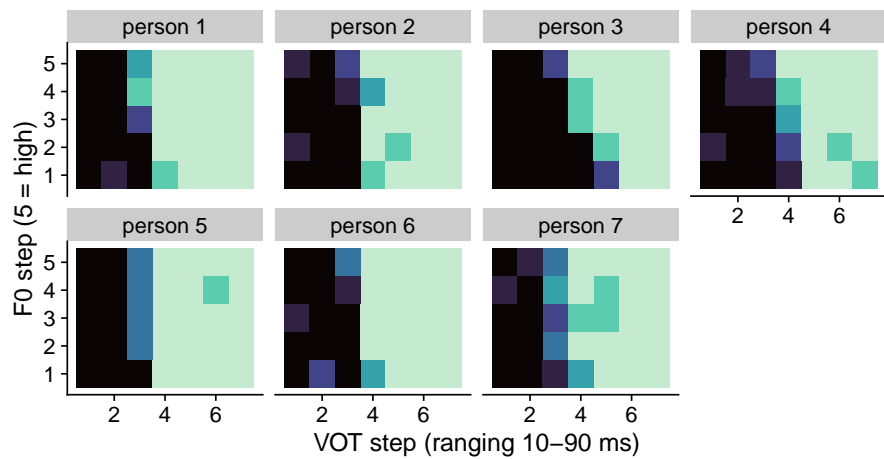
Here are the overall categorisation functions, shown in two different ways below.



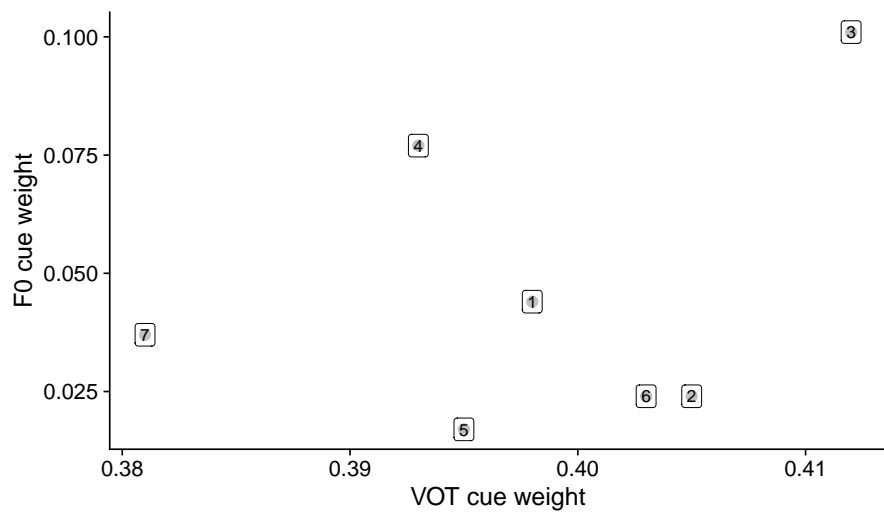
And here are the individual-level ones.



F0 step (5 = high) — 1 — 2 — 3 — 4 — 5



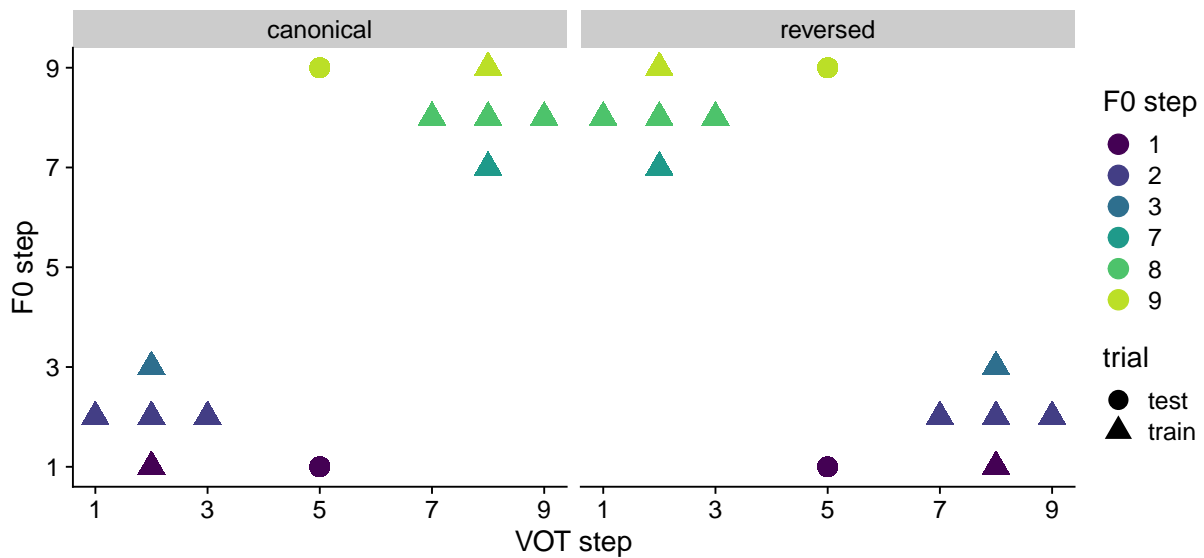
% coat response ■ 0 ■ 25 ■ 50 ■ 75 ■ 100



