

# Obligatorification in grammatical change

## An experimental angle on the emergence of articles in Early English

Eötvös Lorand University, Budapest  
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# What is this talk about?

## (1) The big issues:

**Why** have **articles emerged** and become stably established in English?

**Why** does the expression of conceptual categories become **obligatory** as they grammaticalize?

## (2) The question on which we focus:

Assuming a mixed population, in which some speakers already had articles, while others didn't yet ...

**Did accommodation** in adult-adult communication **favour the spread of articles** to the extent of making it (nearly) **inevitable**?

## (3) The methodological issue:

How **can** controlled **experiments help** to test hypotheses about language change?



# Structure

- (1) A **general and rough sketch of article emergence** in Early English  
(fast and informative: please concentrate)
- (2) A **hypothesis** about the potential role of **accommodation** in article spread in particular, and in obligatorification in general.

(3) An **experiment** by which the hypothesis is tested.

- (4) A **conclusion** regarding ...
  - a) the experiment
  - b) its implications for article emergence and grammaticalization
  - c) its implications for the study of language evolution in general

# A sketch of Article Emergence



(cf. Sommerer 2010, 2012 a & b)

definite article <i>the</i>	←	OE demonstrative <i>se / seo / þæt</i>
indefinite article <i>a(n)</i>	←	OE numeral <i>án</i>

- The ‘**recategorizations**’ of these items reflect **changes** that **actually occurred to** Early English **grammars**.
- By these changes the **explicit marking of reference relations** of specific noun phrase types **became obligatory**.
- The **demonstrative** and the **numeral** were co-opted as **default markers** of these reference relations.

# In OE reference marking was optional

Here you have it ...

(1) *þa Eadmund clypode ænne bisceop* [...]  
then Eadmund summoned a bishop

Then, Edmund summoned **a bishop** [...]

[...] *þa forhtode se bisceop*  
[...] then was afraid that bishop

[...] **the bishop** was frightened.

(Ælfric *Saints* XXXII.56)

... here you don't:

(2) *stonc*    *ða* *æfter*    *stane*    *stearcheort*    *onfand*    *feondes*    *fotlast*  
jumped    then behind    rock    stouthearted,    found    enemy's    footprint

He jumped behind **a rock**, courageously, and discovered **an/the enemy's** footprint.

(*Beowulf* 2288)

(3) *Gecyste*    *þa*    *cyning*    *æpelum*    *god*,    *þeoden*    *Scyldinga*,    *ðegn*    *betstan*  
kissed    then king    nobles.DAT    good,    Lord    of Scyldings,    warrior    best

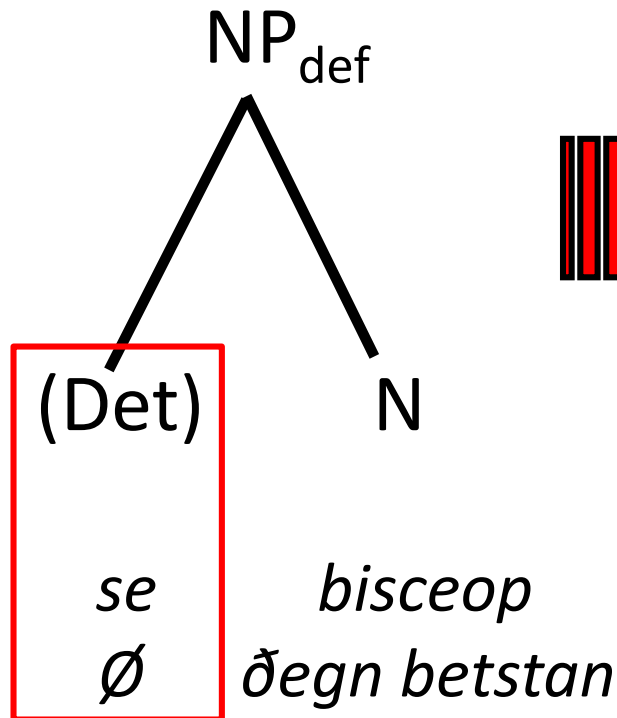
**The** good king of the nobles, **the** lord of **the** Shieldings, kissed **the** best warrior

(*Beowulf* 1870)

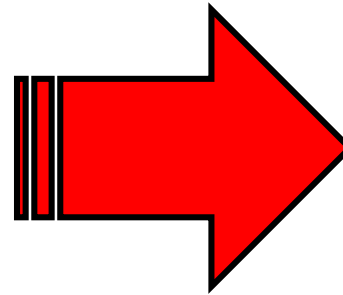


# Demonstrative

## Grammar A

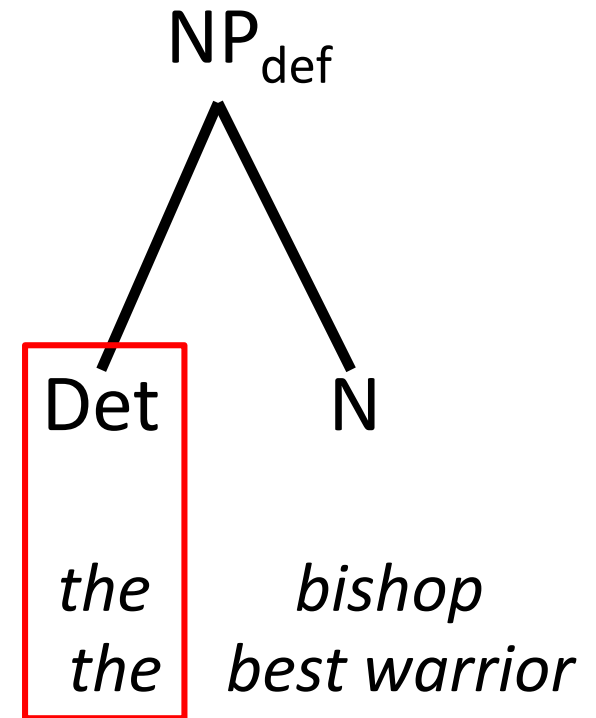


æenne biscoep ...  
Gecyste ...



