The emergence of words from iterated vocal imitation

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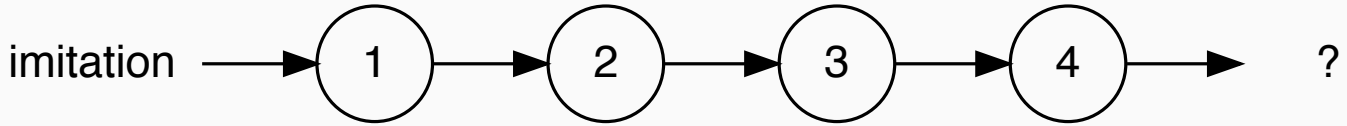
Are names for things natural or conventional?

Which is more important to language evolution?

Onomatopoeic words are found across languages

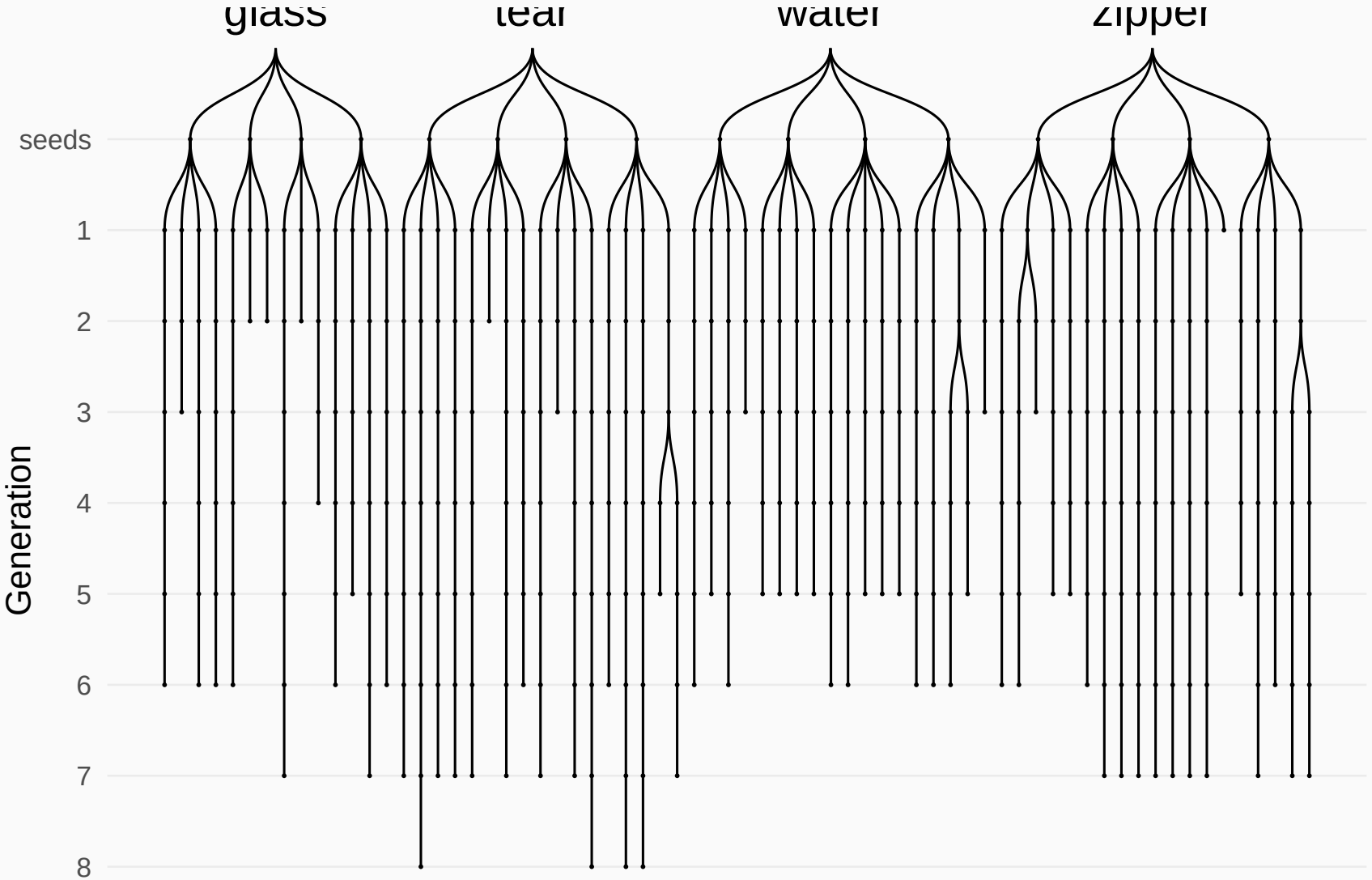
Figure 1: By James Chapman.

Can words emerge from iterated imitation?



Interface for collecting vocal imitations

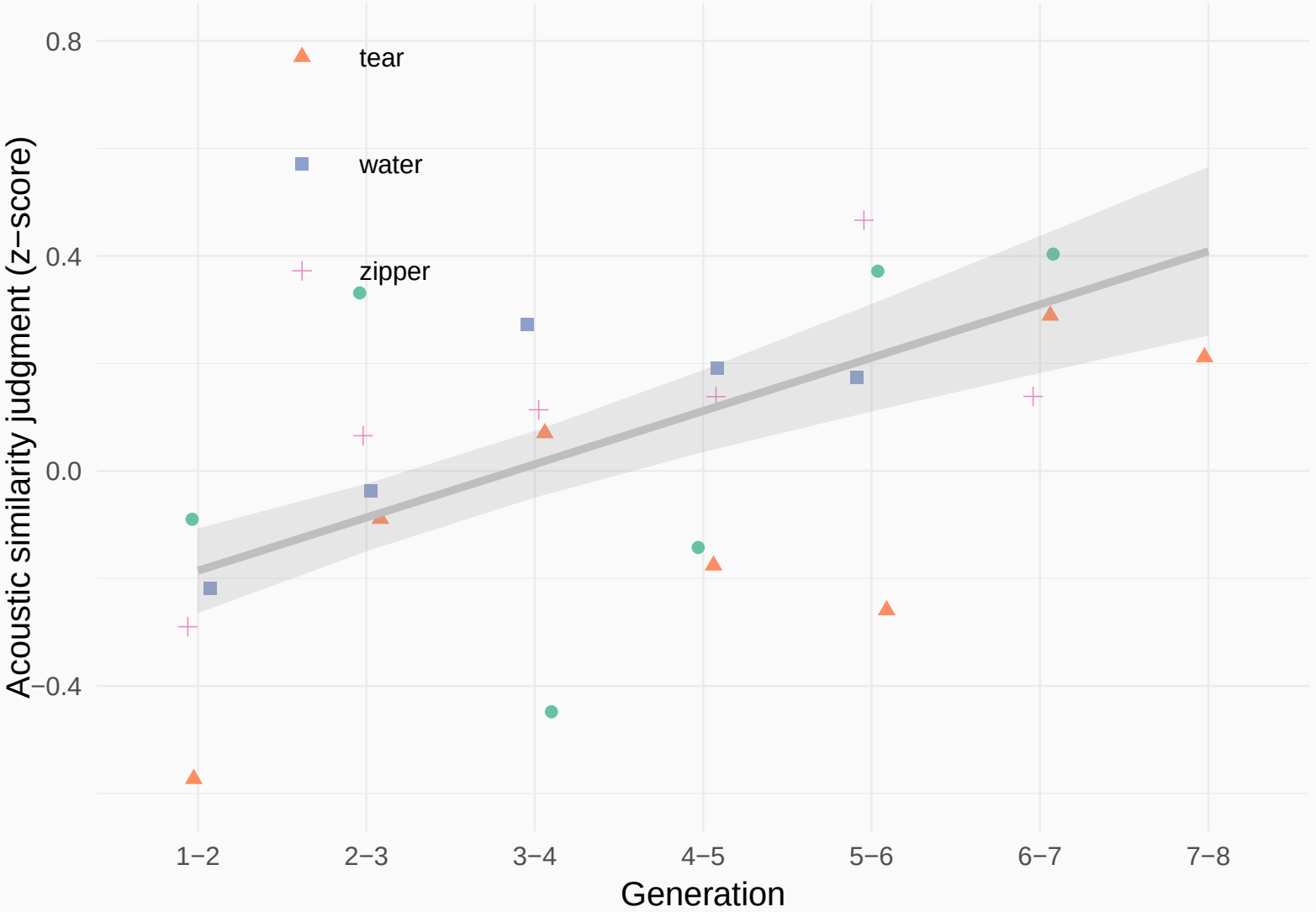
The results of the transmission chain experiment