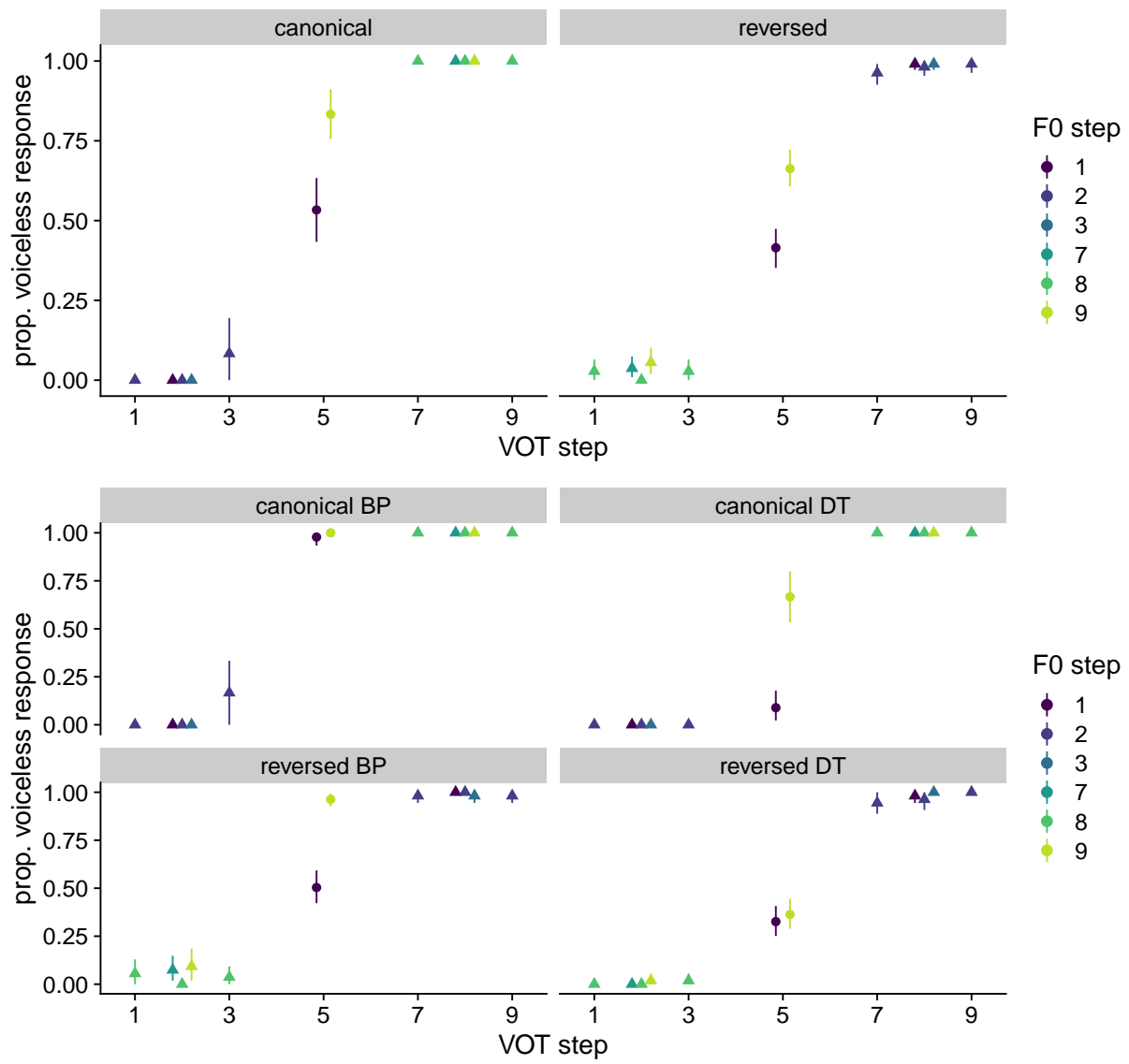
2 Cue shifting experiment

You can find the experiment [here](#).

