Convergence to Expected vs. Observed Behavior in a Laboratory Experiment

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Linguistic Convergence

Speakers shift their speech to become more similar to their interlocutors

Linguistic Convergence

Speakers converge toward the linguistic input they **observe**

- Lexical Items (Garrod & Doherty, 1994)
- Syntactic Constructions (Bock,1986; Pickering & Ferreira, 2008)
- Lengthened VOT (Shockley et al., 2004; Nielsen, 2011)
- Vowel Quality (Babel 2009, 2012; Pardo 2012)

Linguistic Convergence

Speakers converge toward linguistic variants they **expect**, triggered by social cues

- An anglo interviewer produced the “eh” tag when conversing with a Maori interviewee who never used this tag (Bell, 2001)

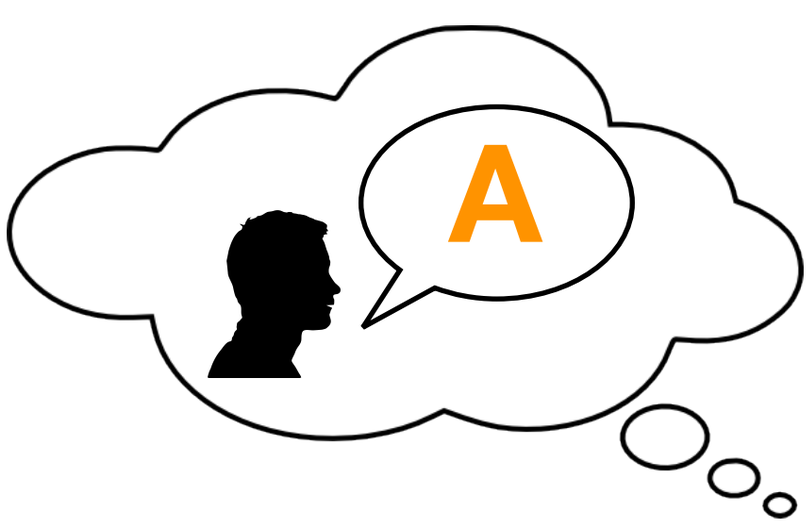
- Speakers produce more monophthongal /ay/ when exposed to a Southern talker who never produces /ay/ (Wade, In Prep)

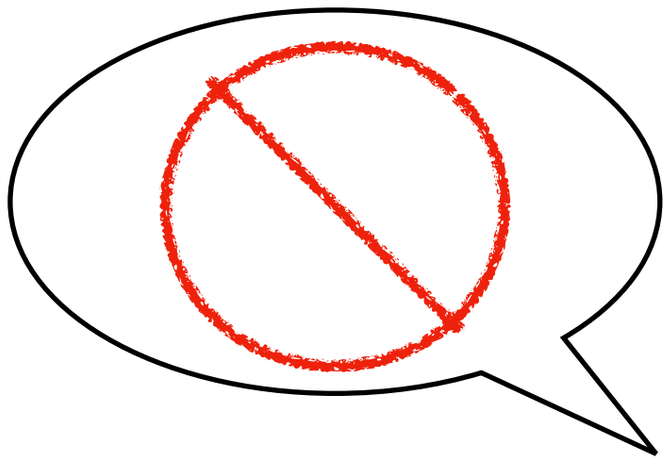
Linguistic Convergence

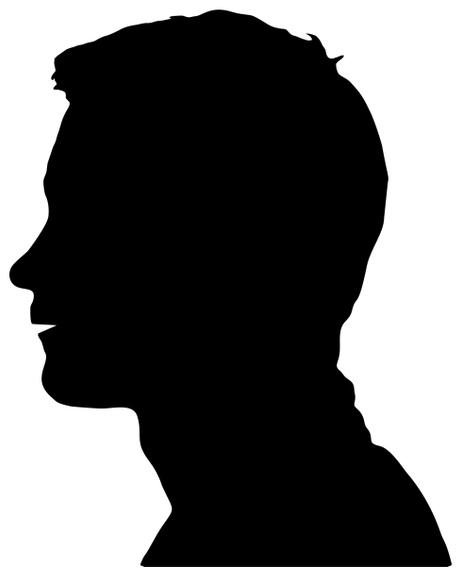
How do participants behave when **expected** and **observed** interlocutor behavior don’t align?

Research Questions

1. Do participants converge toward **expected** linguistic behavior, in the absence of observed behavior?







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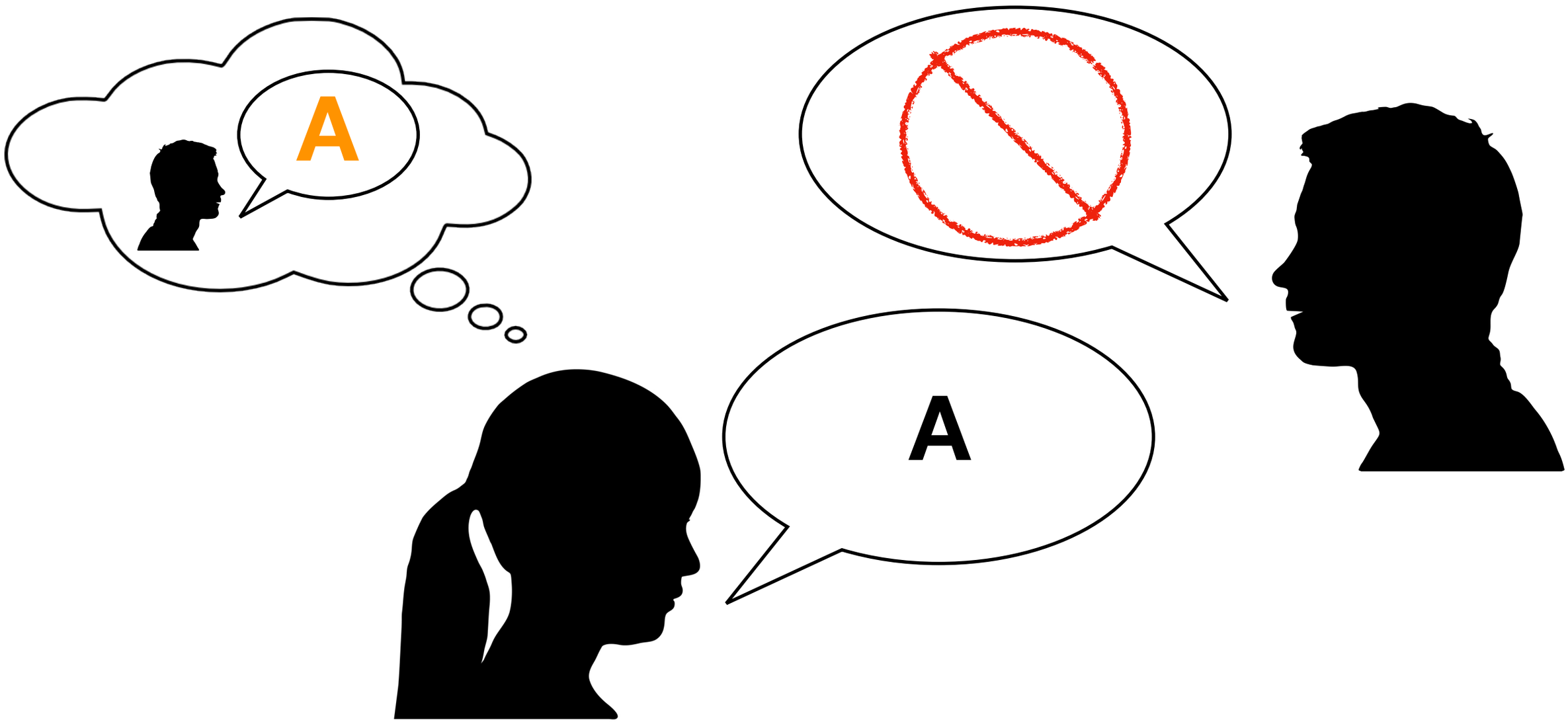

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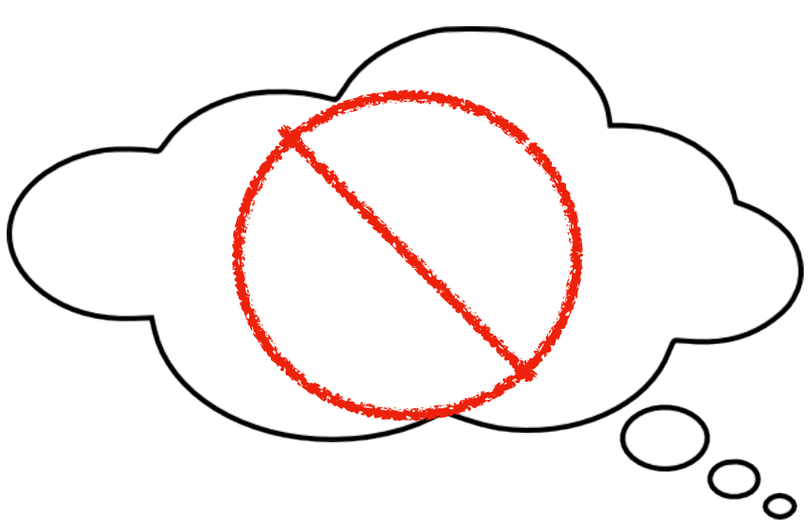
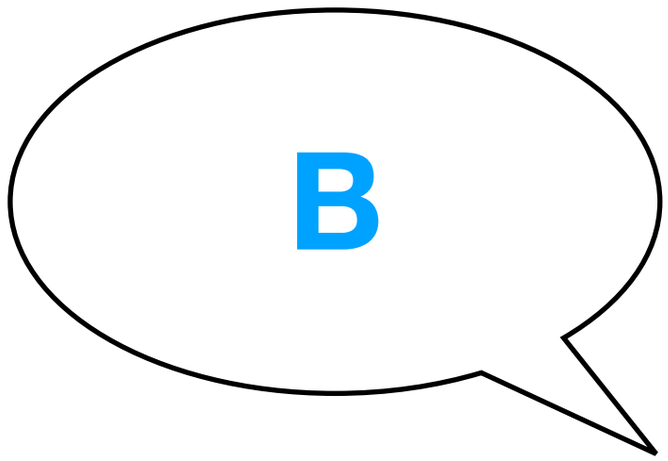
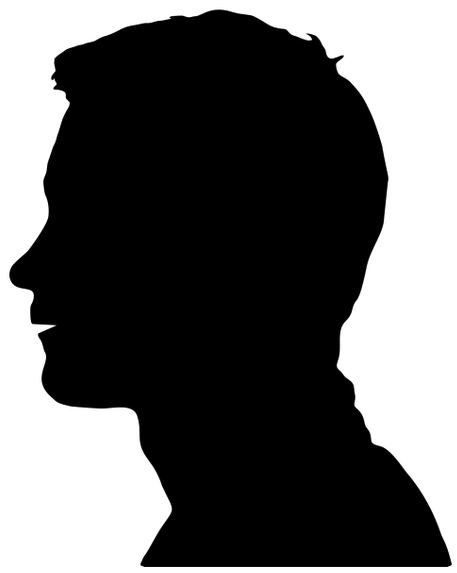
2. Do participants converge toward **observed** linguistic behavior, in the absence of prior sociolinguistic expectations?