# Article

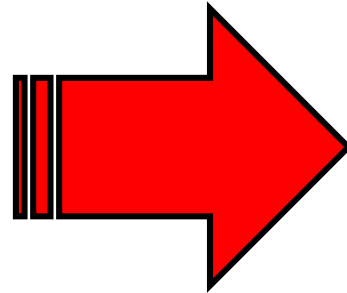
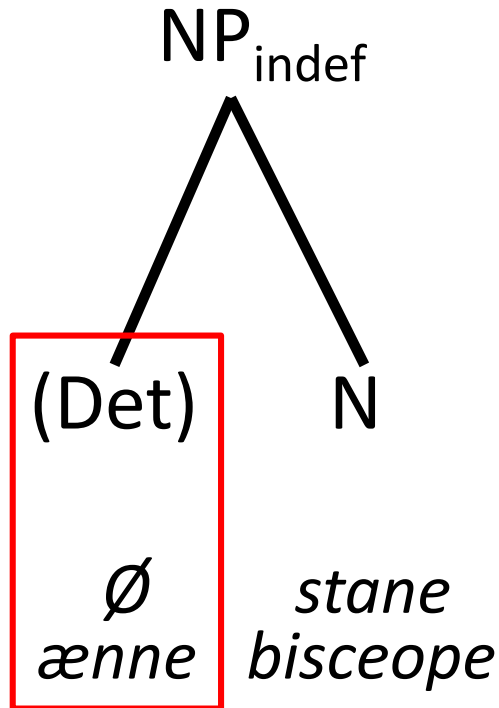
## Grammar B



a bishop ...  
kissed ...

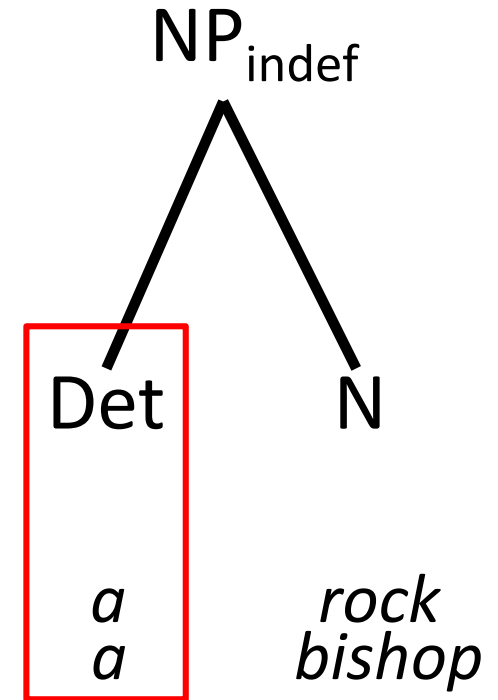
# Numeral

## Grammar A



# Article

## Grammar B





# Phases in article emergence

**Phase 0:** In **resident type** grammars without articles, reference marking (**R-marking**) is optional, and conditioned

- (a) **Pragmatically** (how easily can the referent be inferred, how listener-friendly and explicit do I want to be?)
- (b) **Conventionally**

**Phase 1:** Convention drifts, the **frequency** of R-marking **rises**.

**Phase 2:** **ARTICLE EMERGENCE:** Exposed to input in which R-marking abounds, **some learners infer a categorical rule, making it obligatory**.

**Phase 3:** **ARTICLE SPREAD - Mutant grammars spread** at the cost of the resident type.



## Phases 0 & 1

- That a unique **definite** or a unique **indefinite** reference relation obtains **may** (or **may not**) be **signalled**.

**Def:** demonstratives (*se-seo-ðæt*), possessives, possessive NPs, etc.

**Indef:** the numeral *án*, the indefinite pronoun *sum*, etc.

- When R-signalling is syntactically optional, it is **conditioned**
  - (a) **Pragmatically** - reflecting the relative difficulty involved in inferring the referent, as well as considerations of politeness.
  - (b) **Conventionally** - reflecting agreement concerning the degree of inferential difficulty above which the explicit signalling of R-relations is felt to be warranted.
- In discourse, **the population of referring NPs** will display **variability** with regard to R-marking.
- Since **conventions are subject to drift**, the **probability/frequency of R-marking** may fluctuate and **reach high levels**. ... over time it will ...

## Phase 3 – Article spread

### What we know (but only in hindsight)

Having emerged, categorical and obligatory R-marking grammars were transmitted more successfully than optional R-marking grammars and eventually ousted them from the population.

### What we do not (yet) know:

**Why** was this the case?

**Language acquisition?** - Children favour simple categorical grammars over grammars that involve finer distinctions. But why do they not revise/refine them as they continue to communicate with adults?

**Accommodation in adult-adult communication?** - Categorical usage is easier to imitate than optional, pragmatically conditioned usage. It will therefore spread inevitably, as long as speakers are inclined to accommodate to one another.

## In accommodation ...

... the question is who will accommodate to whom.

(a) **Speaker based asymmetries**: e.g. relative social prestige

(b) **Language based asymmetries**: e.g. perceptual salience, phonemicity, etc.

In the case of **article emergence** (and in all cases of obligatorification) we assume a **language based asymmetry**

because ...



... because ...

### Speakers who mark reference optionally ...

- (a) will perceive categorical usage as grammatically possible, if perhaps somewhat over-explicit.
- (b) to accommodate, they only need to make more use of an option they have anyway.

### Speakers who mark reference categorically ...

- (a) will perceive a lack of expected R-marking as odd ('ungrammatical').
- (b) lack the sensitivity for the finer pragmatic distinctions conditioning optional reference marking, they will find it difficult to accommodate.

Nice story, but is it true? Being plausible is **NOT** good enough.

## An experimental test

- **Construct** an **artificial miniature language** with two varieties, so that variety (A) marks a category optionally, while variety (B) marks it obligatorily.
- **Train pairs of participants** on that miniature language, so that one of them learns variety (A) with optional marking, and the other variety (B) with obligatory marking.
- **Have them interact** using the miniature language.
- **See what happens.**



**Kenny Smith & Olga Féher**

*Language Evolution and  
Computation*

University of Edinburgh



## Constructing the mini-language

- Re-constructing article usage in a mini language is impossibly complex.

**Is that a problem? – NO**

- What is the **essence** of our research question?

When speakers who mark an inferable concept optionally meet speakers who mark it categorically, who accommodates to whom?

For testing that, **ANY inferable concept** will do.

We chose the conceptual category NUMBER rather than reference relation.