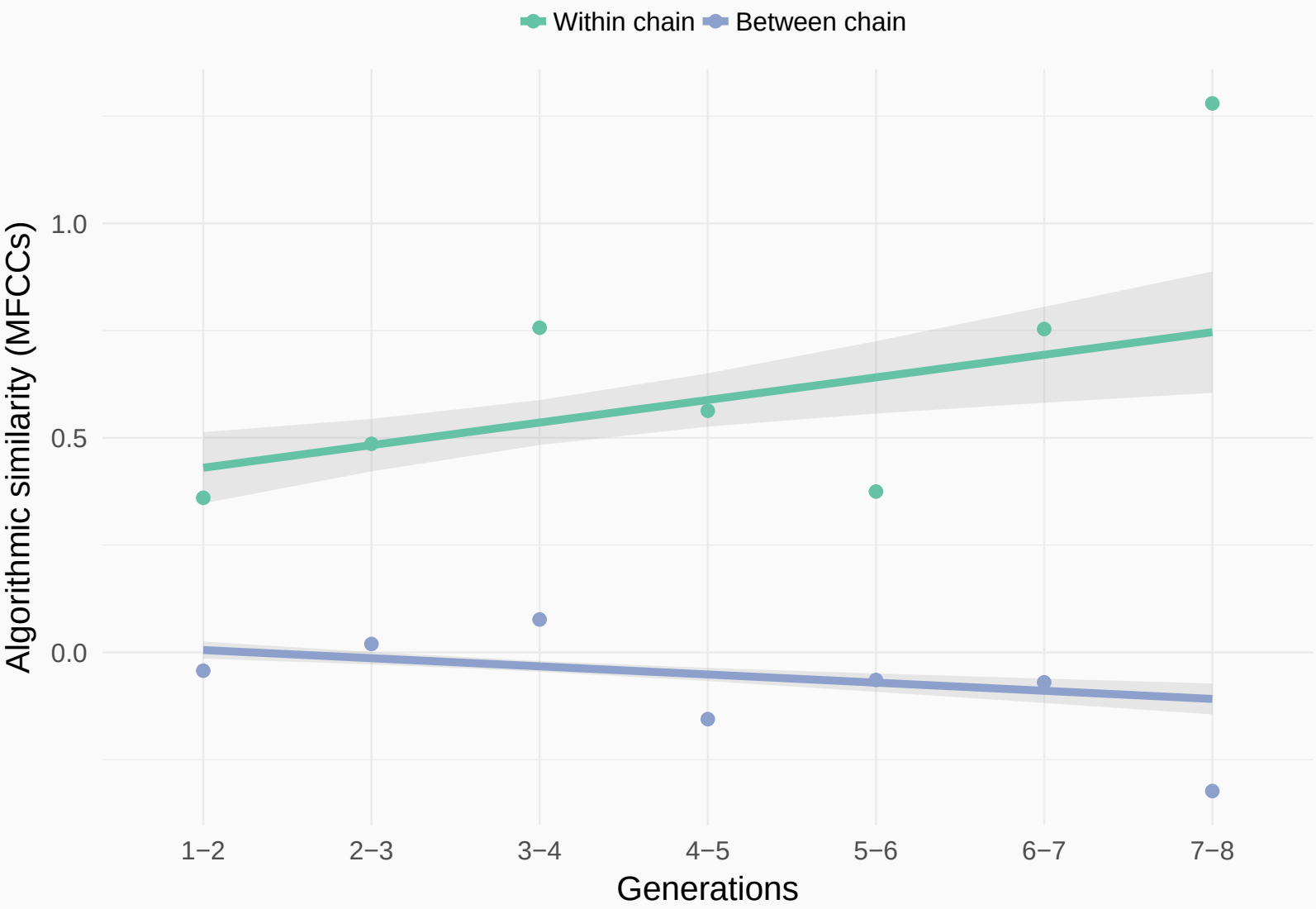
Research questions

1. Do repeated imitations stabilize on particular words?
2. Do the imitations retain their resemblance to the seed sound?
3. Do the imitations become more suitable as category labels?

Repeated imitations became more similar



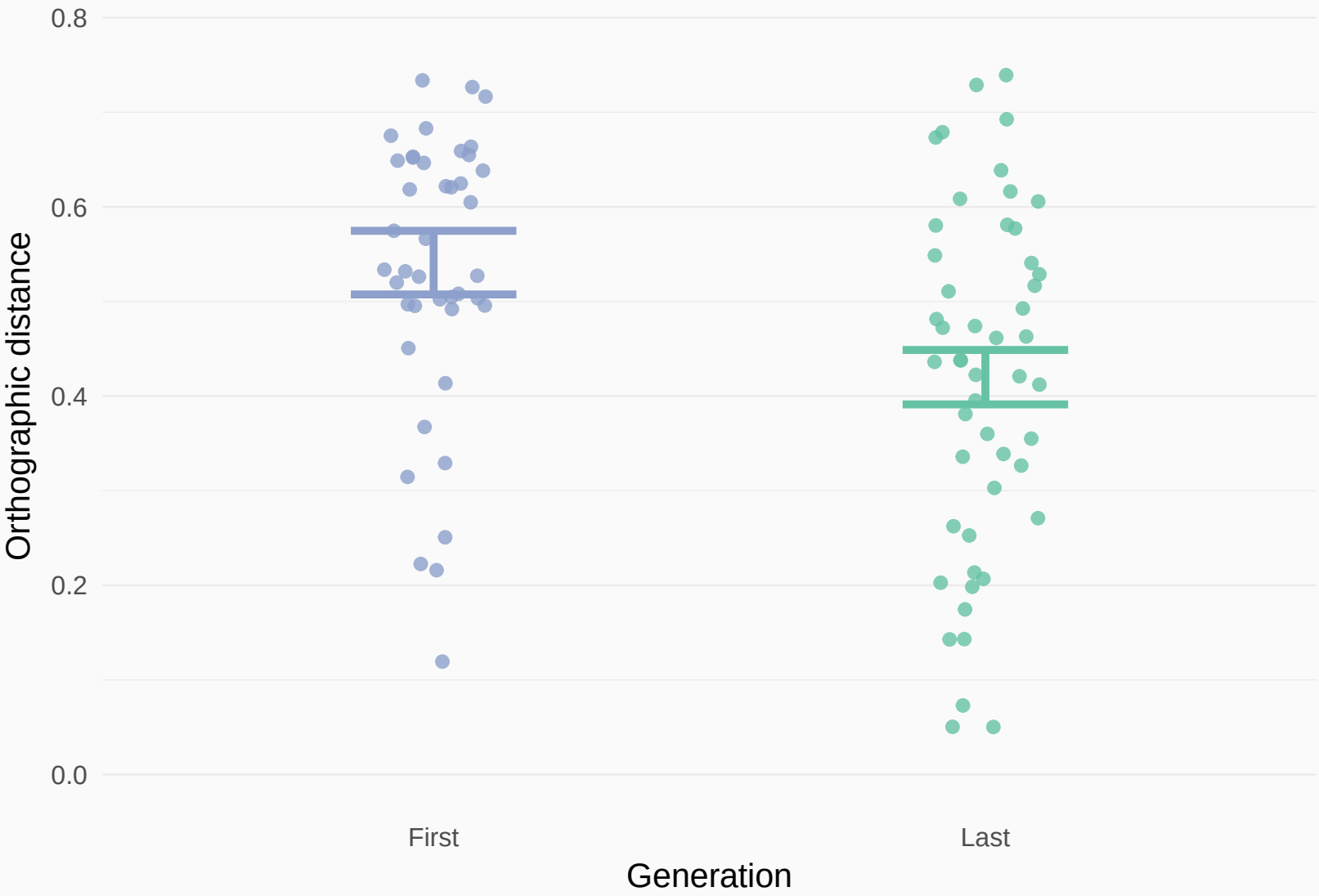
Similarity increased within, not between, chains