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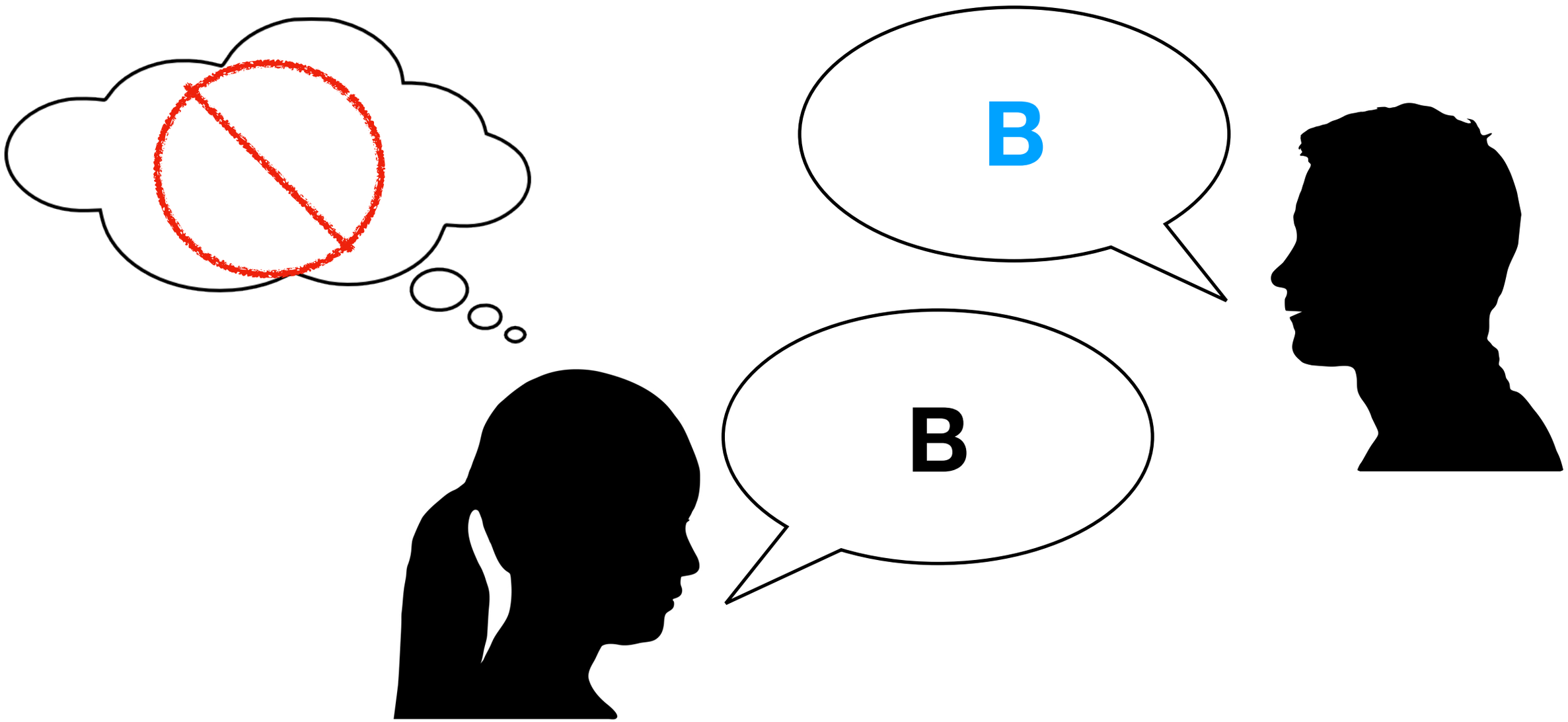

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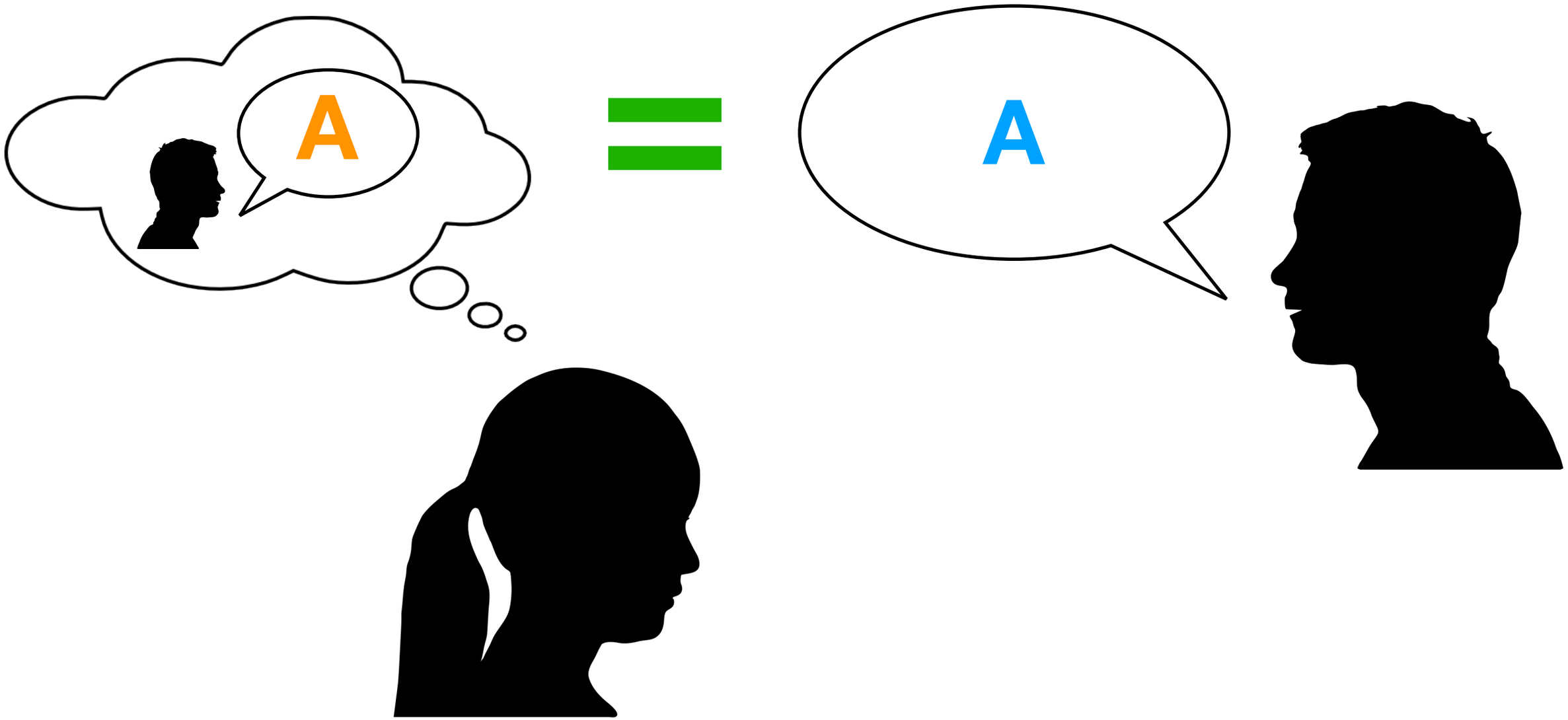
3. If observed behavior **confirms** expectations, does this boost convergence rates?



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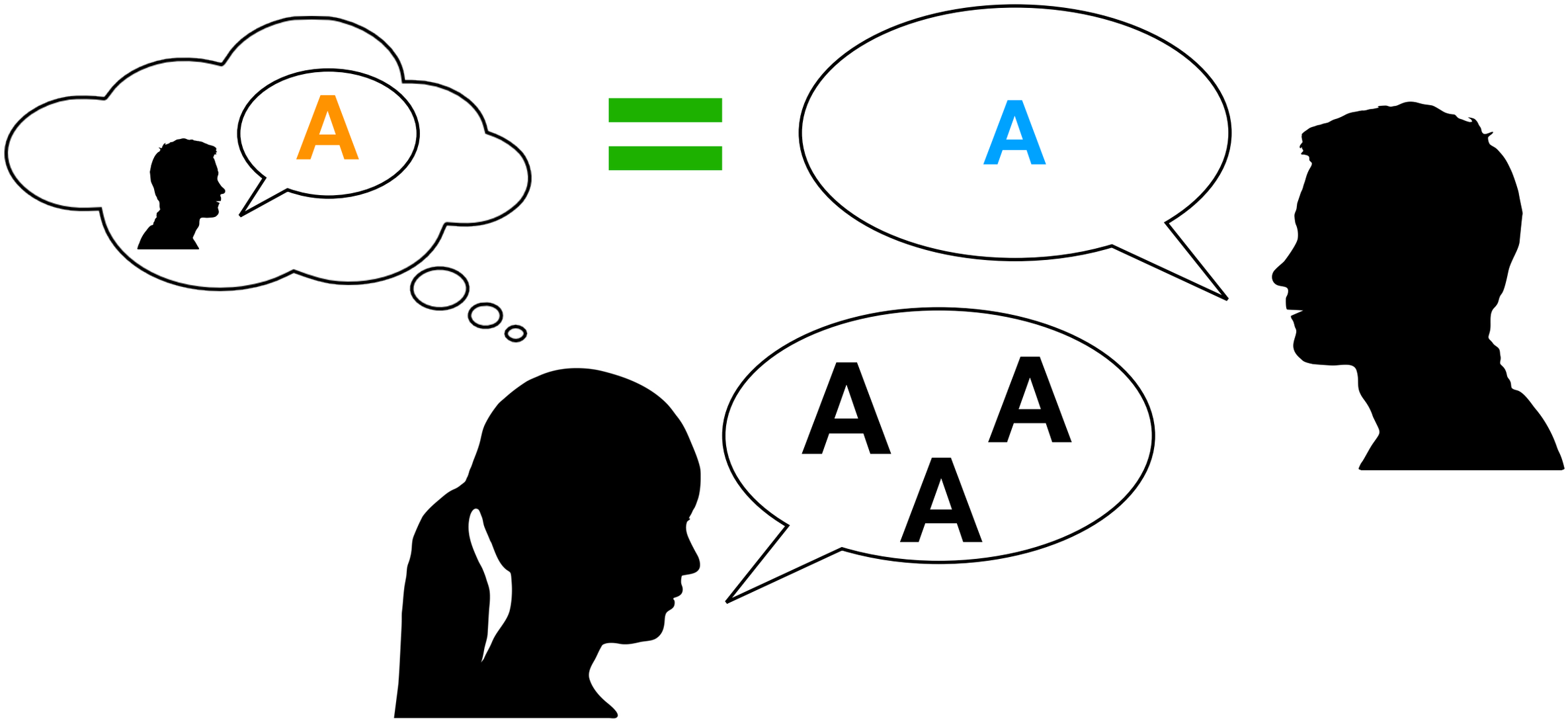