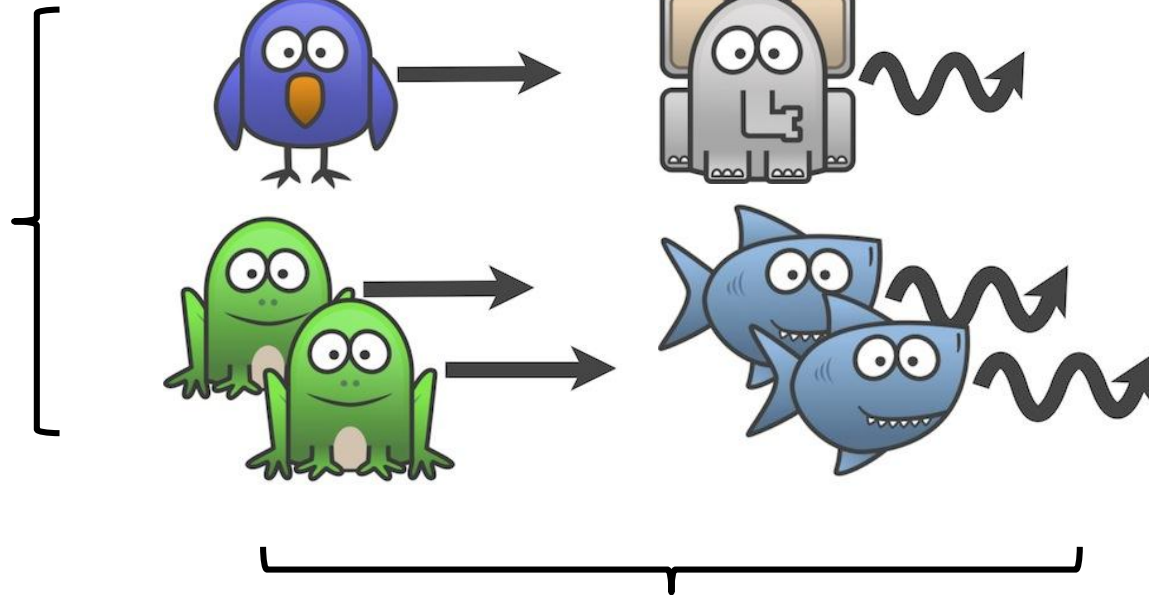
# Things to talk about ...

Animal SPECIES:



ONE

or MORE:



Type of MOVEMENT:



# Target language

S → V N (Num)

V → {*wooshla*, *boingla*}

N → {*beeko*, *trunko*, *hoppo*, *bugo*, *oinko*, *fino*}

Num → 2 from {*bup*, *dak*, *jeb*, *kem*, *pag*, *tid*, *wib*, *yav*}

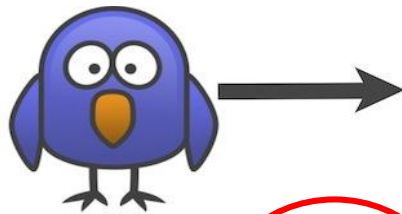
Plurals: always marked with overt Num, e.g. *wib*

Singulars:    **Variety (A):** **sometimes** marked with overt Num, e.g. *dak*  
                  **Variety (B):** **always** marked with overt Num, e.g. *dak*

Since **absence of plural** marking **implies singular**, **singulars are redundantly marked**.

# Example utterances

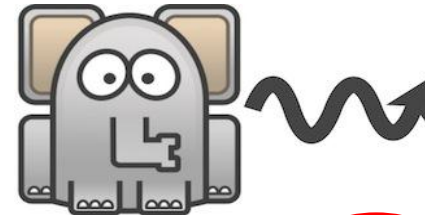
Singulars:



*wooshla beeko dak*

OR

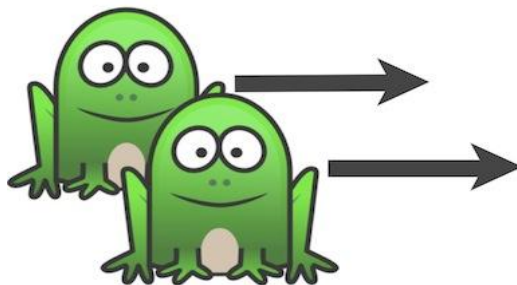
*wooshla beeko ∅*



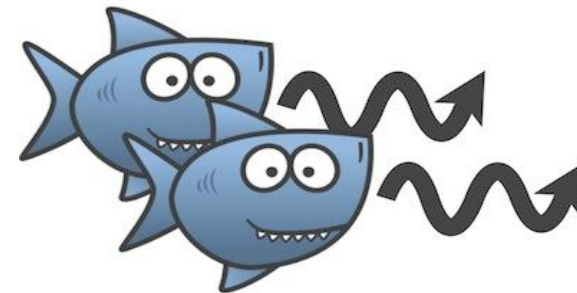
*boingla trunko dak*

OR

*boingla trunko ∅*



*wooshla hoppo wib*



*boingla fino wib*

Plurals:

# Procedure

## Vocabulary training (4 blocks)

- See animal + label, retype label

## Sentence training (6 blocks)

- See scene + description, retype description

## Individual testing (3 blocks)

- See scene, type description

## Interactive testing

- Communicate with your partner:
  - Director sees scene, describes it
  - Matcher sees description, selects appropriate scene from a set of options
  - Roles are reversed
- Prizes available!

Now you are going to play with your partner. Use the language you learned to communicate with them.

When you are the DIRECTOR, you will be asked to describe a picture so your partner can identify it.

When you are the MATCHER, you will see the description from the director in the middle of the screen.  
Press 1, 2, 3, 4, 5, 6, 7 or 8 to indicate which picture you think the director is naming.

Press 1 to begin.



# Experimental conditions

## 100-66

One participant trained on 100% marked singulars (categorical), one on 66% marked singulars (unpredictably variable)

## 100-33

One categorical (100%), one unpredictably variable (33%)

## 66-33

Both unpredictably variable (one 66%, one 33%)