Example transcriptions

Category	Seed	First generation	Last generation
glass	1	tingtingting	deetdedededeet
glass	2	chirck	correcto
glass	3	dirrng	wayew
glass	4	boonk	baroke
tear	1	scheeept	cheecheea
tear	2	feeshefee	cheeoooo
tear	3	hhhweerrr	chhhhhhewwwe
tear	4	ccccchhhhyeaahh	shhhhh
water	1	boococucuwich	eeverlusha
water	2	chwoochwooochwooo	cheiopshpshcheiopsh
water	3	atoadelchoo	mowah
water	4	awakawush	galonggalong
zipper	1	euah	izoo
zipper	2	zoop	veeeep

Repeated imitations were transcribed more consistently

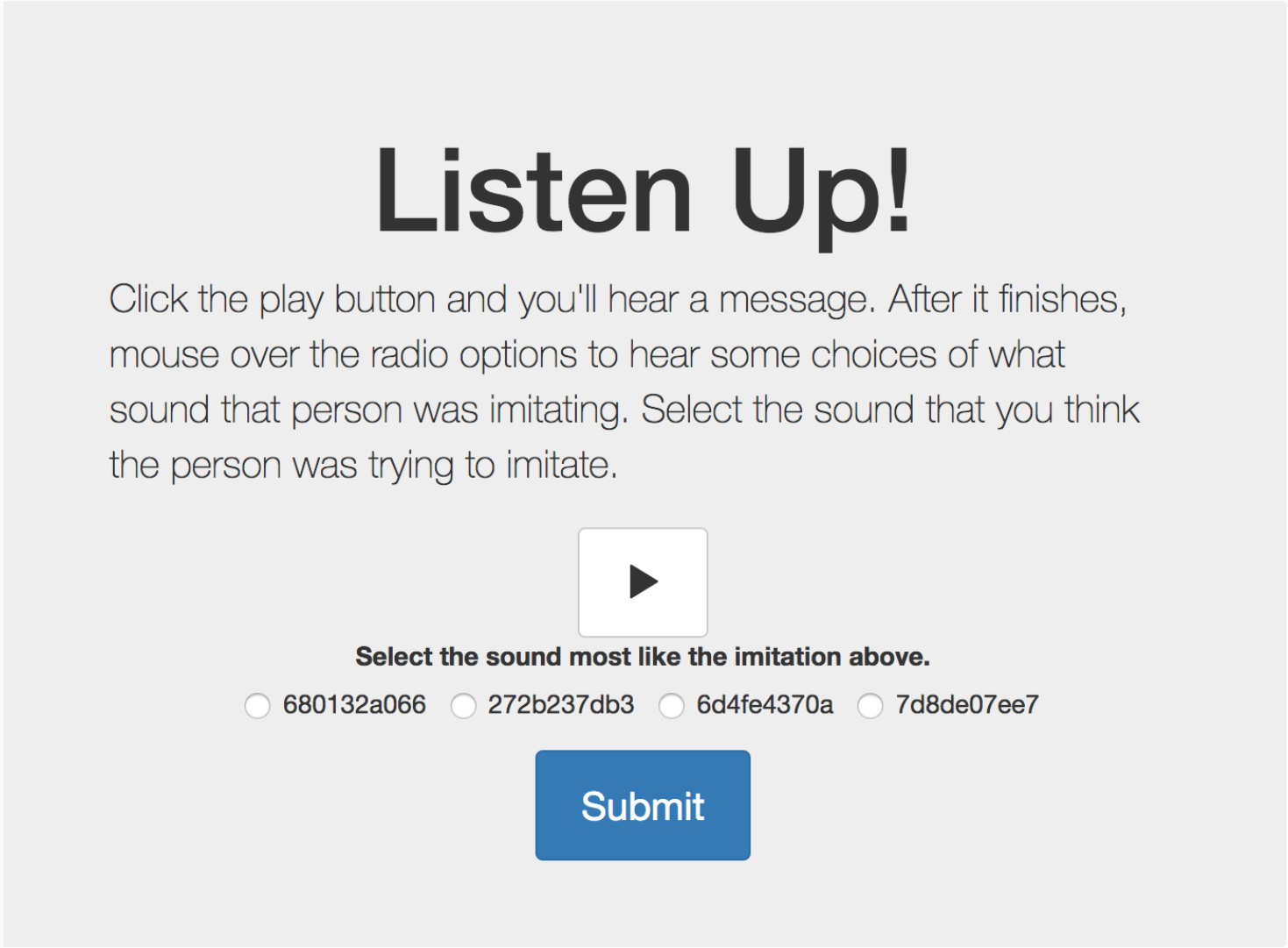


1. Do imitations stabilize on particular words?

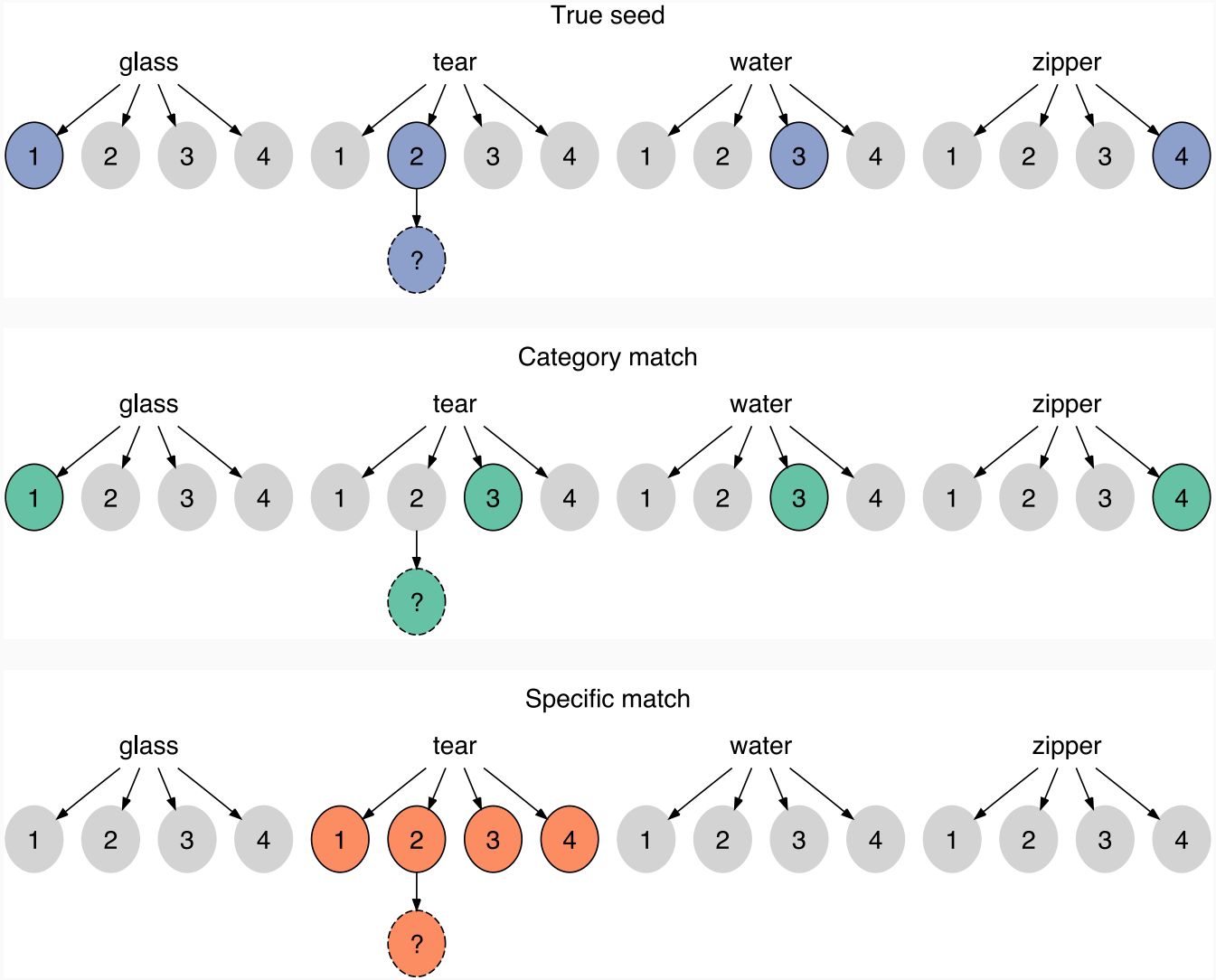
Yes. Repeating imitations makes them more similar to one another acoustically and orthographically.