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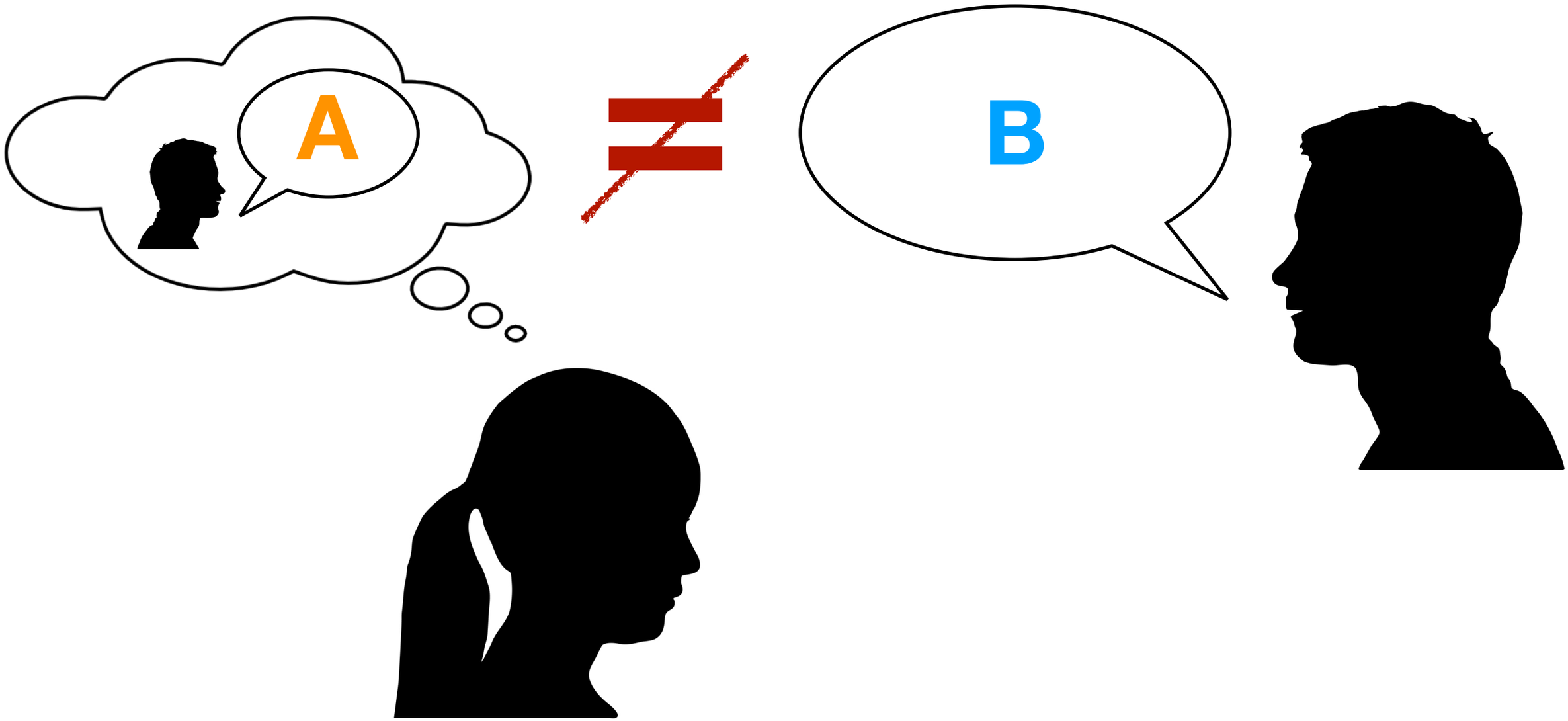

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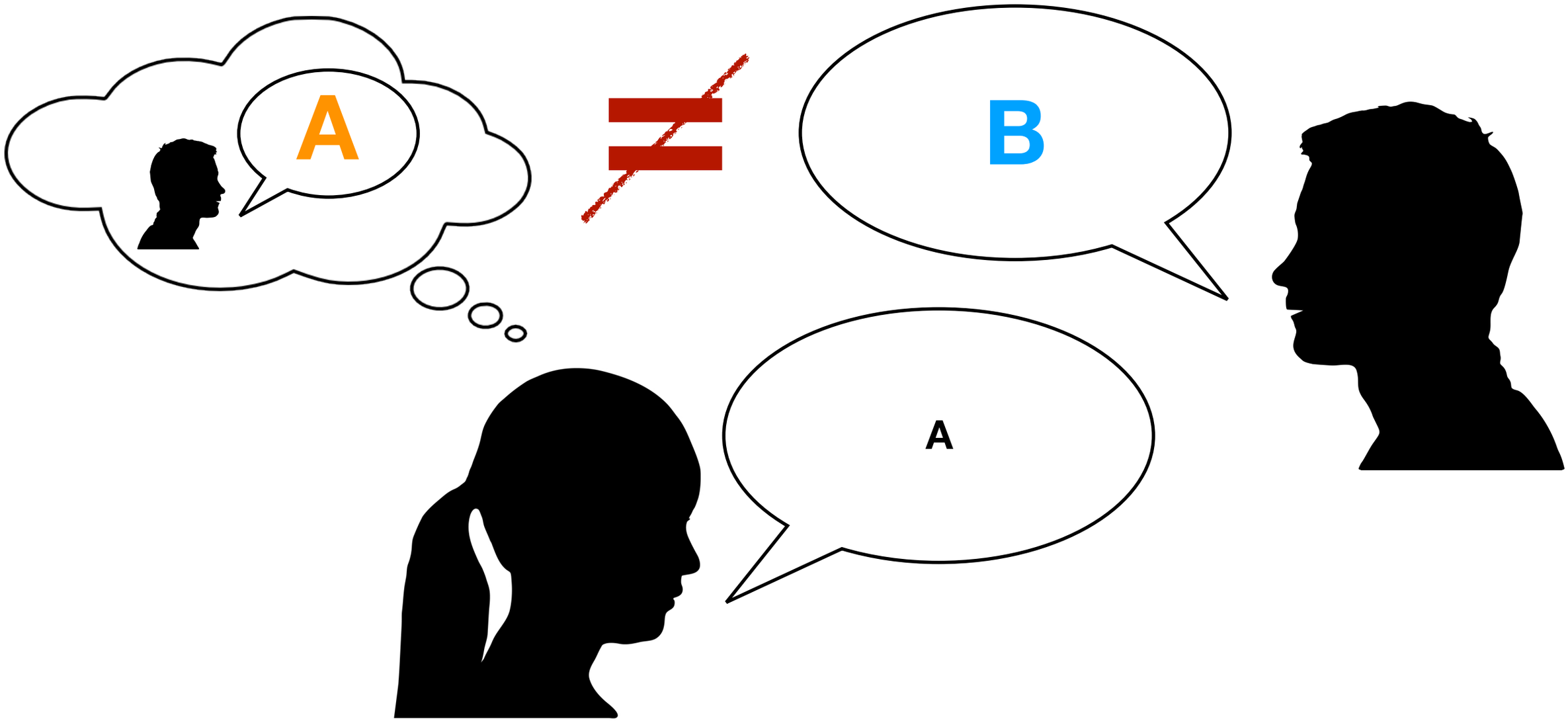


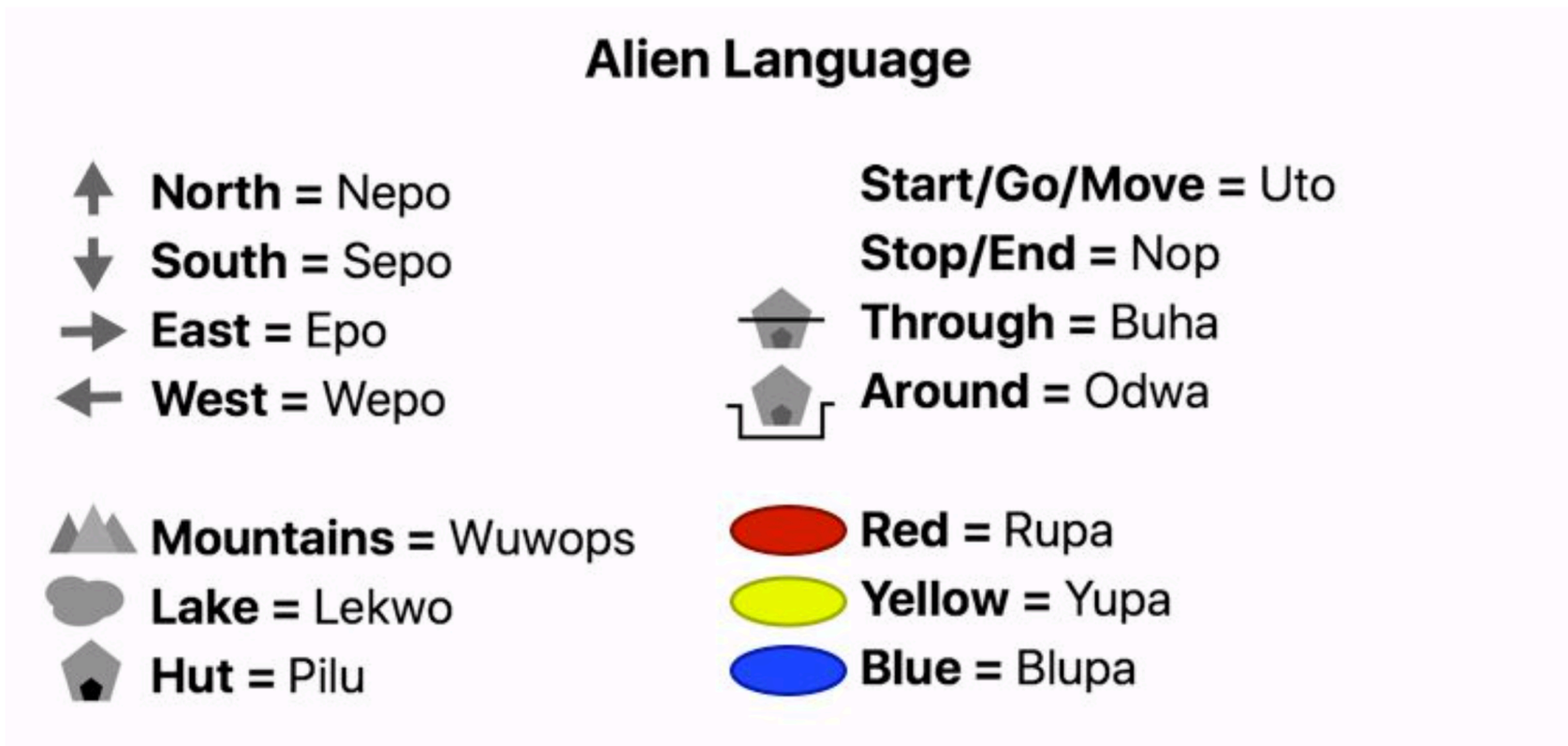
Alien Language Map Task

We need a task that…

- Is highly interactive
- Allows for manipulation of observed and expected behavior
- Ideally controls for differences in sociolinguistic experience

