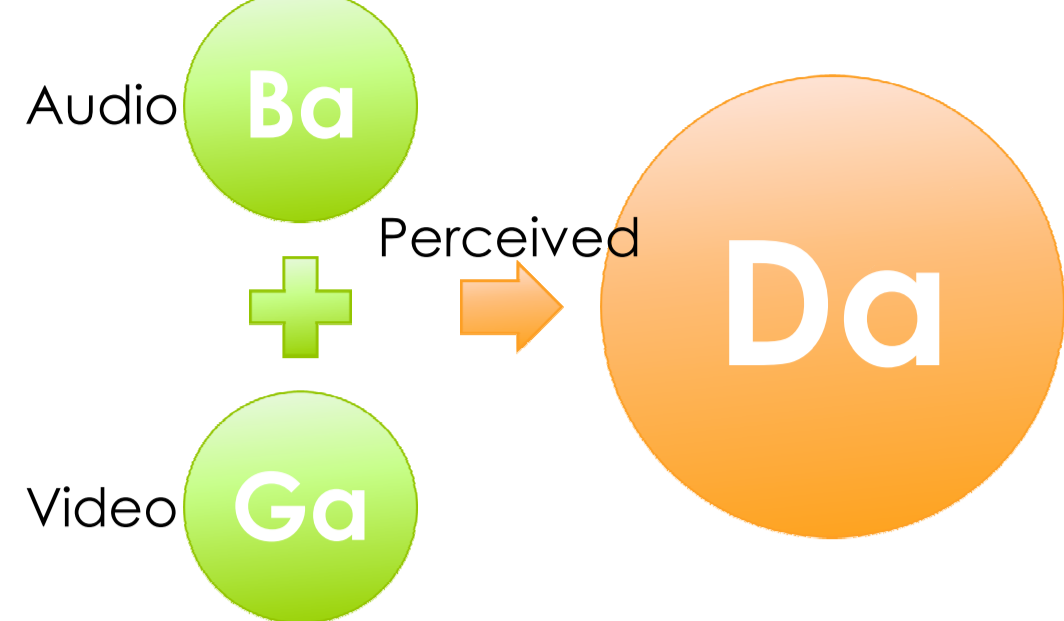


Temporal dynamics of binding in audiovisual speech fusion

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McGurk effect

- Is an indicator of audiovisual fusion

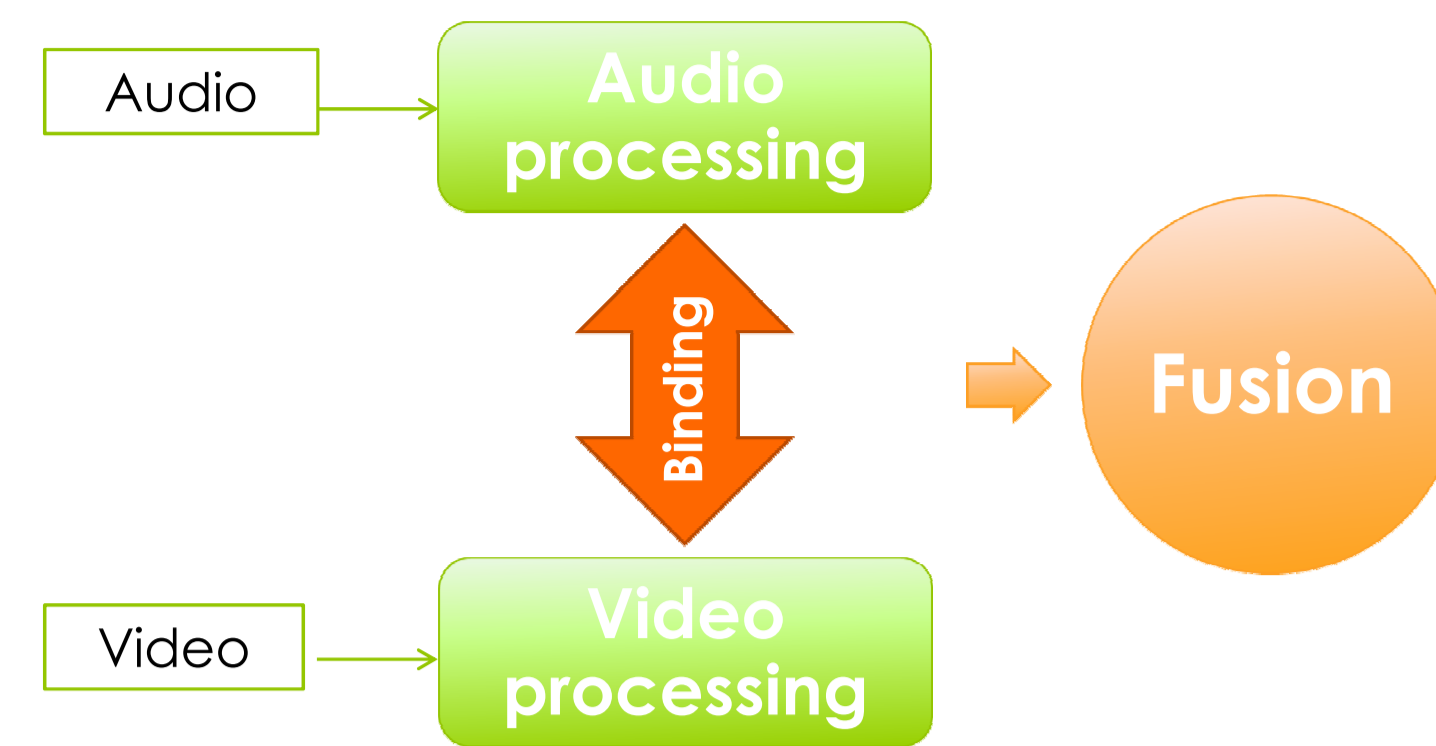