But what are they stabilizing on?

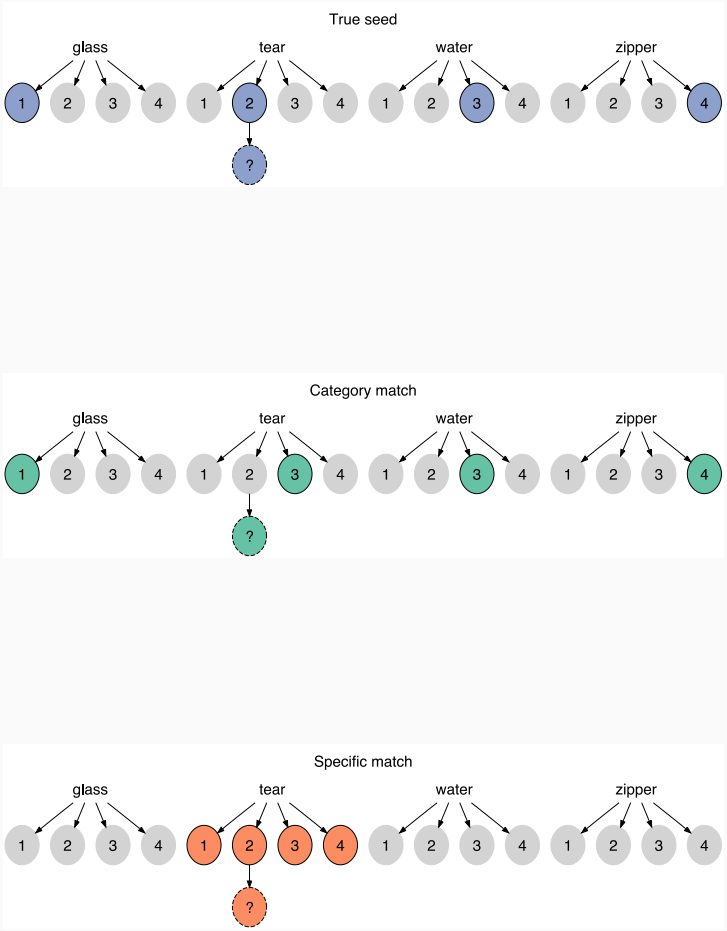
Interface for matching imitations to seed sounds