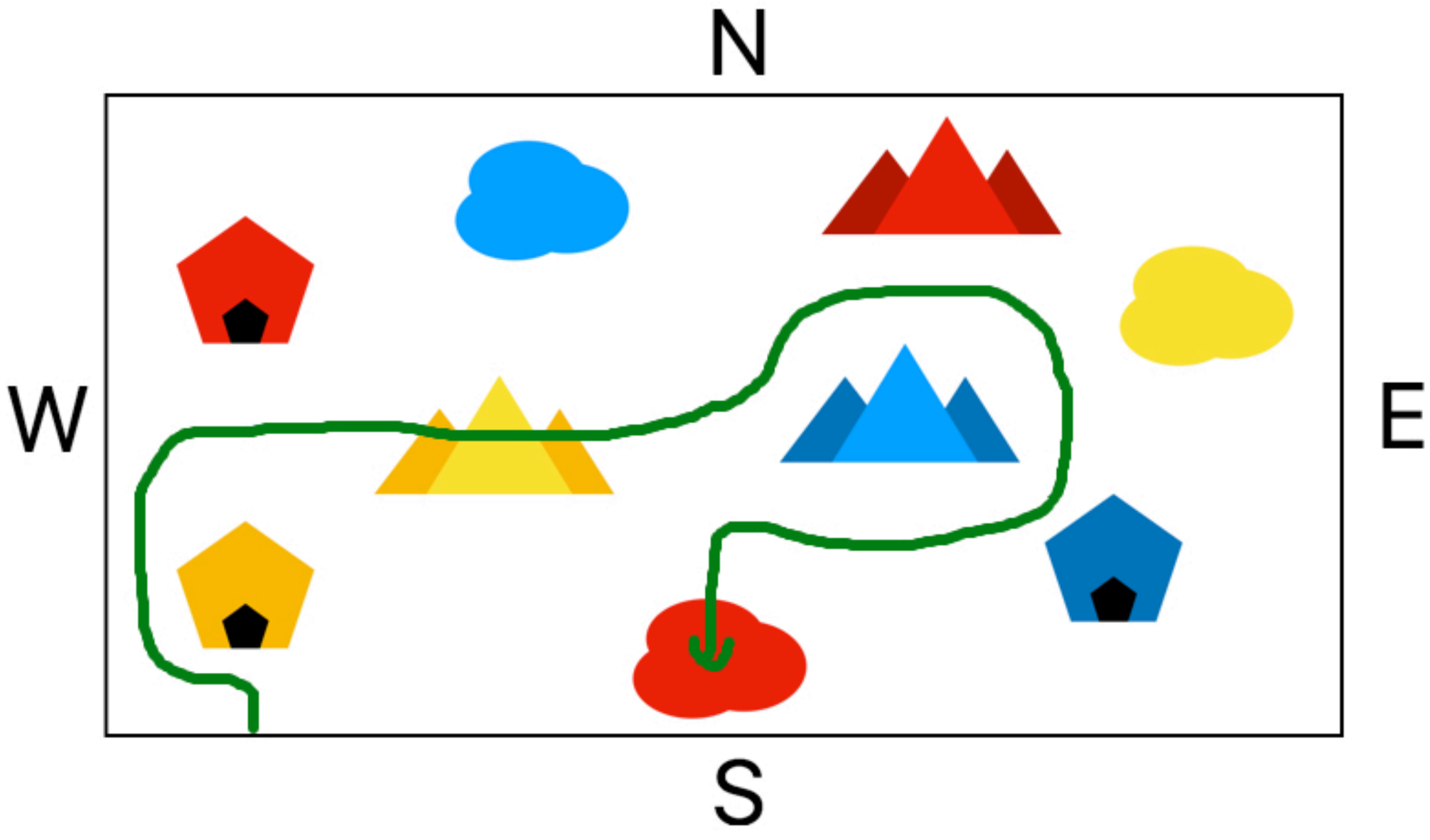
Alien Language Map Task

Online instant-messenger-style chat in an artificial “alien” language



Alien Language Map Task

Partners take turns leading each other around a map



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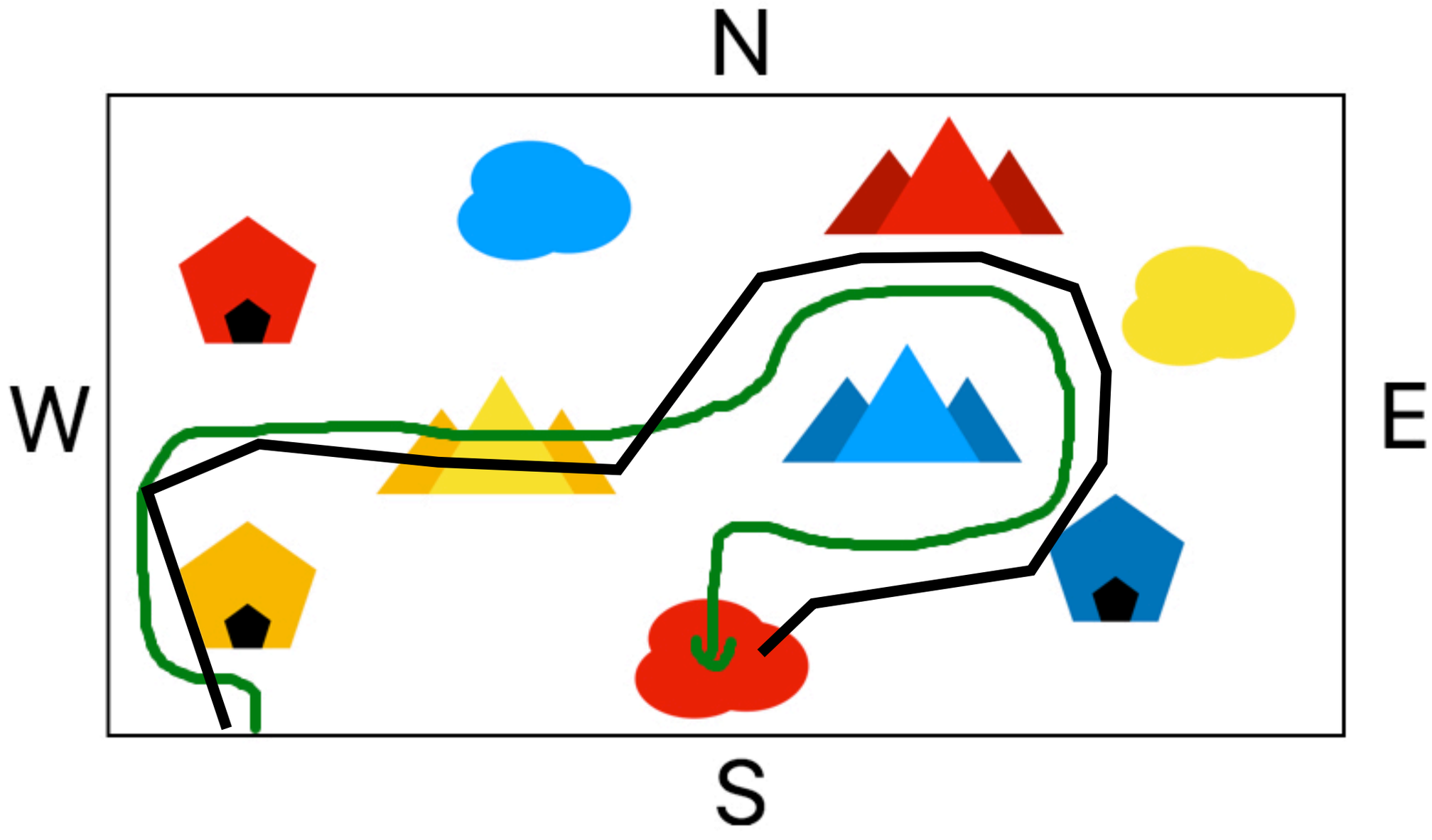
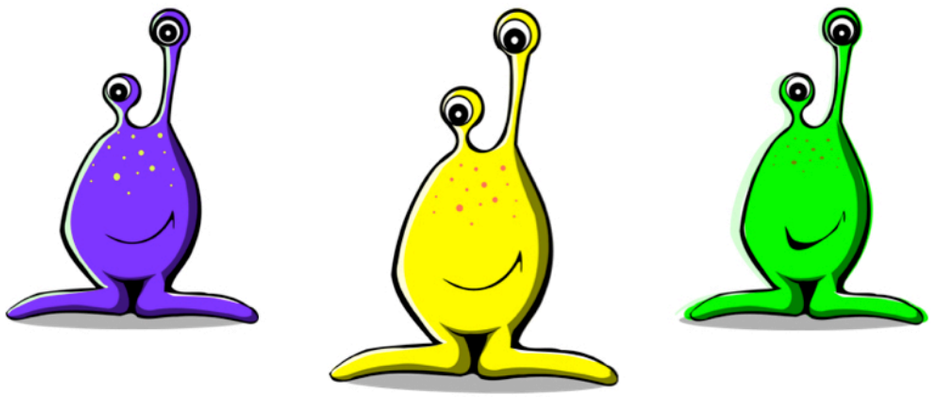
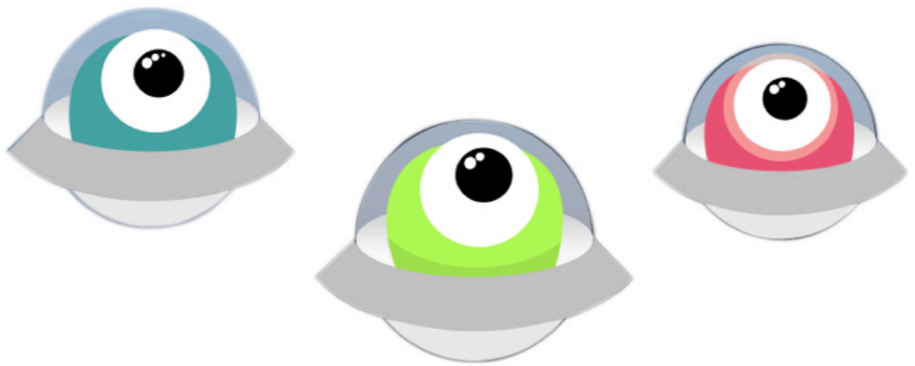


Alien Language Map Task

Two alien species serve as social categories with dialectal variation



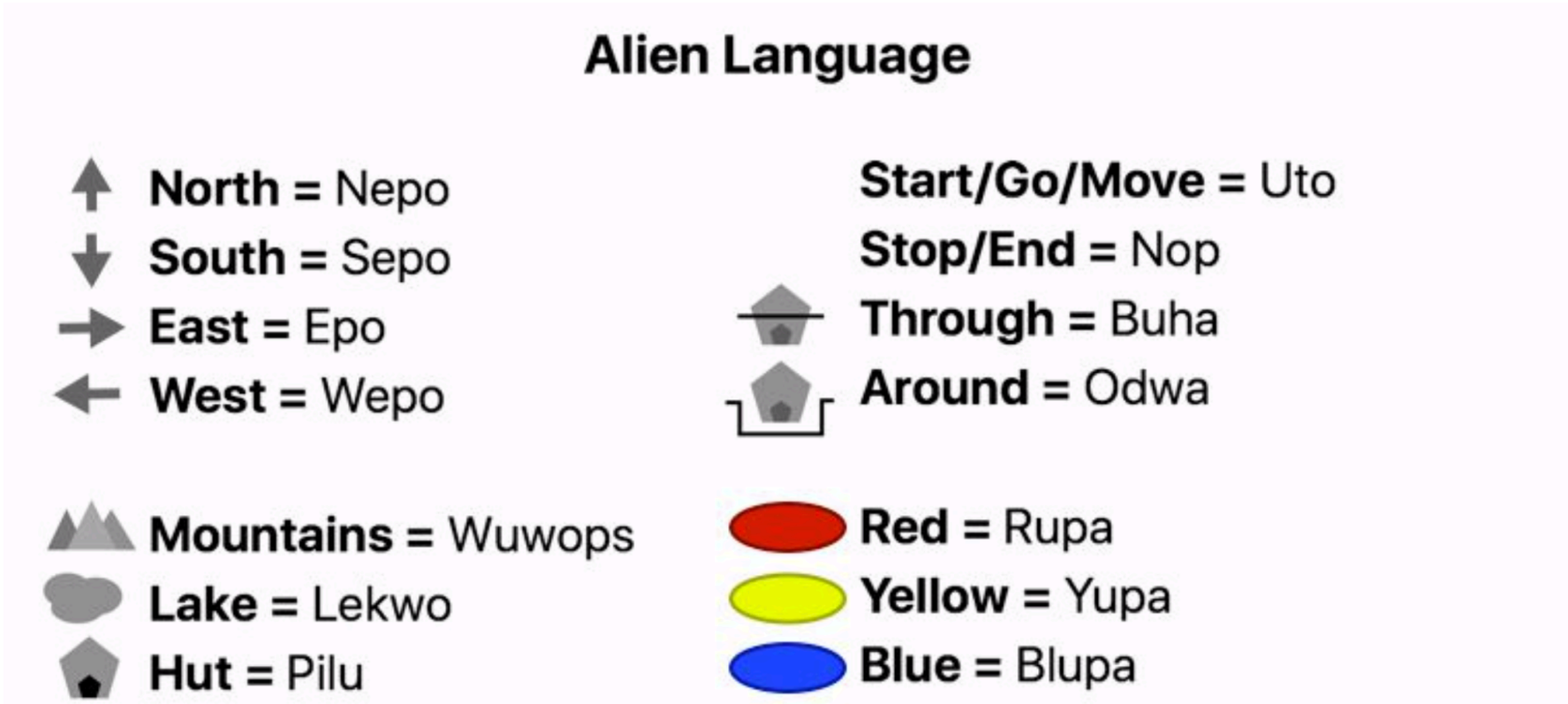
Greebits learn the language with [p]