## 83-17

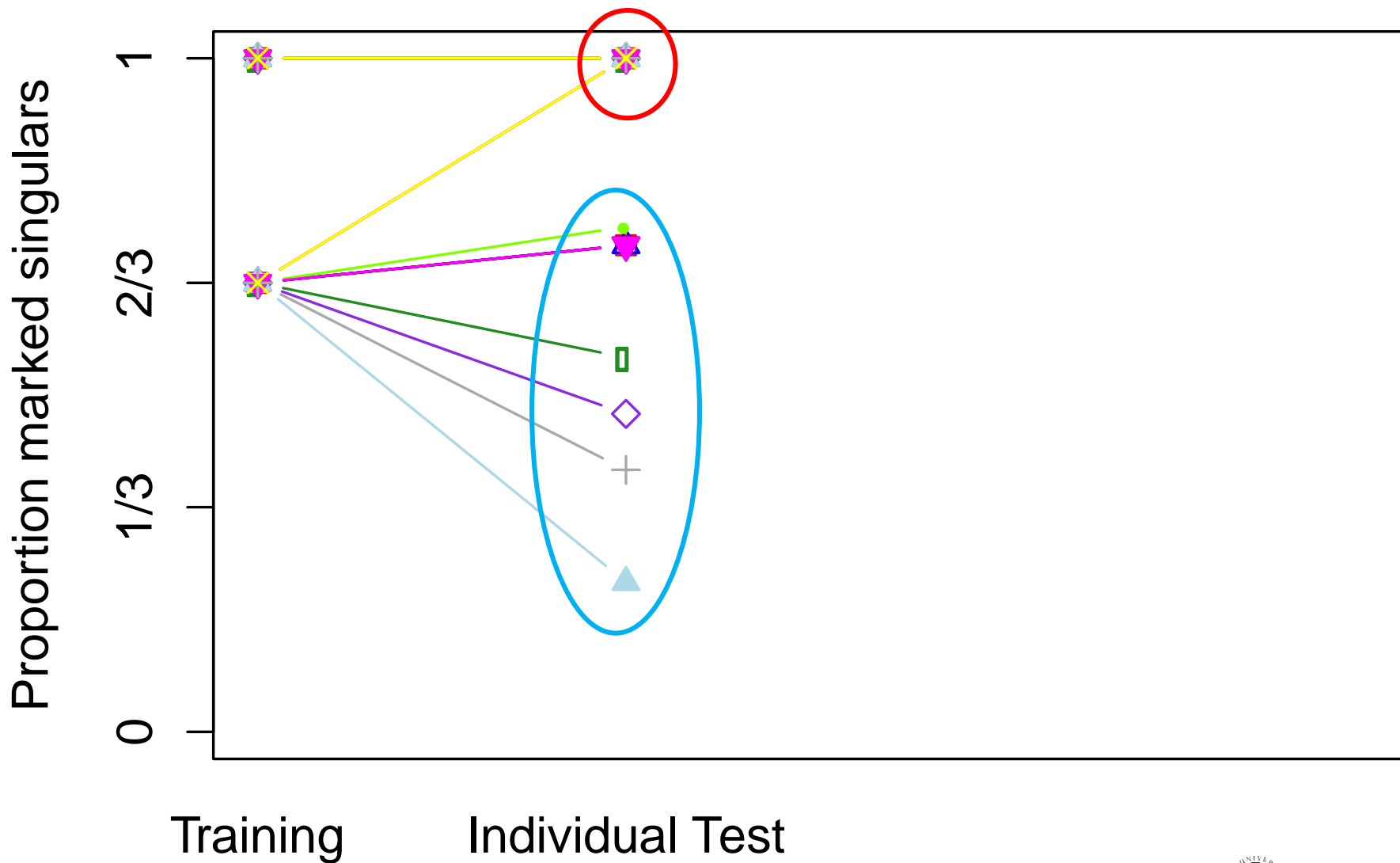
Both unpredictably variable (one 87%, one 17%)