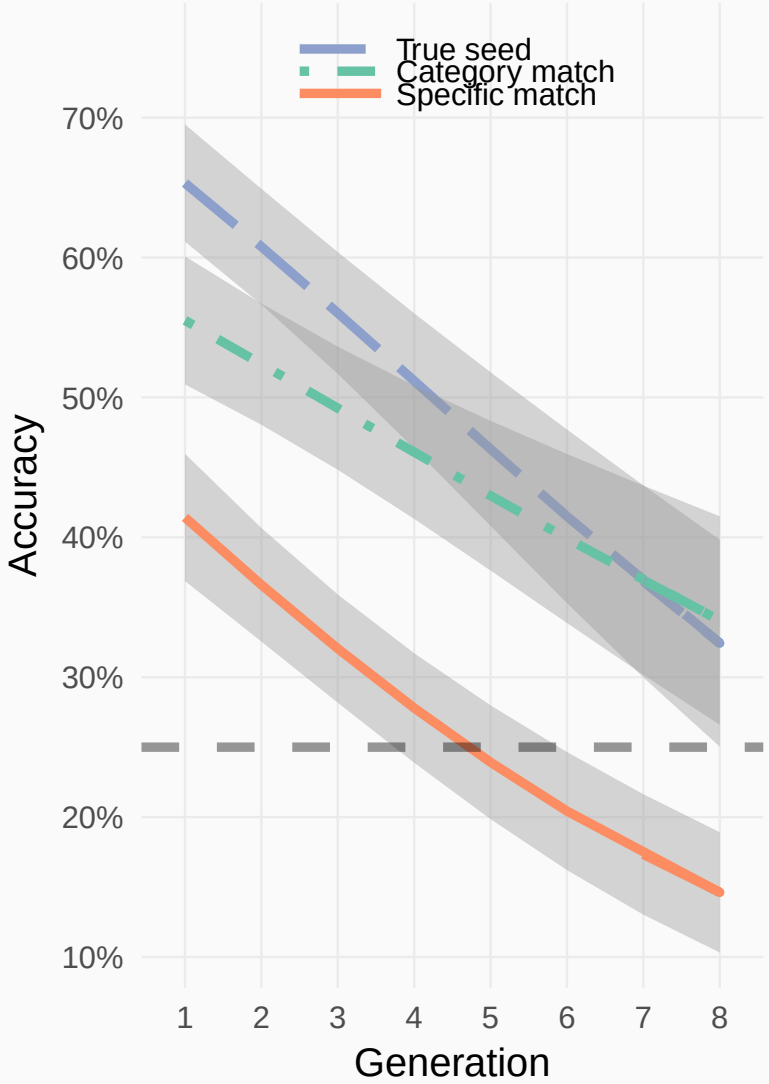


Types of matching questions

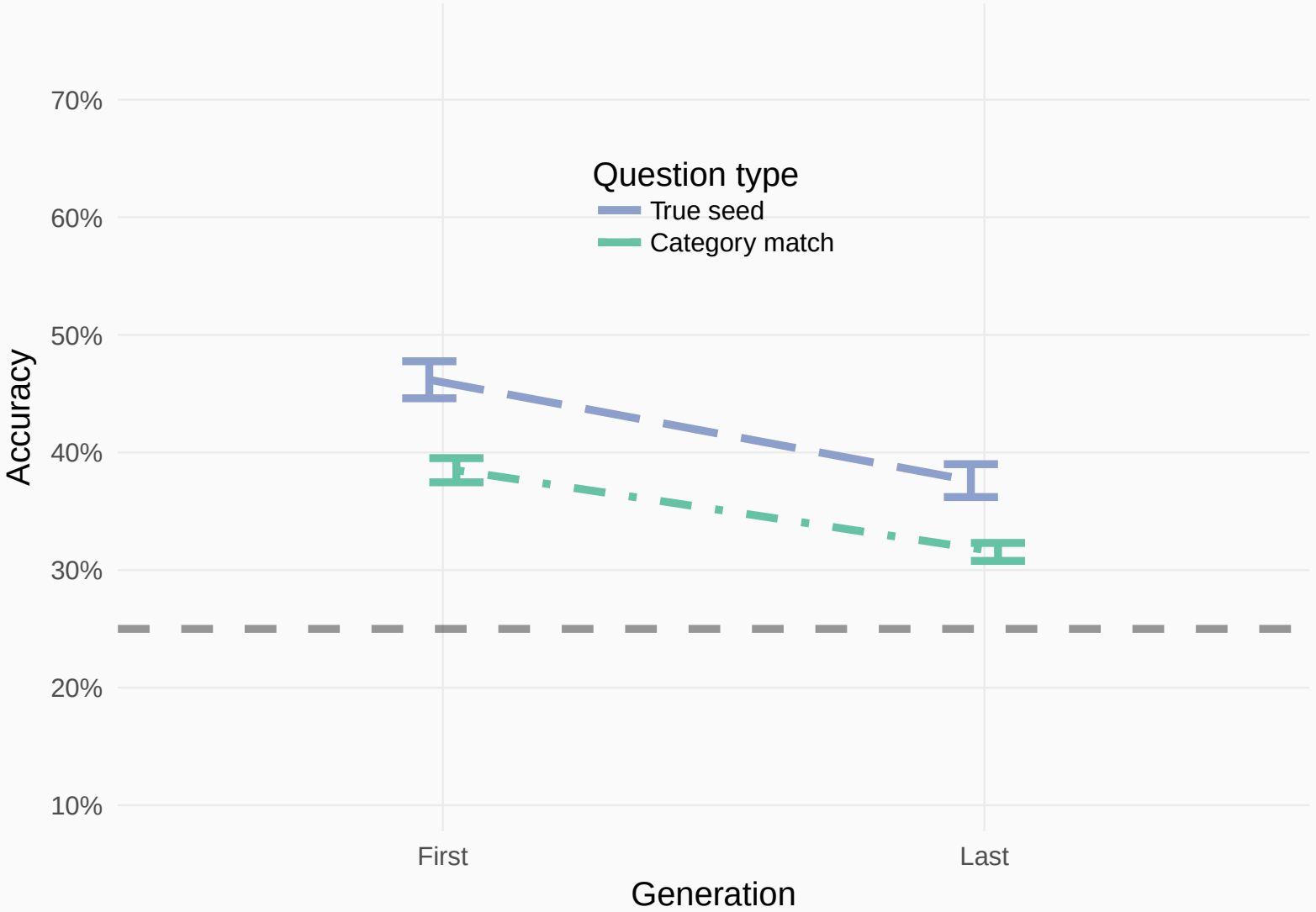


Category information was the most resilient to decay





Transcriptions can retain category informations

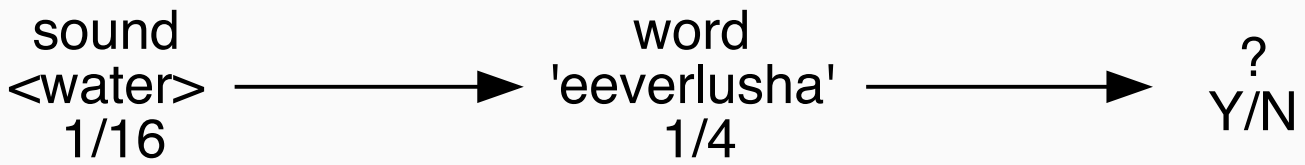


2. Do imitations retain a resemblance to the seed sound?

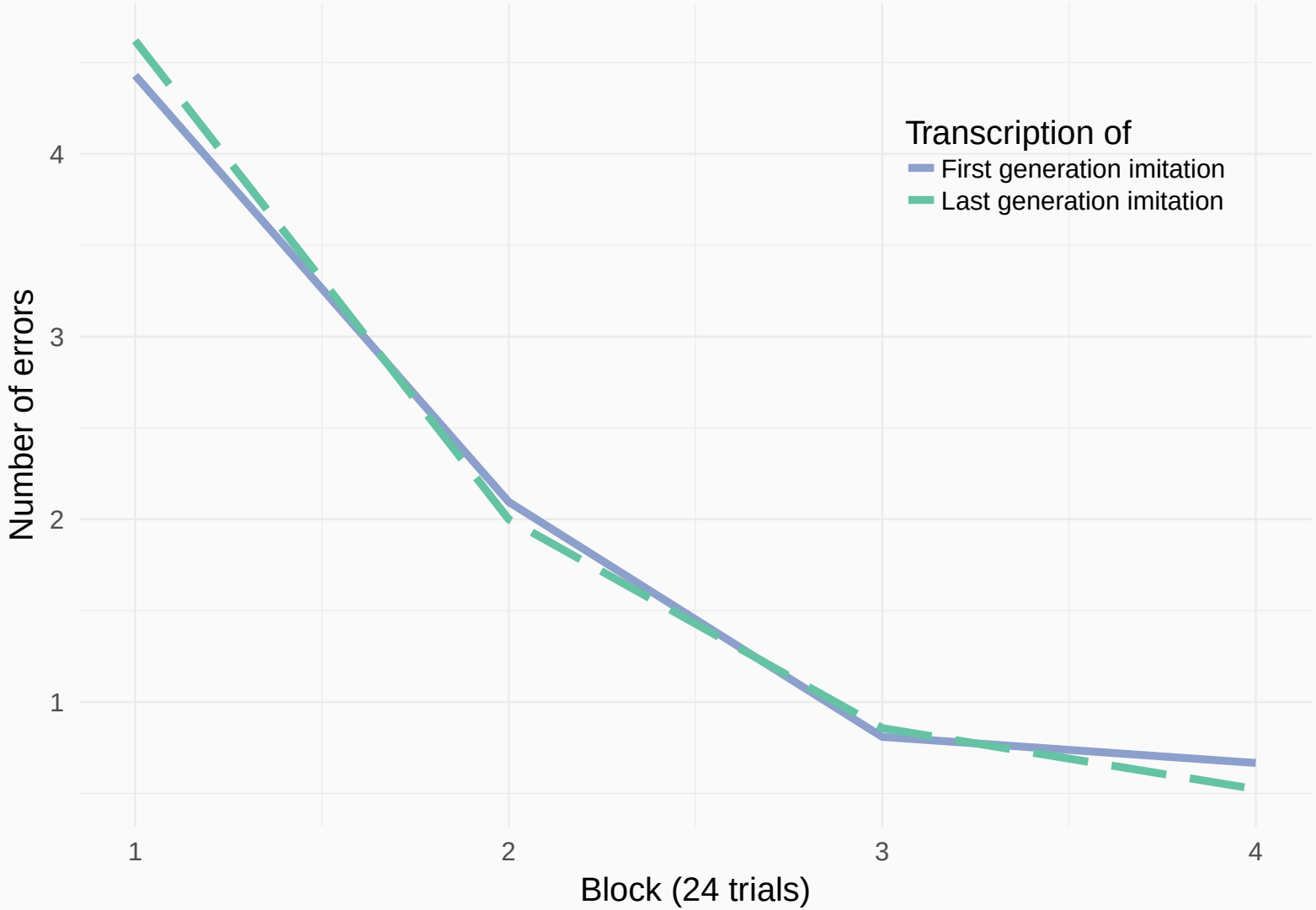
Yes (at least for 8 generations with 4 categories).

What are the consequences of repeating imitations for learners?