Bulbenes learn the language with [f]

Alien Language Map Task

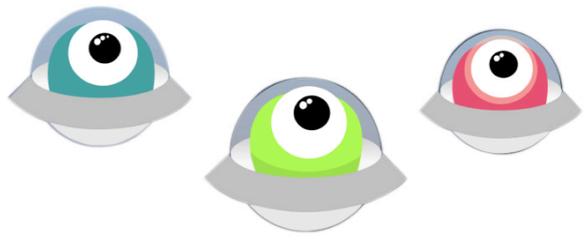
Two alien species serve as social categories with dialectal variation



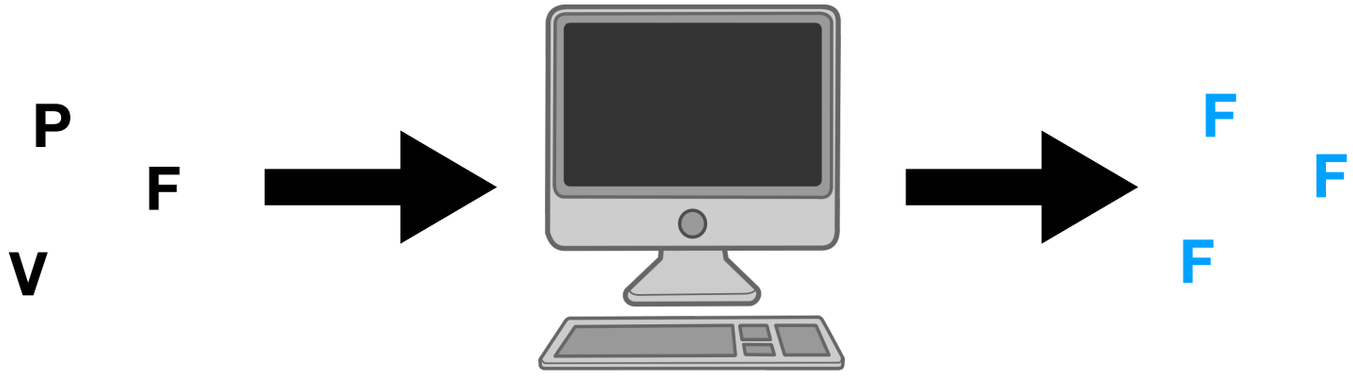
The alien species are very concise. They have no words for some concepts such as *and* or *then*. **You should omit these** in your communication. Also note that **Bulbenes may speak a slightly different dialect** and use "**F**" in place of "**P**."

Alien Language Map Task

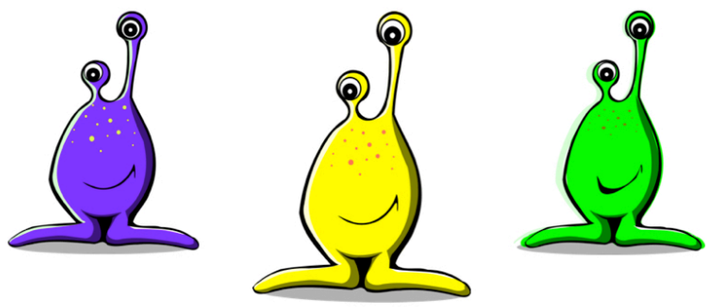
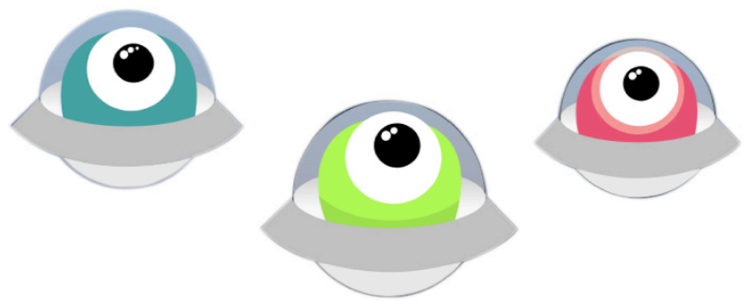
- **Expectations** manipulated by showing participants which species they would be conversing with.



- **Observations** manipulated with software that automatically swaps variants, depending on the condition



Alien Language Map Task

	Explicit-Expectation Participants Told they are Greebit Learn language with [p]	**No-Expectation Participants** Told they are Bulbene Learn language with [f]
		
Matched Phase (Confirmatory)	Told partner is Bulbene Expects [f] Observes [f]	
Unmatched Phase (Contradictory)	Told partner is new Bulbene Expects [f] Observes [v]	Told partner is new Greebit Has no expectations Observes [p]
Same-Species (Control)	Told partner is Greebit Expects [p] Observes [p]	

Alien Language Map Task

Order counterbalanced across pairs of participants

	A	B	C
Phase 1	Matched	Unmatched	Same-species
Phase 2	Unmatched	Same-species	Matched
Phase 3	Same-species	Matched	Unmatched

	D	E	F
Phase 1	Matched	Unmatched	Same-species
Phase 2	Same-species	Matched	Unmatched
Phase 3	Unmatched	Same-species	Matched

Alien Language Map Task

- **Actual**: What the participants types (and we store in the data file)

- **Observed**: What their partner sees, varies by round

- **Expected**: What the explicit-expectation participants expect from their partner

Alien Language Map Task

The Data Set:

- 108 participants, in pairs
  - Fluent speakers of English
  - 32 from the Penn subject pool (16 in the lab, 16 online)
  - 76 from the online Prolific Academic platform
- Actual messages recorded
- Data set includes any word containing [p] [f] or [v] (N=11,825)
- Mean of 219 observations per participant

Alien Language Map Task

Two mixed effects logistic regression models:

Explicit Expectation Participants:

- Predicts use of expected [f] (1) vs. [p] or [v] (0)
- Fixed effects: Condition, PrePost, Phase, WhichFirst, Condition*PrePost, Phase*WhichFirst
- Random by-speaker intercepts

No-Expectation Participants:

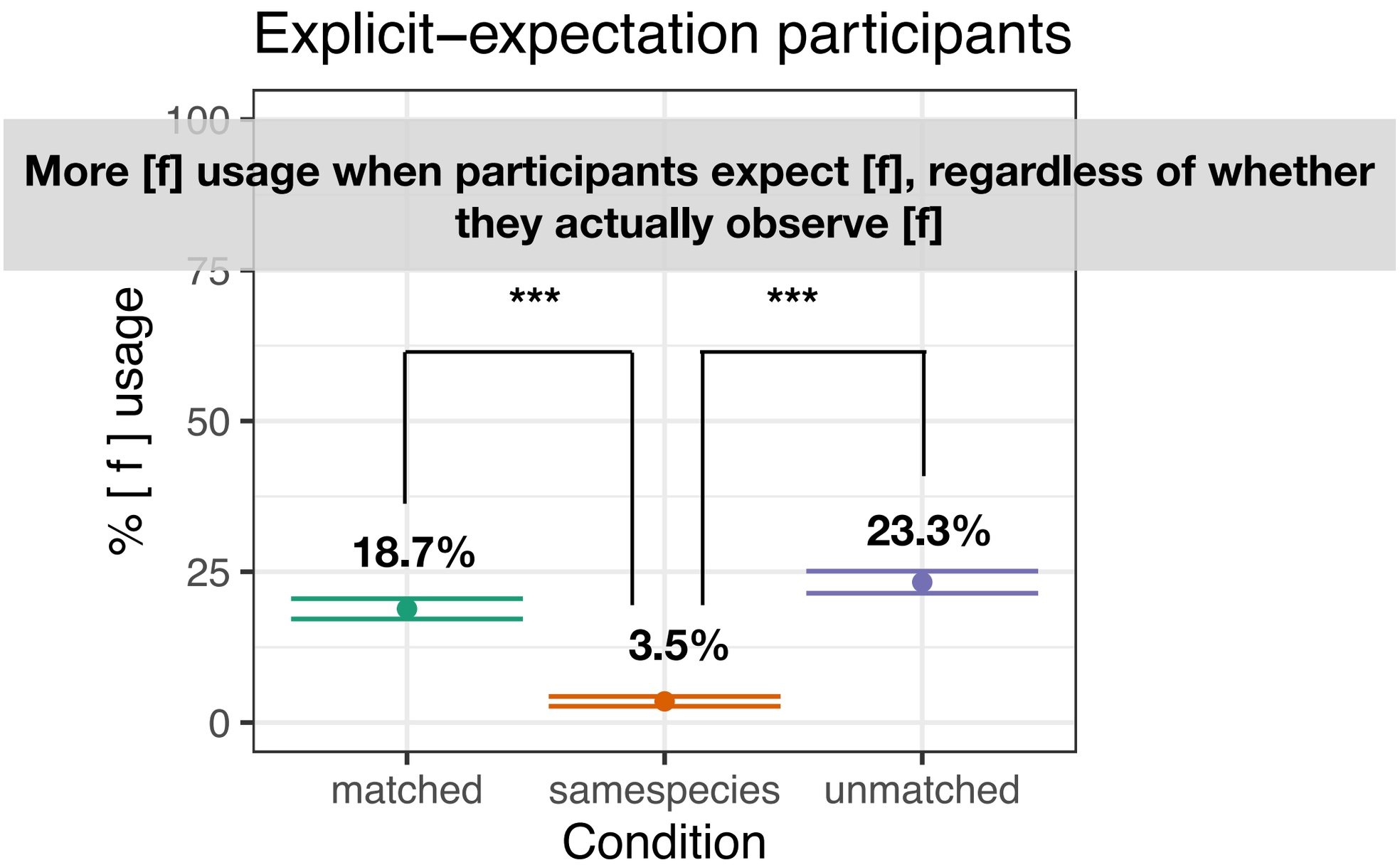
- Predicts use of [p] (1) vs. [f] or [v] (0)
- Fixed effect: Phase
- Random by-speaker intercepts