**12 pairs per condition**



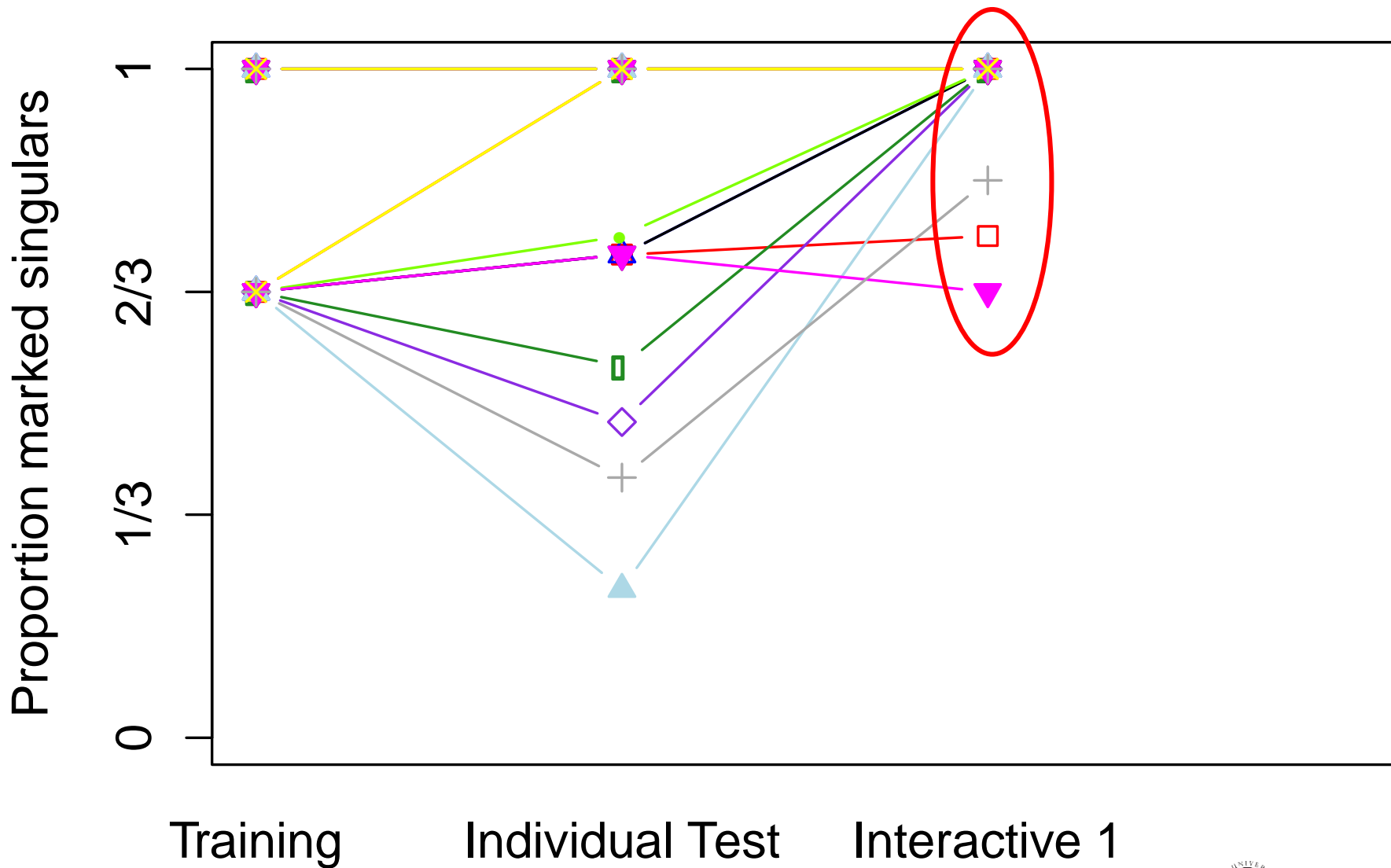
# Results: marker use

## Condition: 100-66



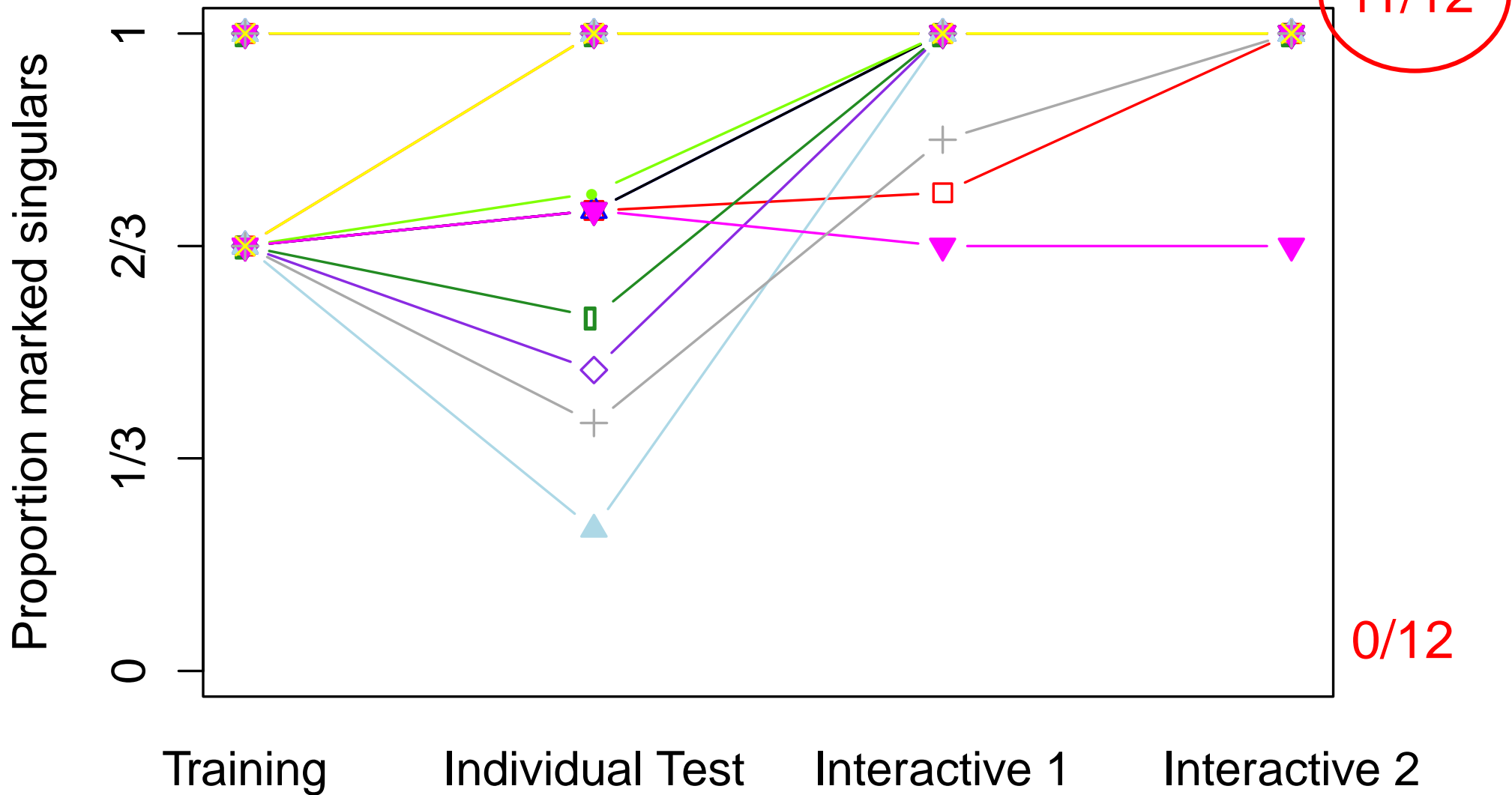
# Results: marker use

## Condition: 100-66



# Results: marker use

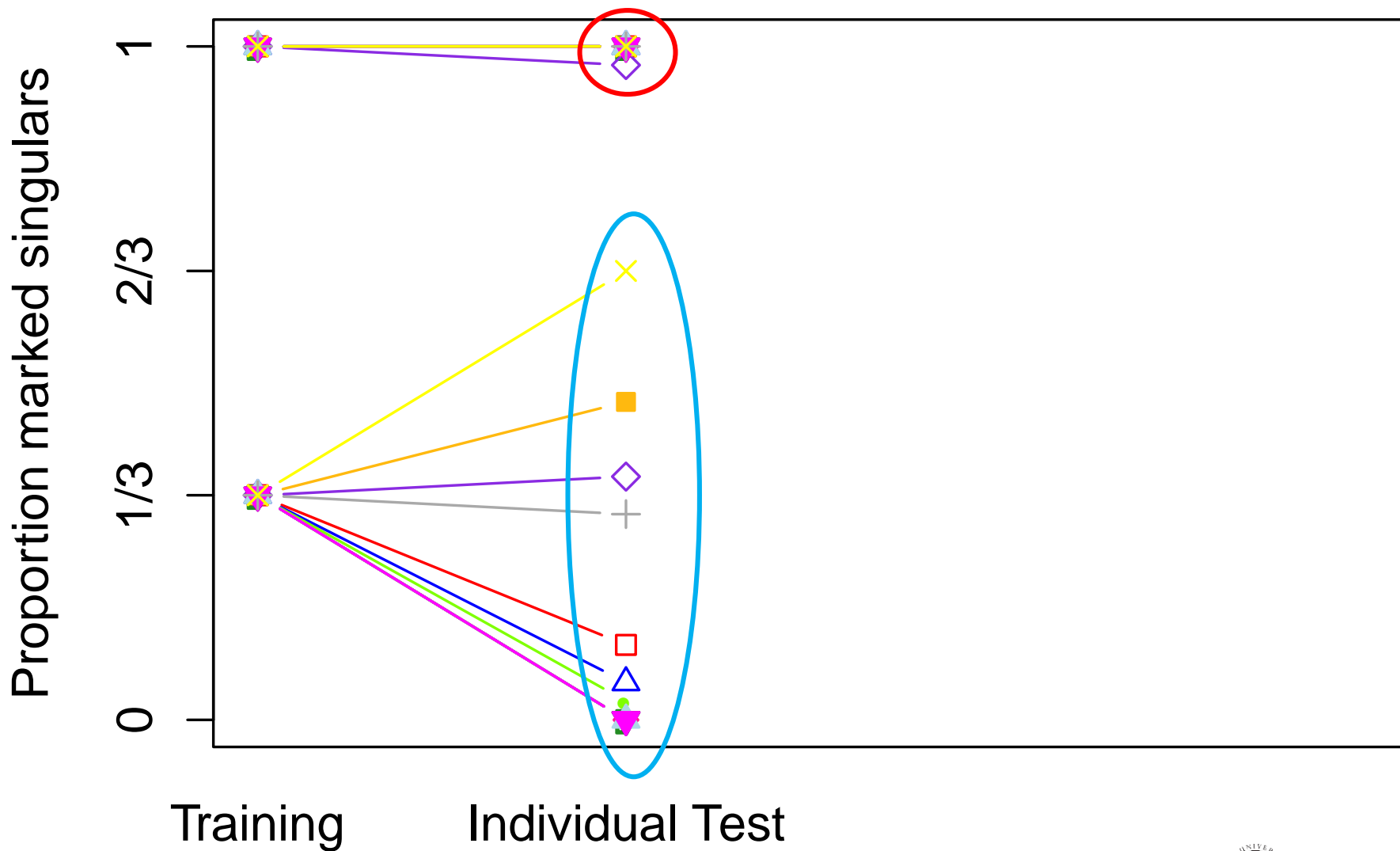
## Condition: 100-66





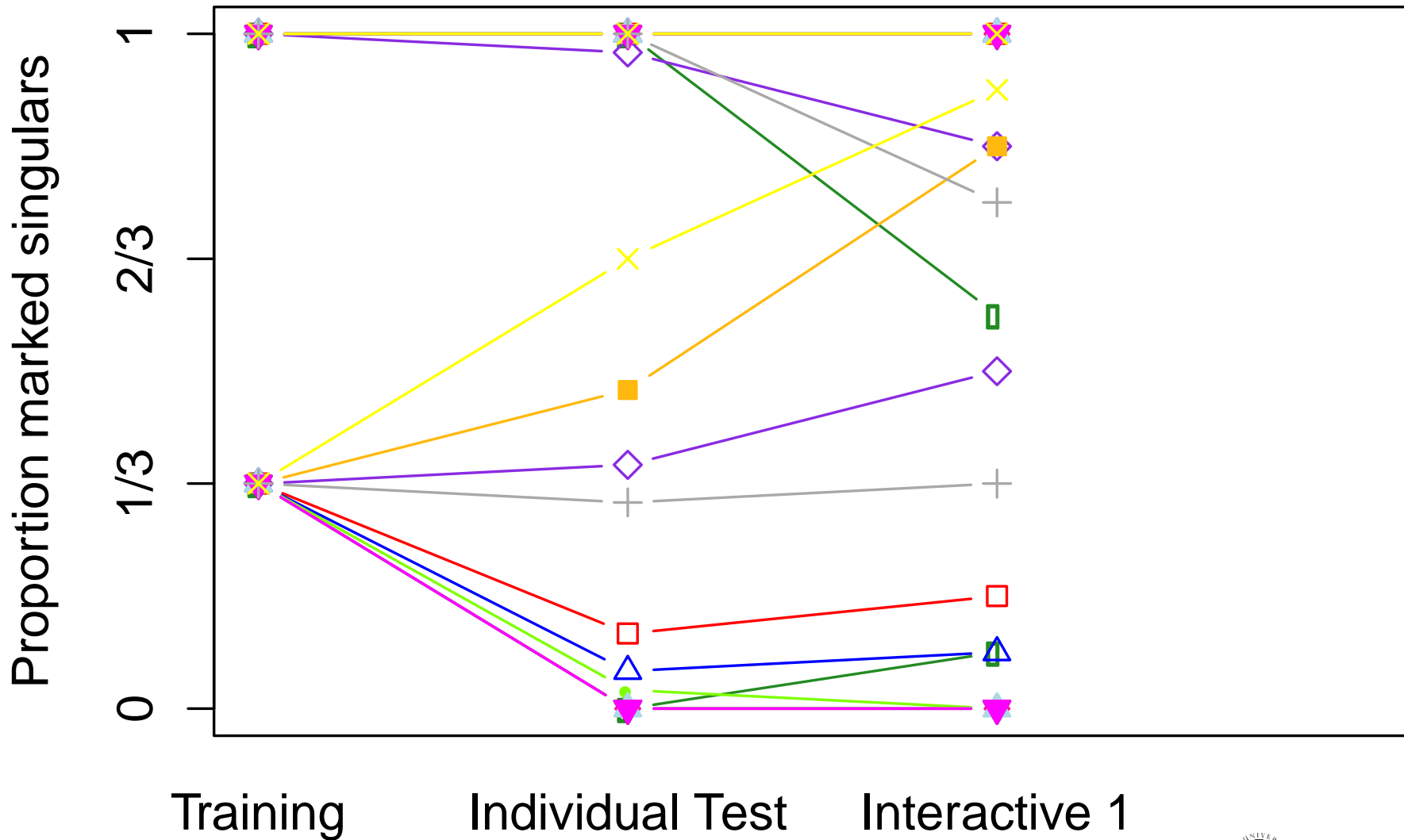
# Results: marker use

## Condition: 100-33



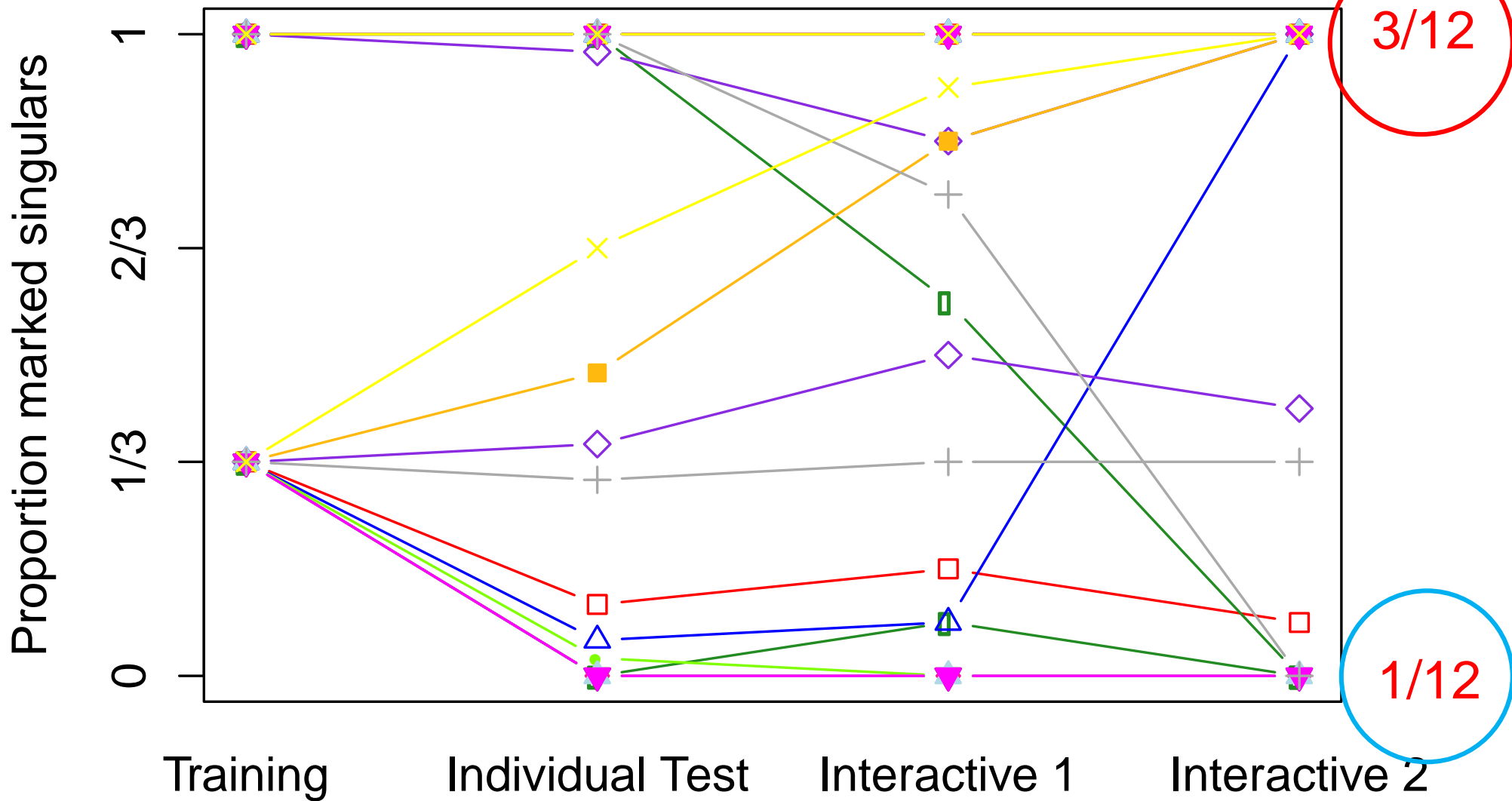
# Results: marker use

## Condition: 100-33

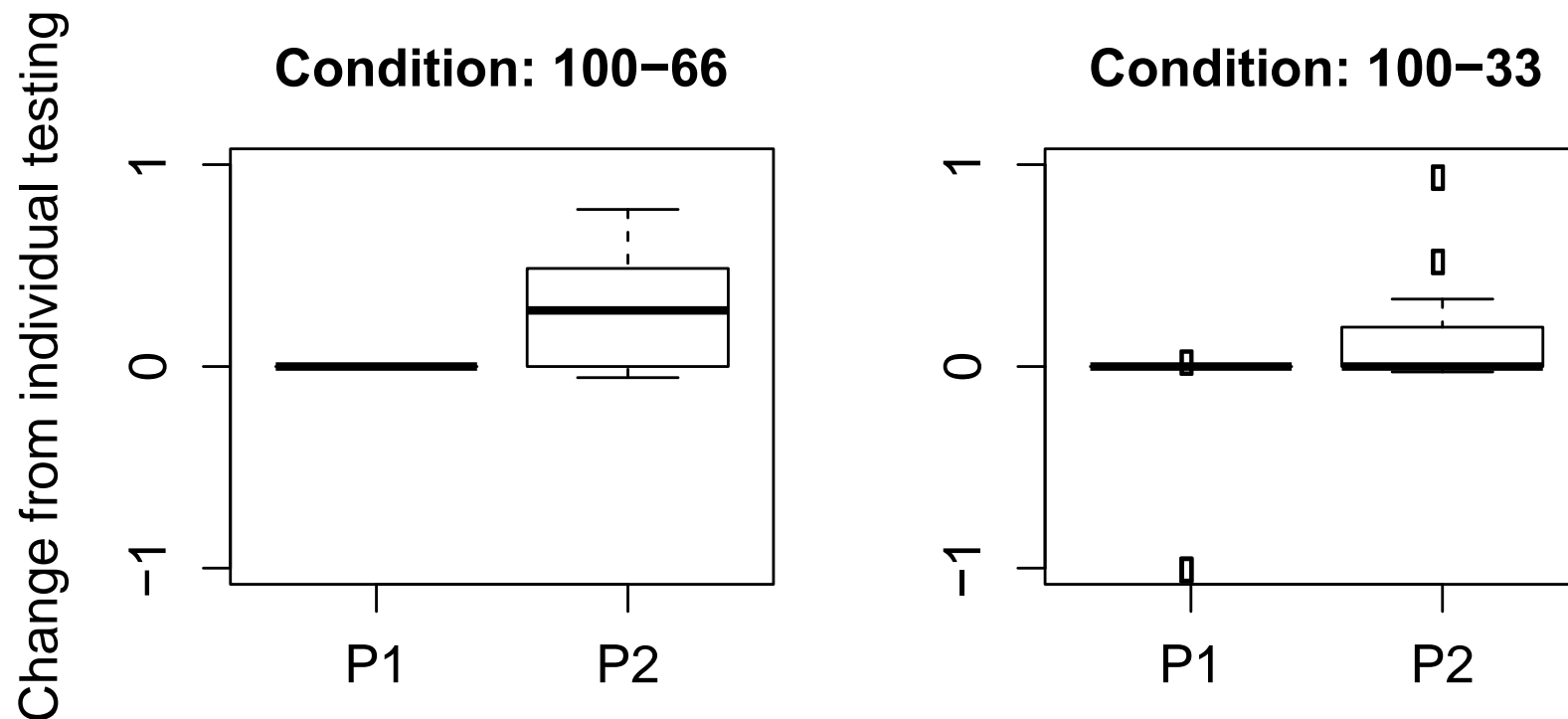