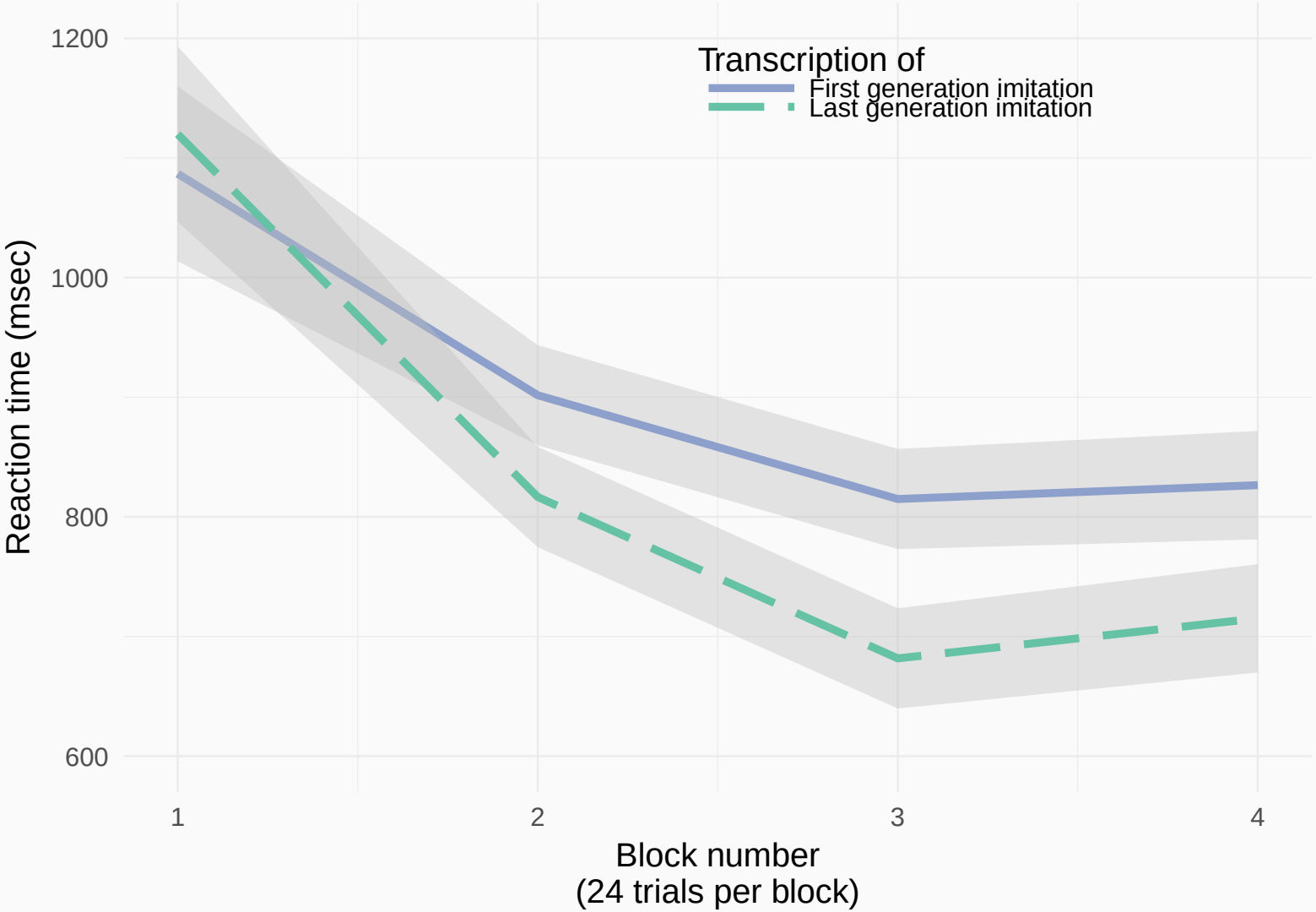
A simple category learning experiment



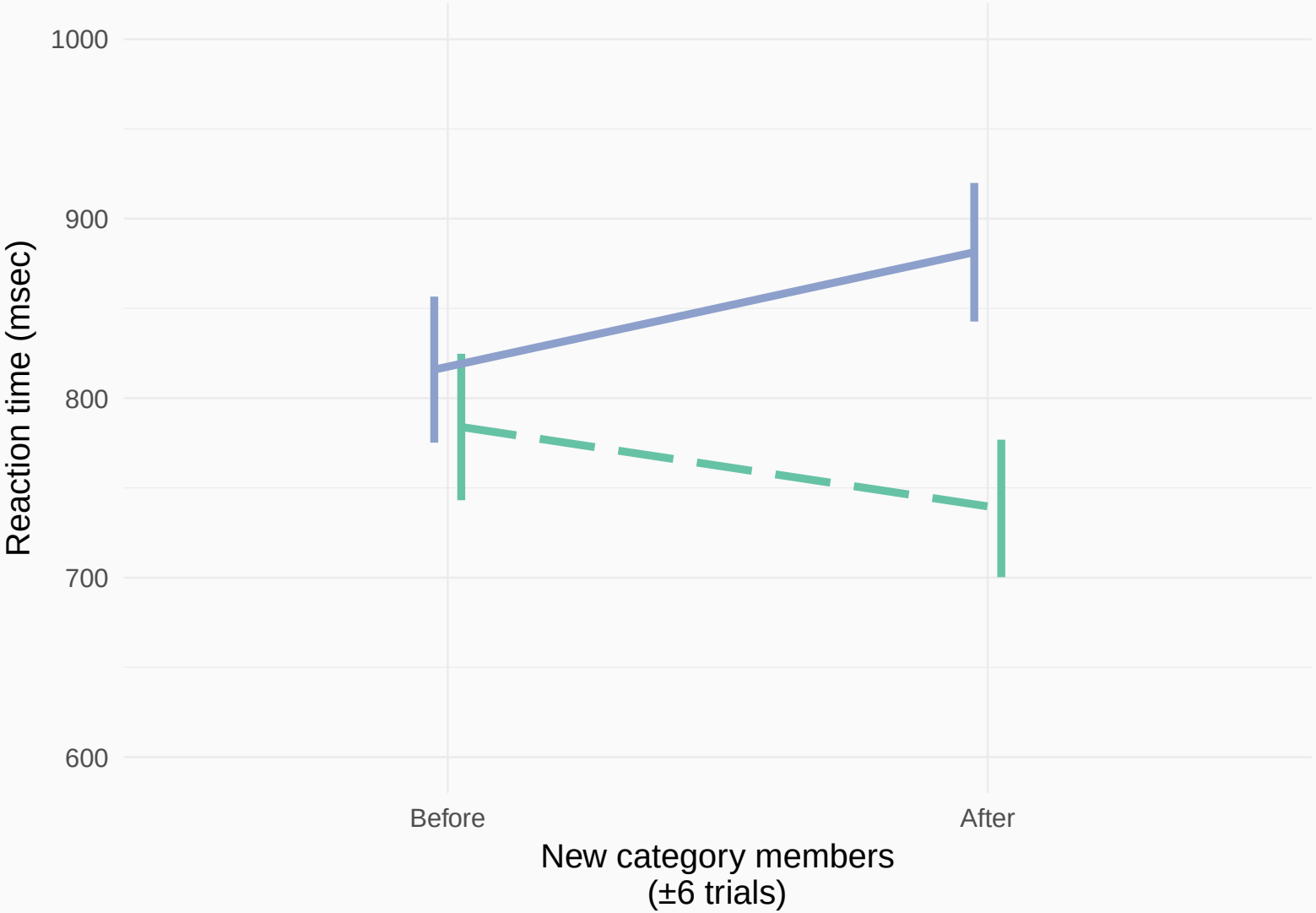
No difference in accuracy for novel labels



Later generation labels yielded faster responses



Later generation labels were generalized more quickly



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Thanks!