Results

Do participants converge toward **Expected Behavior?**

Results

Convergence to **Expected Behavior**



Results

Do participants converge toward **Observed Behavior?**

Results

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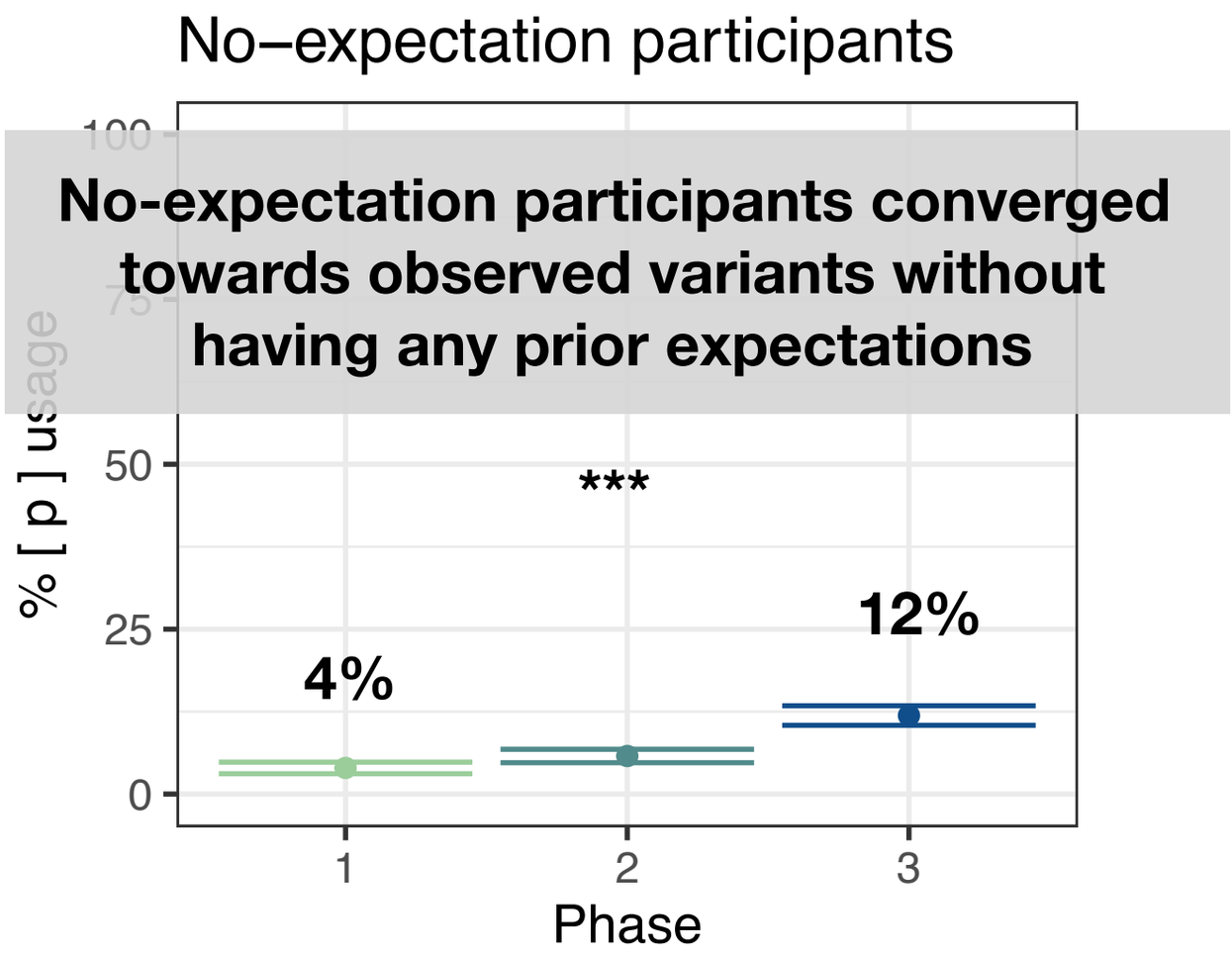

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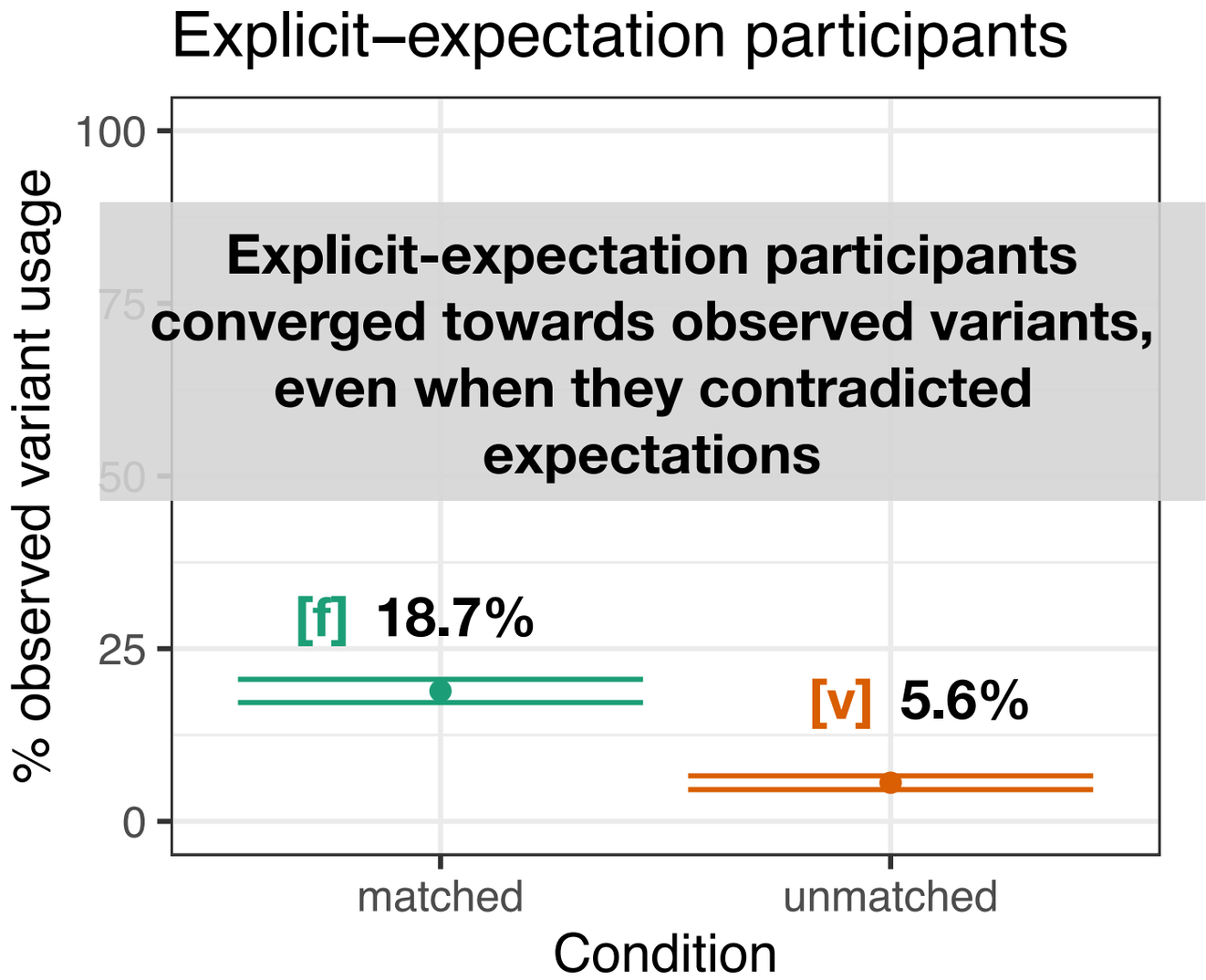


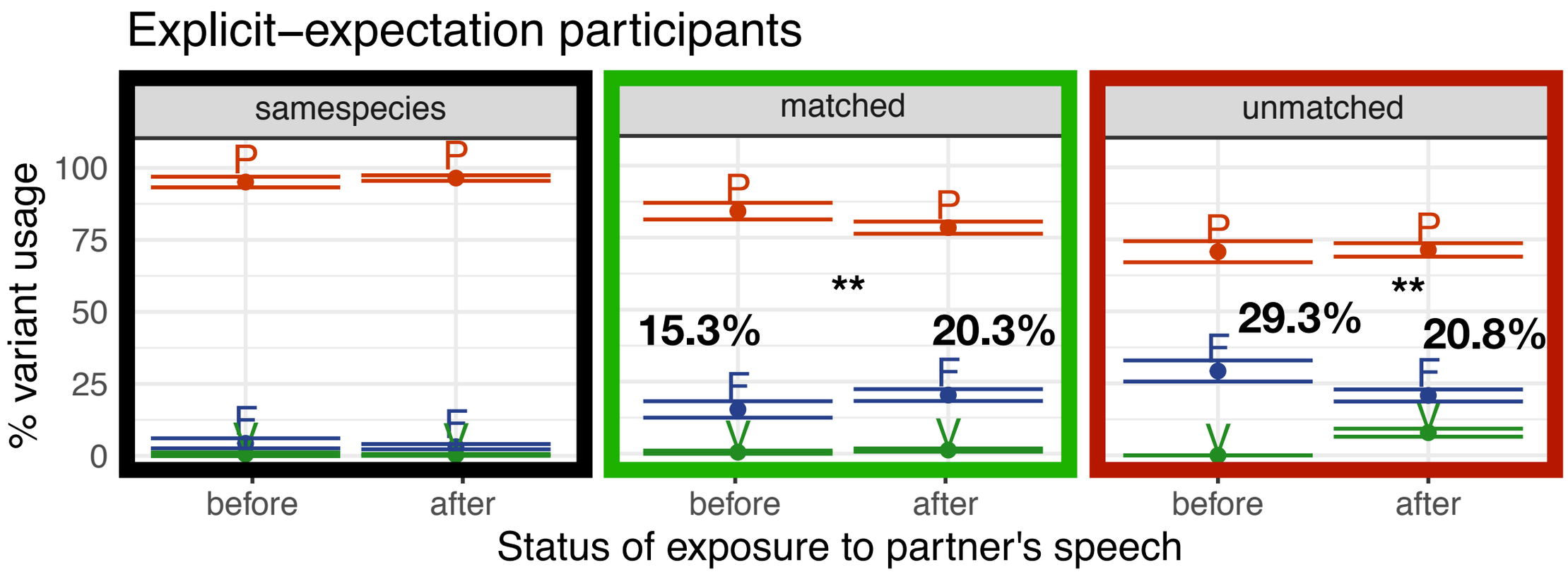
Results

Do participants converge more toward **confirmatory** Expected vs. Observed Behaviors?

(How) do participants converge when Expected and Observed behavior **contradict**?