# Results: marker use

## Condition: 100-33



## Asymmetric accommodation?

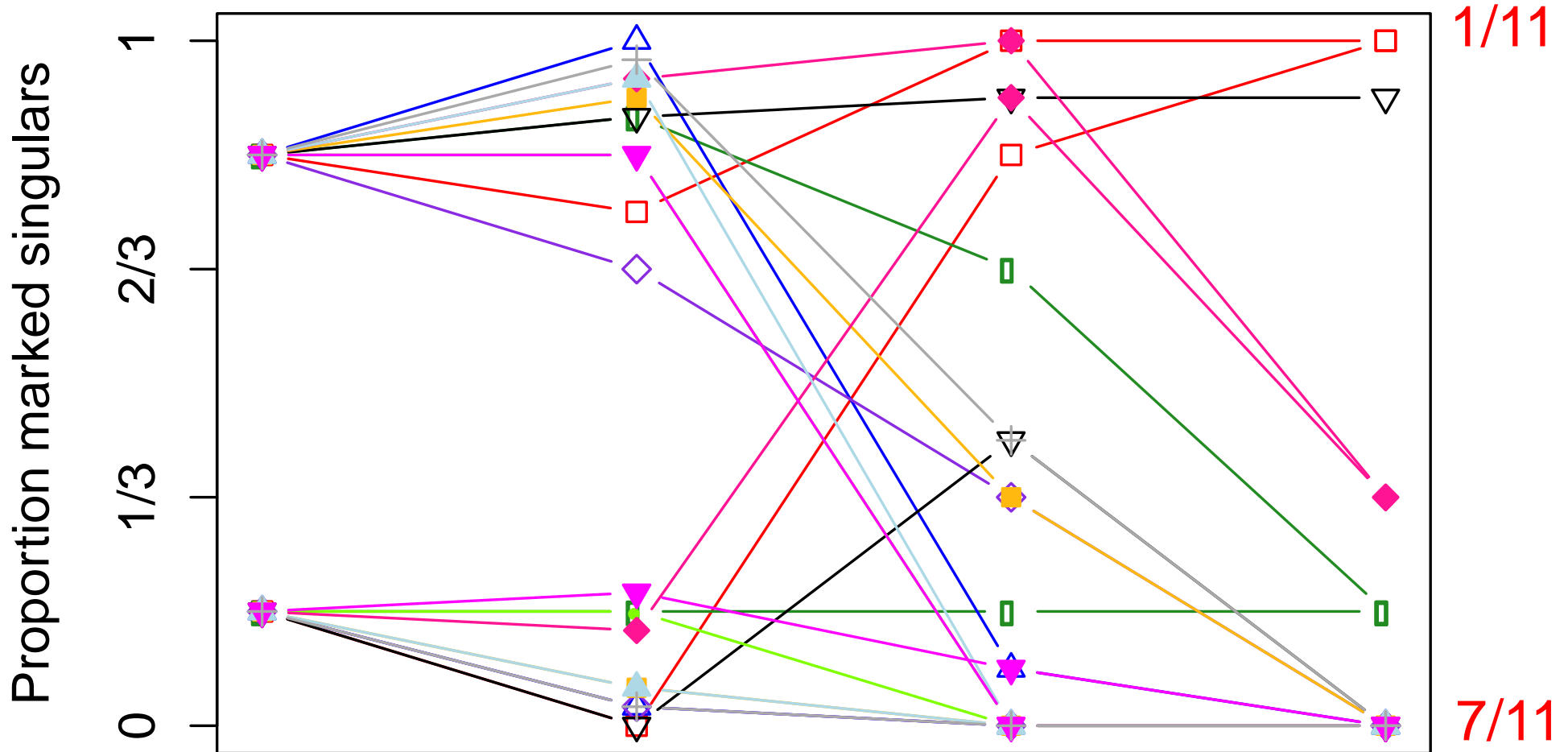


Variably-trained Ps change more than categorically-trained Ps in 100-66 and 100-33 conditions ( $W = 159$ ,  $p = .003$ ), and they accommodate **upwards** (change  $> 0$ ,  $V=126.5$ ,  $p=.003$ )

(Not just due to being paired with higher-producing partner, cf. 66-33 and 83-17 conditions)

# Results: marker use

## Condition: 83-17



Training