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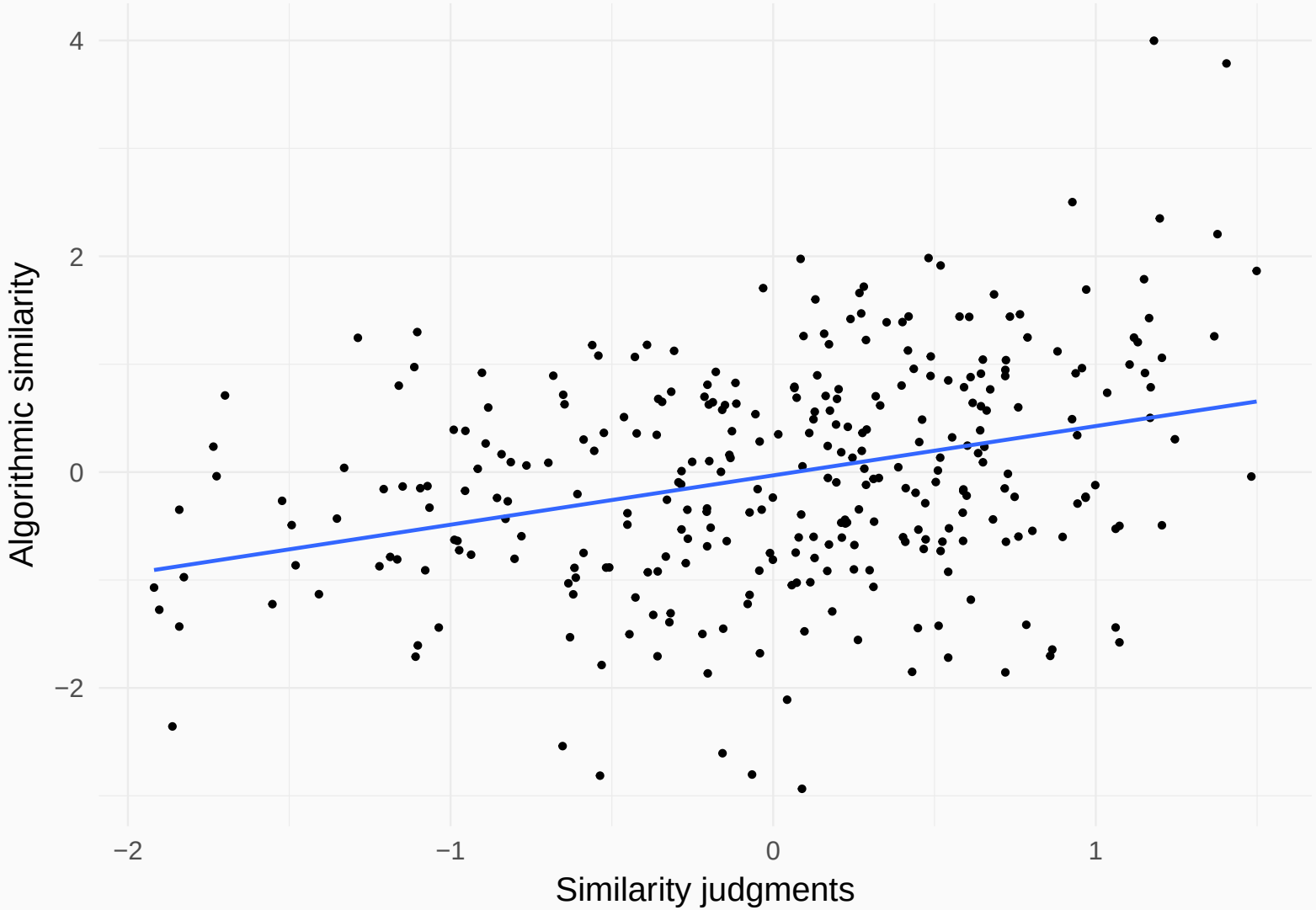
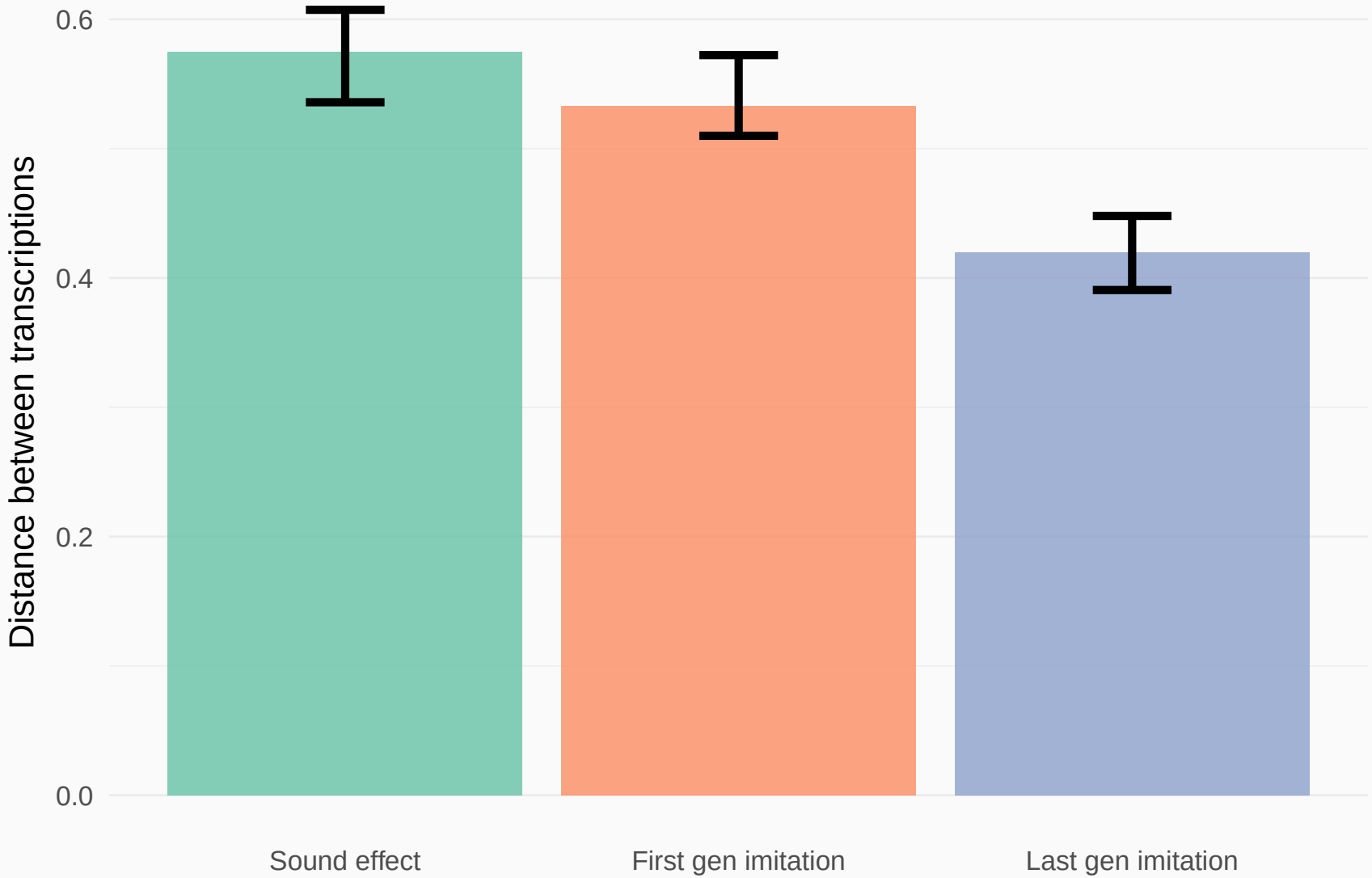
github.com/lupyanlab/creating-words