Results

Confirmatory vs. **Contradictory** Behaviors



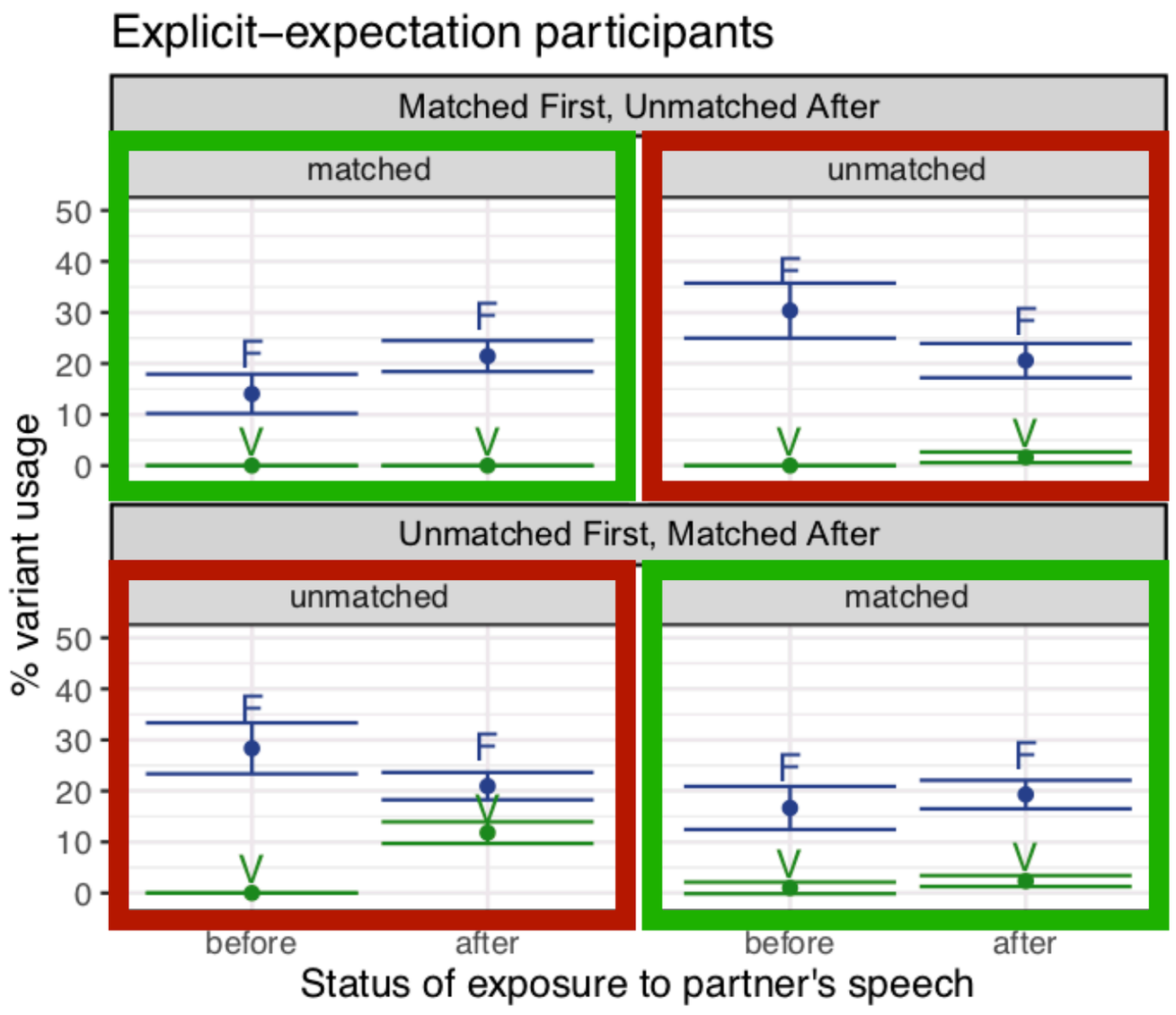
[f] rates increase after observing confirmatory behavior and decrease after observing contradictory behavior.

Results

Order effects

Results

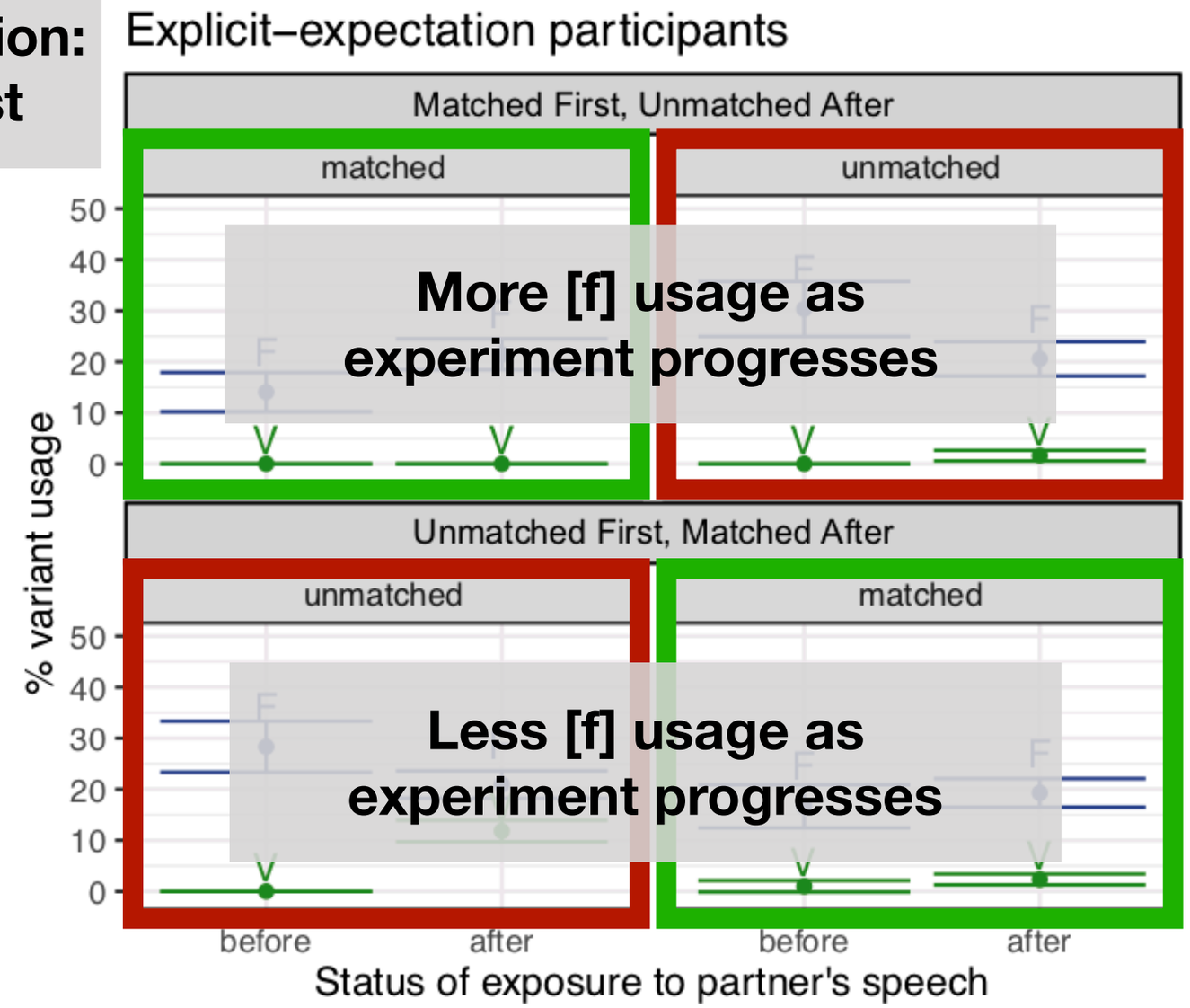
Confirmatory vs. **Contradictory** Behaviors



Results

Confirmatory vs. **Contradictory** Behaviors

Significant interaction: Phase*WhichFirst



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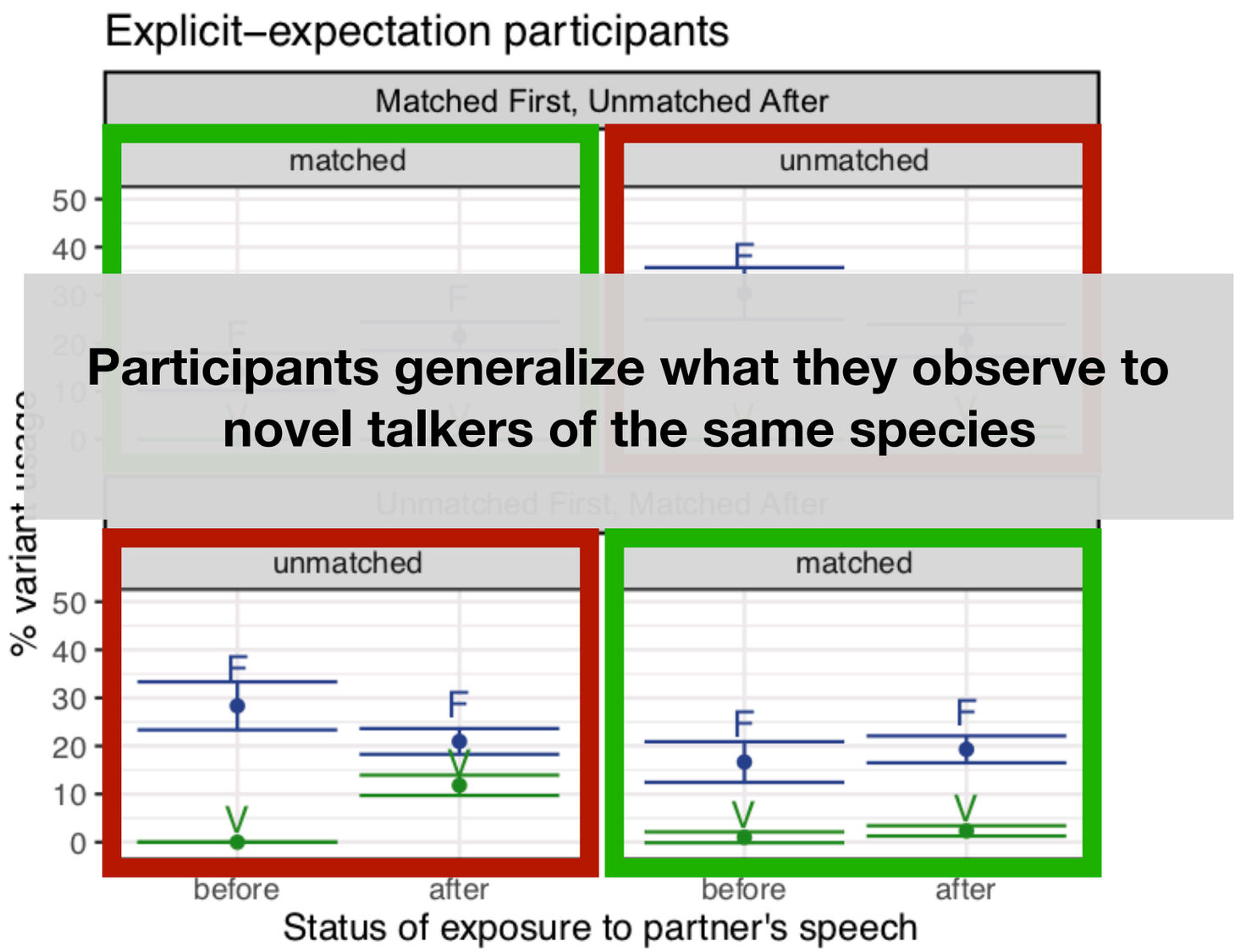


Participants generalize what they observe to novel talkers of the same species

Summary

Results mirror findings outside of the lab that speakers converge to both observed and expected behavior

Participants form expectations relatively quickly (12% P-usage for no expectation participants by the end of the game)