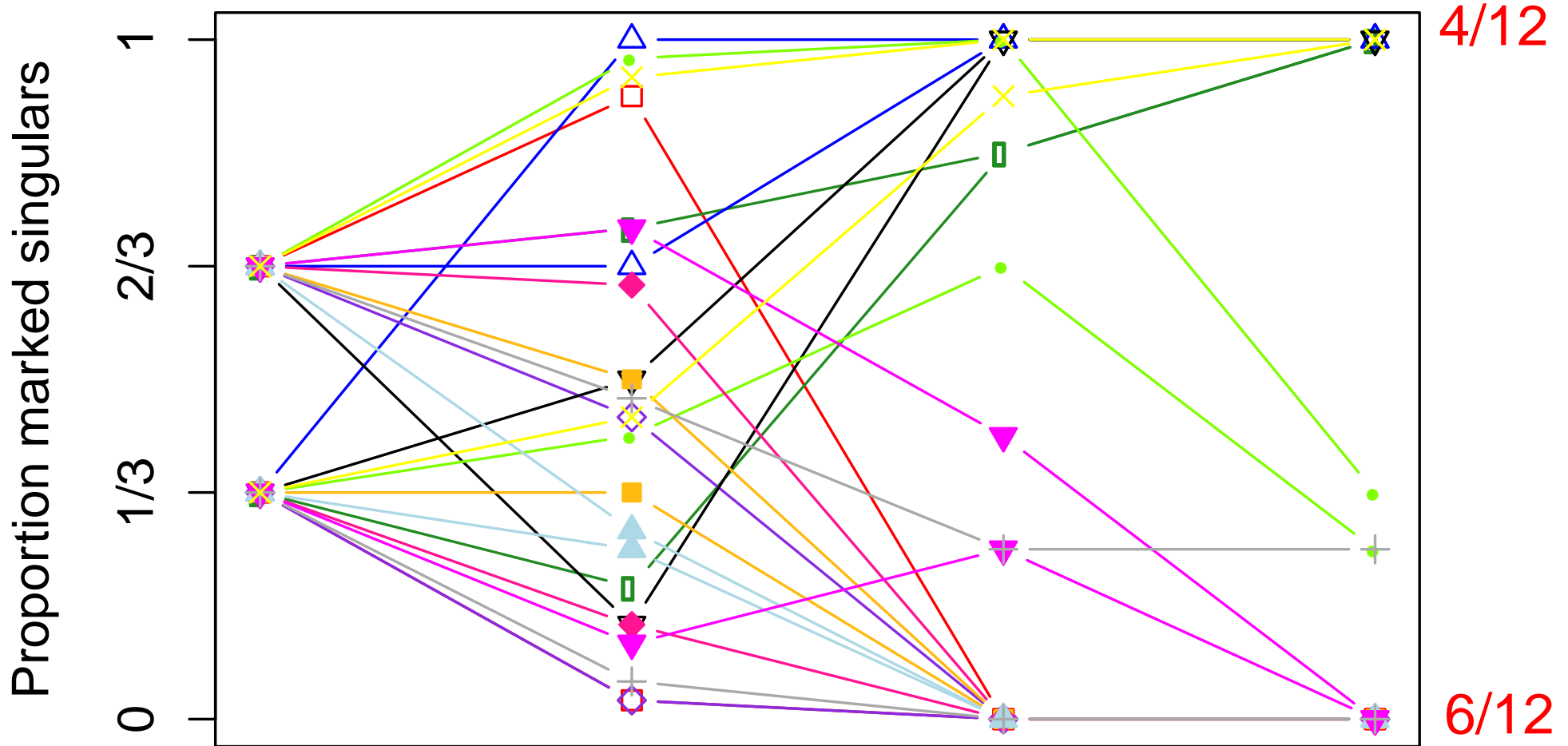
Individual Test

Interactive 1

Interactive 2

# Results: marker use

Condition: 66-33



Training

Individual Test

Interactive 1

Interactive 2

# Conclusions

1. The hypothesis that **accommodation favours categorical**, syntactically conditioned **category marking** over variable, otherwise (e.g. pragmatically) conditioned category marking can count as **corroborated**.
2. It is therefore **legitimate** to adduce it in **explanations of article emergence** in Early English
3. It may help to explain one aspect in the widely assumed unidirectionality of grammaticalization, namely why **obligatorification** is often irreversible.
4. **Laboratory experiments are extremely valuable** for testing hypotheses about processes involved in language evolution, that are difficult to observe 'in the wild' or impossible to reconstruct from static textual evidence.

## Some references

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**THANK YOU**