osf.io/3navm

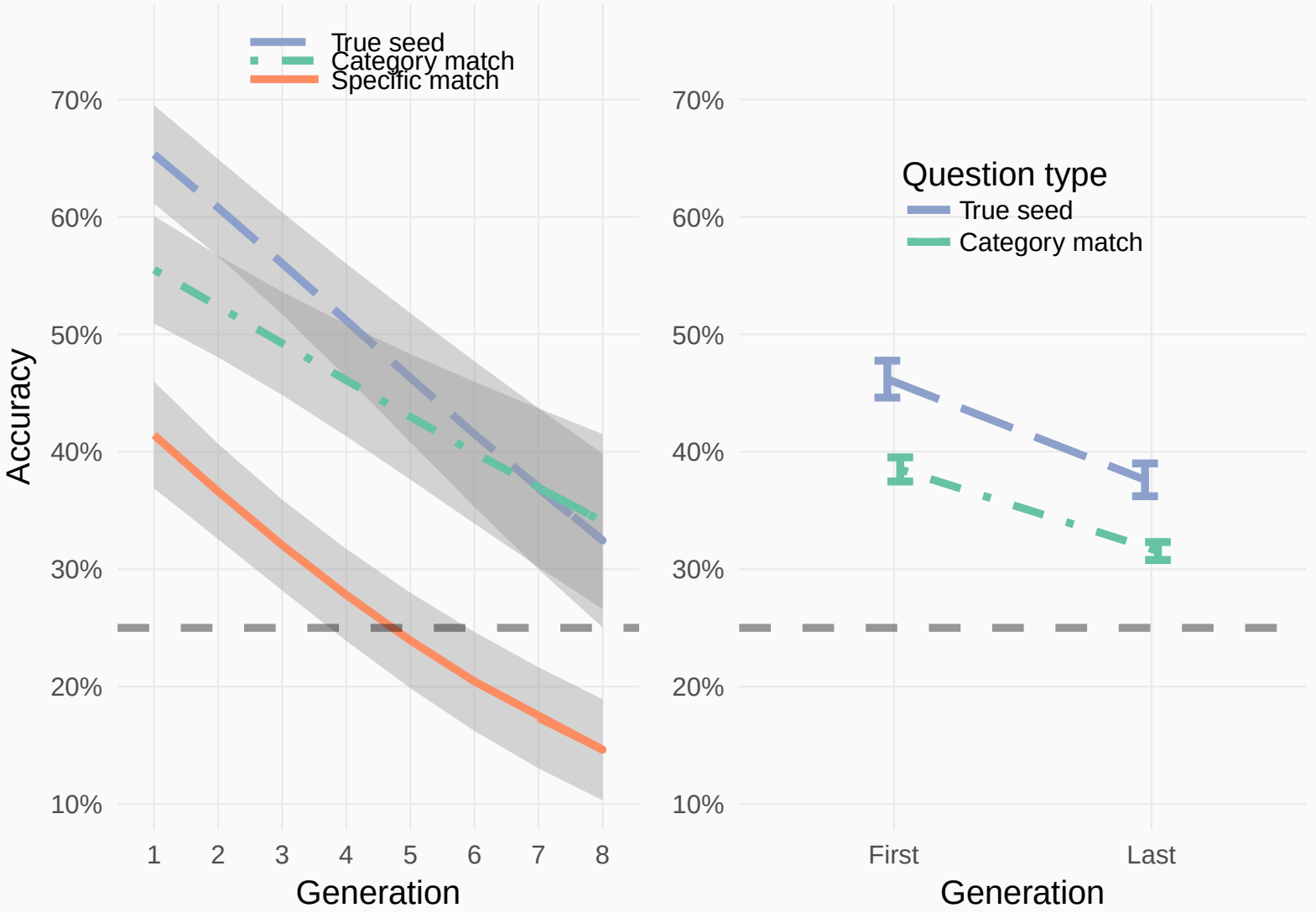
Correlation between subjective and objective similarity



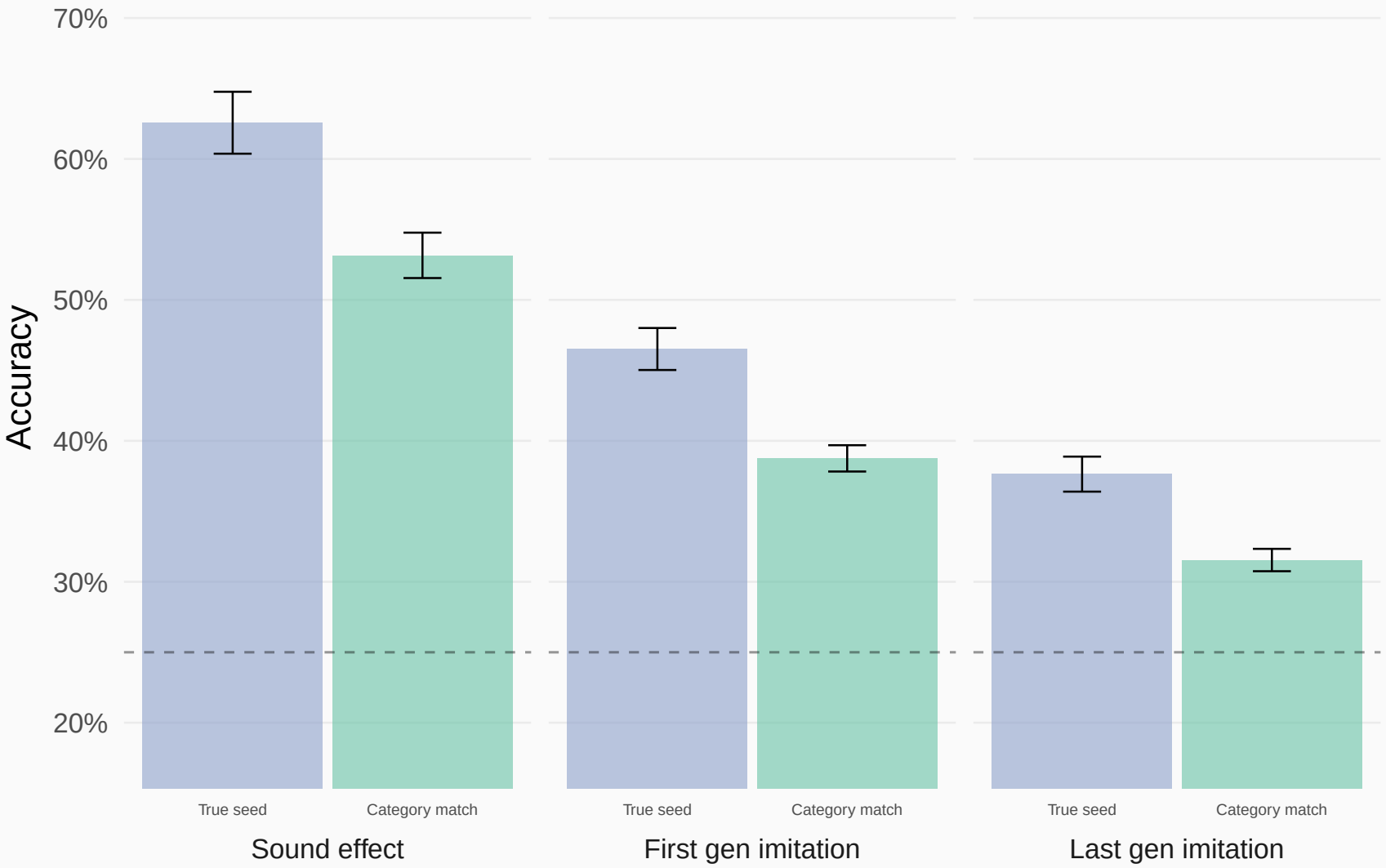
Transcriptions of seeds were the least consistent



Match accuracies for imitations and transcriptions



Transcriptions of seed sounds were matched very accurately



Transcriptions of seed sounds ???