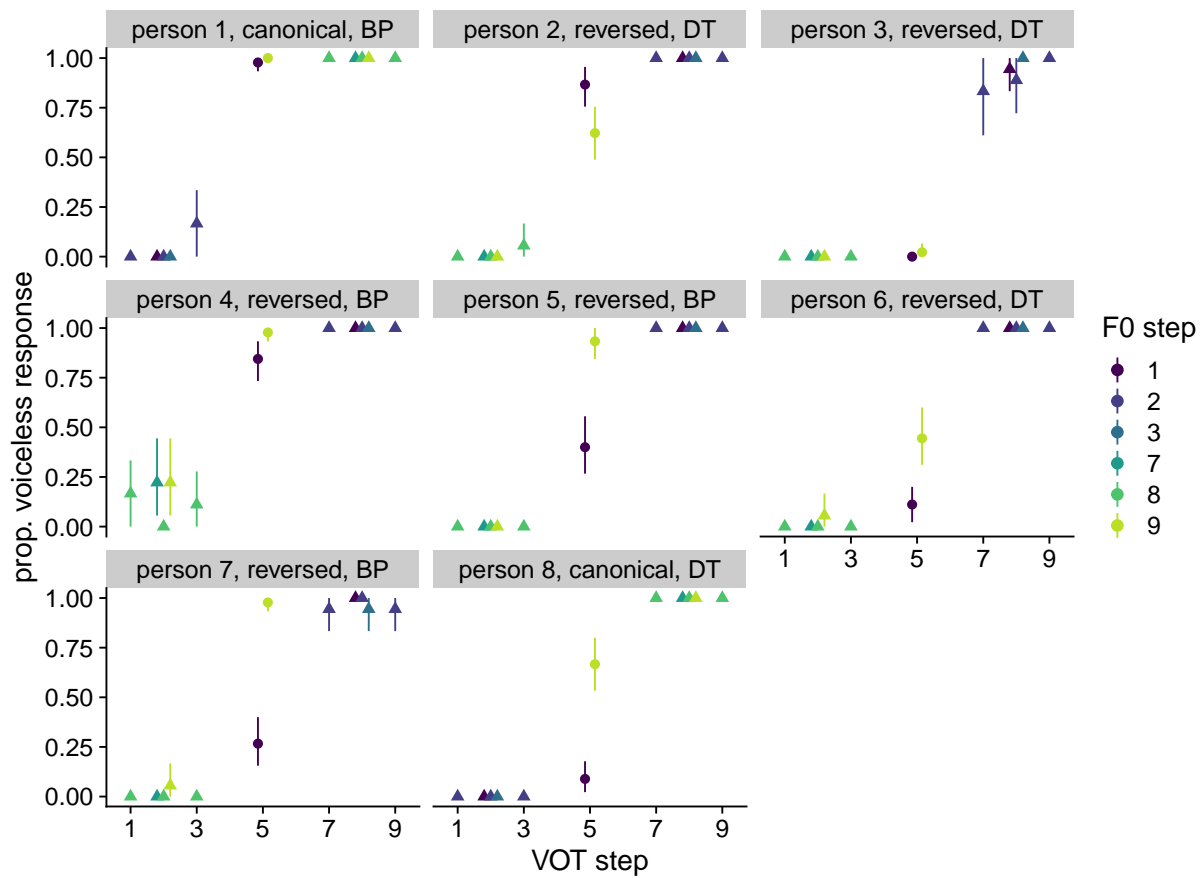
Here are the cue distributions used in the two conditions.