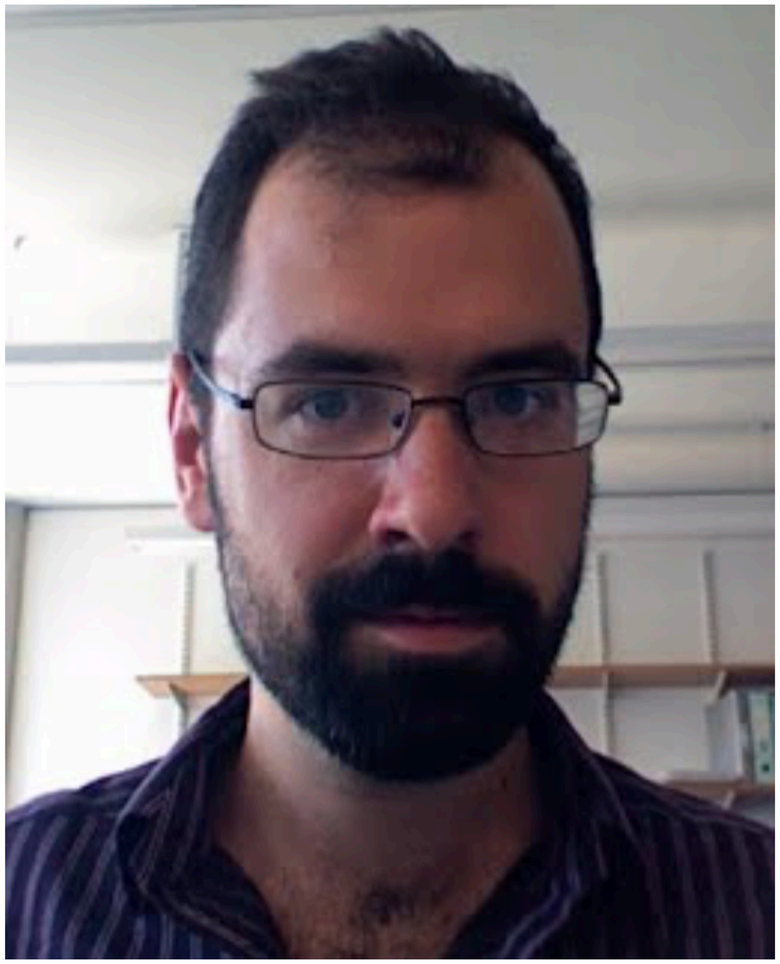
While some participants updated their expectations when faced with contradictory information, some continued to use the expected form

- May be indicative of different ways of incorporating information into social representations
- Expectations are strong—in contradictory conditions, convergence rates are higher toward expectations than toward observations
- Learning can occur after relatively limited exposure to a single partner

Adds to our understanding of sociolinguistic knowledge formation and listeners' capacity for updating sociolinguistic stereotypes

Implications for the role of convergence in sound change

Thank you!



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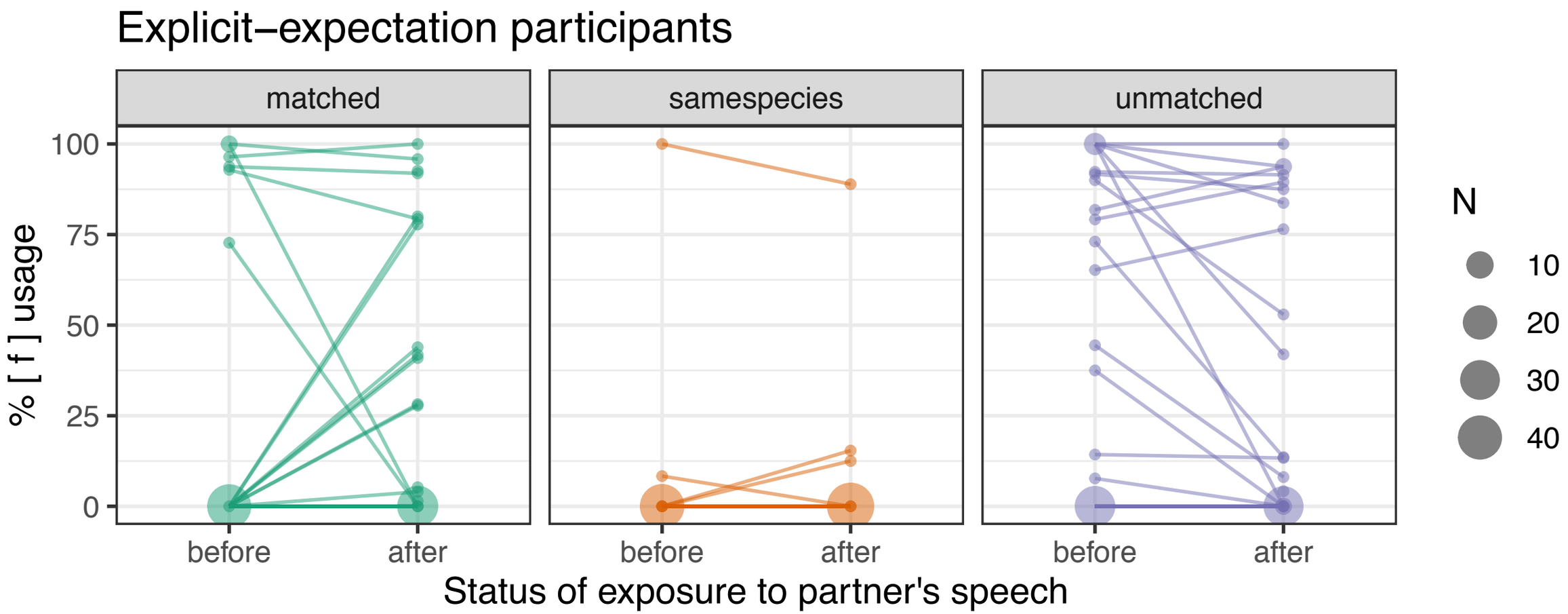
RA Daksh Chhokra

Results

Individual Differences



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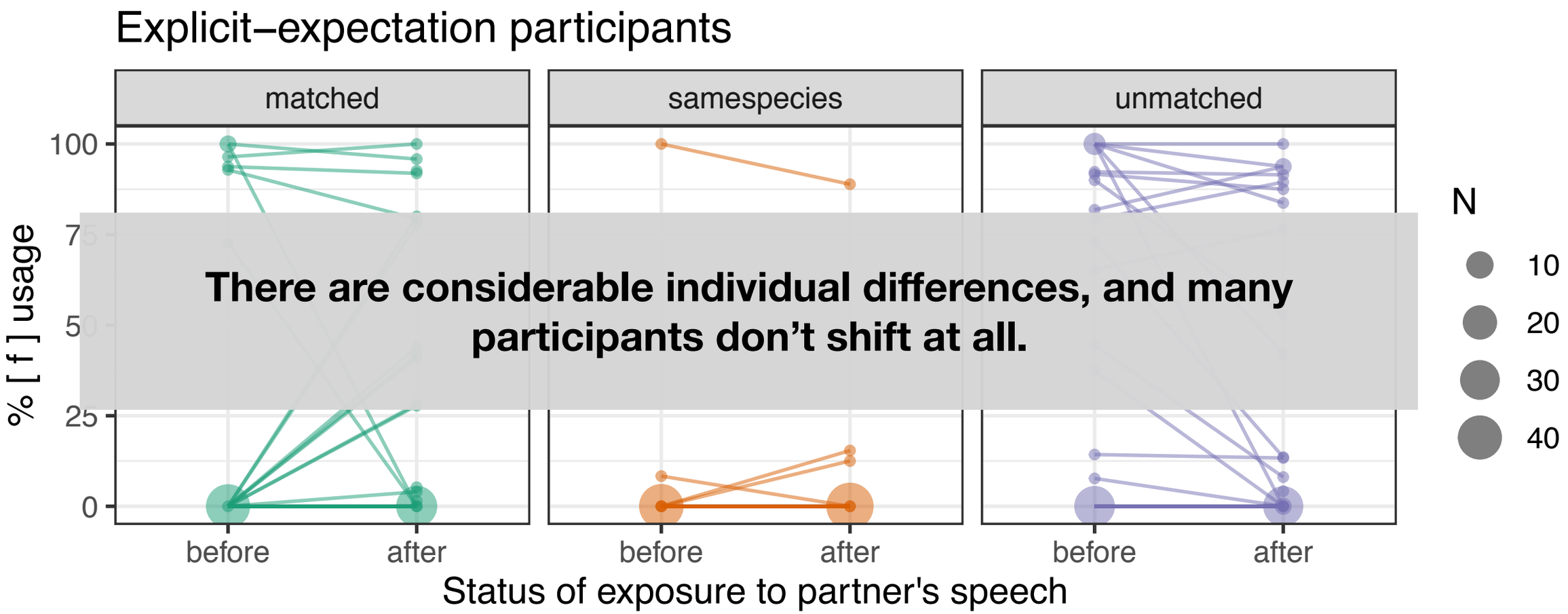
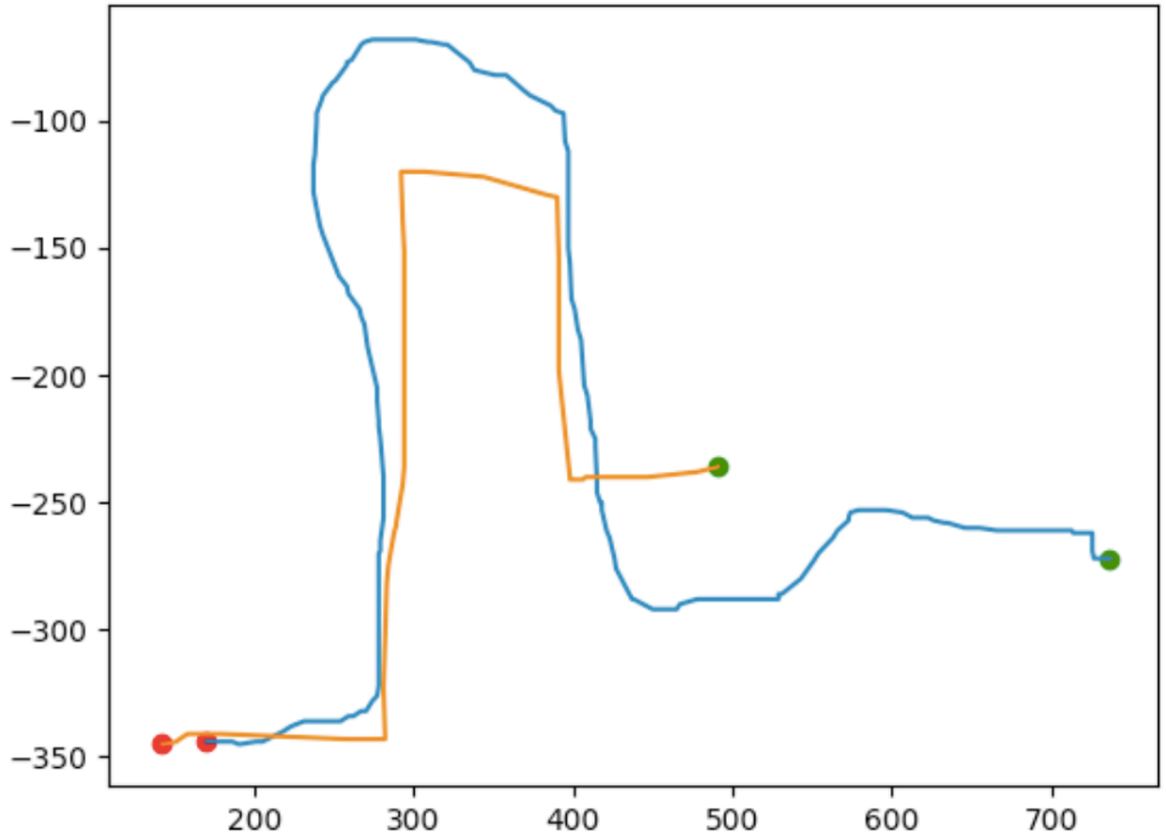


Results

Success on map task

- Measured by how closely the drawn line matches the goal line
- Convergence rates do not predict success on the map task



Results

Degree of Interaction

- Measured as adjacency pair rate
- Moderate correlation with no-expectation participants' usage of accommodative variant [p] (Pearson's R = 0.188, p = .0197)
- Degree of interaction does not predict convergence for explicit-expectation participants