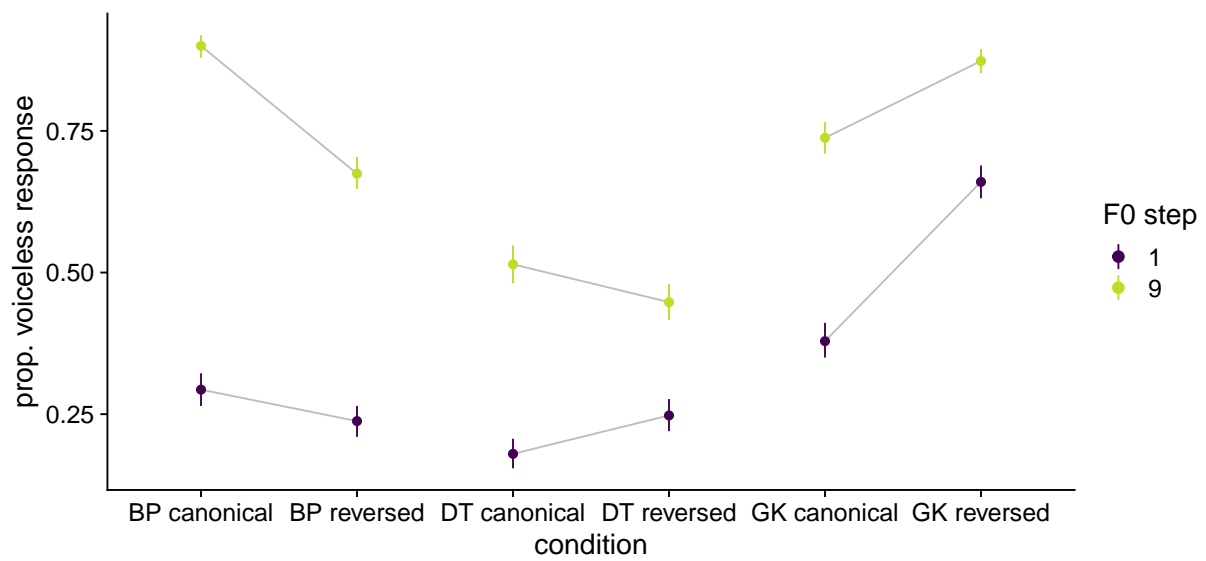
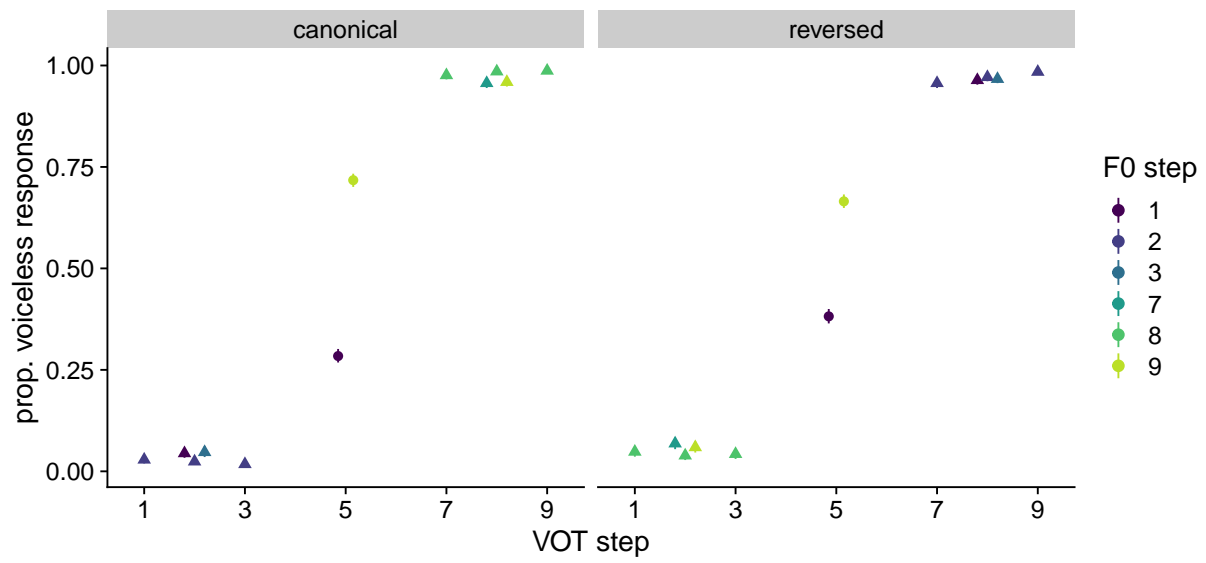
And here are the results, first pooled by place of articulation and then split by it. Note that the canonical BP person did not find the stimuli at VOT step 5 to be ambiguous - this can be a major challenge for this type of research!



And here are the results split out by individuals. It ended up being unbalanced with only two canonical people \square . Note that person 2 fully reversed the F0 effect.



Finally, in case you are curious, here are the results from a study that I ran which had a larger group of participants (20 people in each place and each distribution condition). In the second plot below, just the trials at VOT step 5 are plotted.



3 Selective adaptation experiment

You can find the experiment [here](#).

The results will appear here when they are ready...

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