Is fusion automatic?

- In the literature it is considered to be automatic

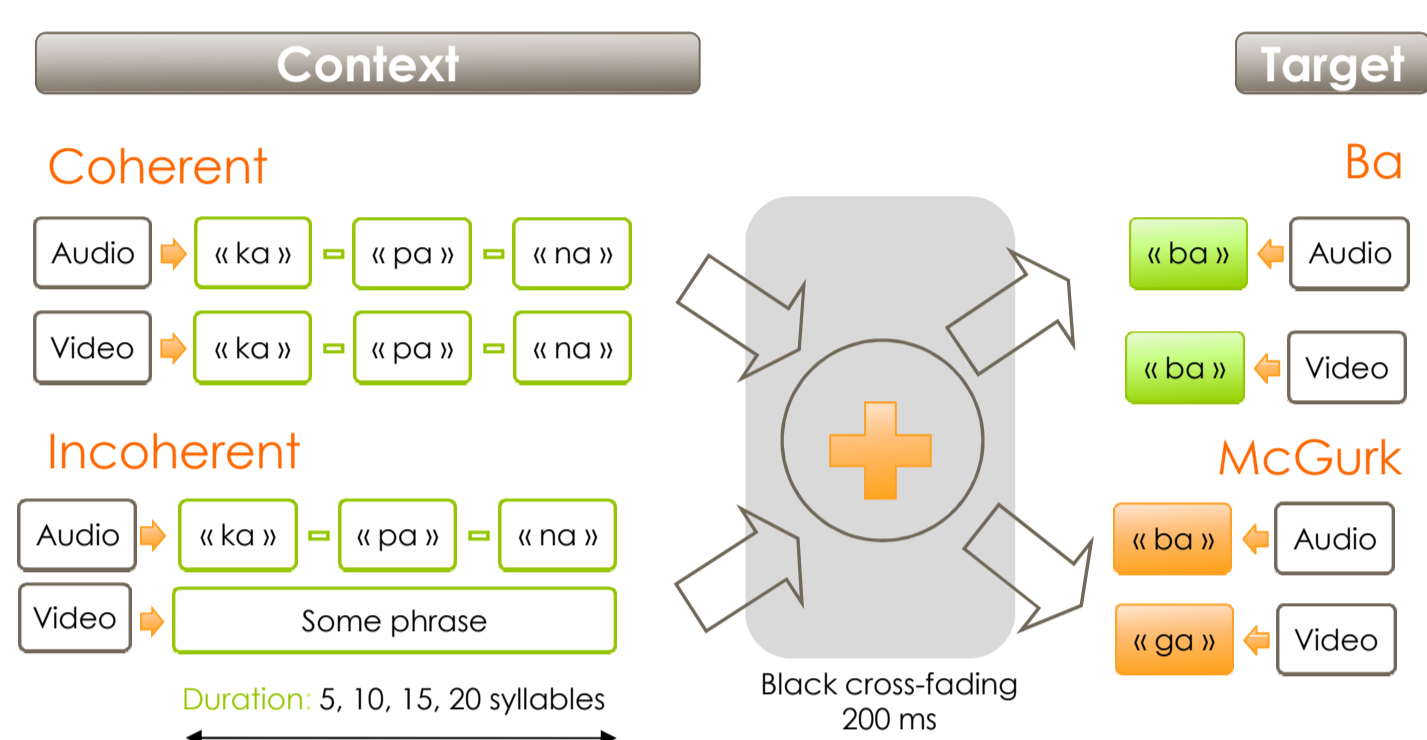
We suppose it is NOT

- We try to show that it is modulated by the preceding context
- This would suggest the existence of a binding process preceding fusion

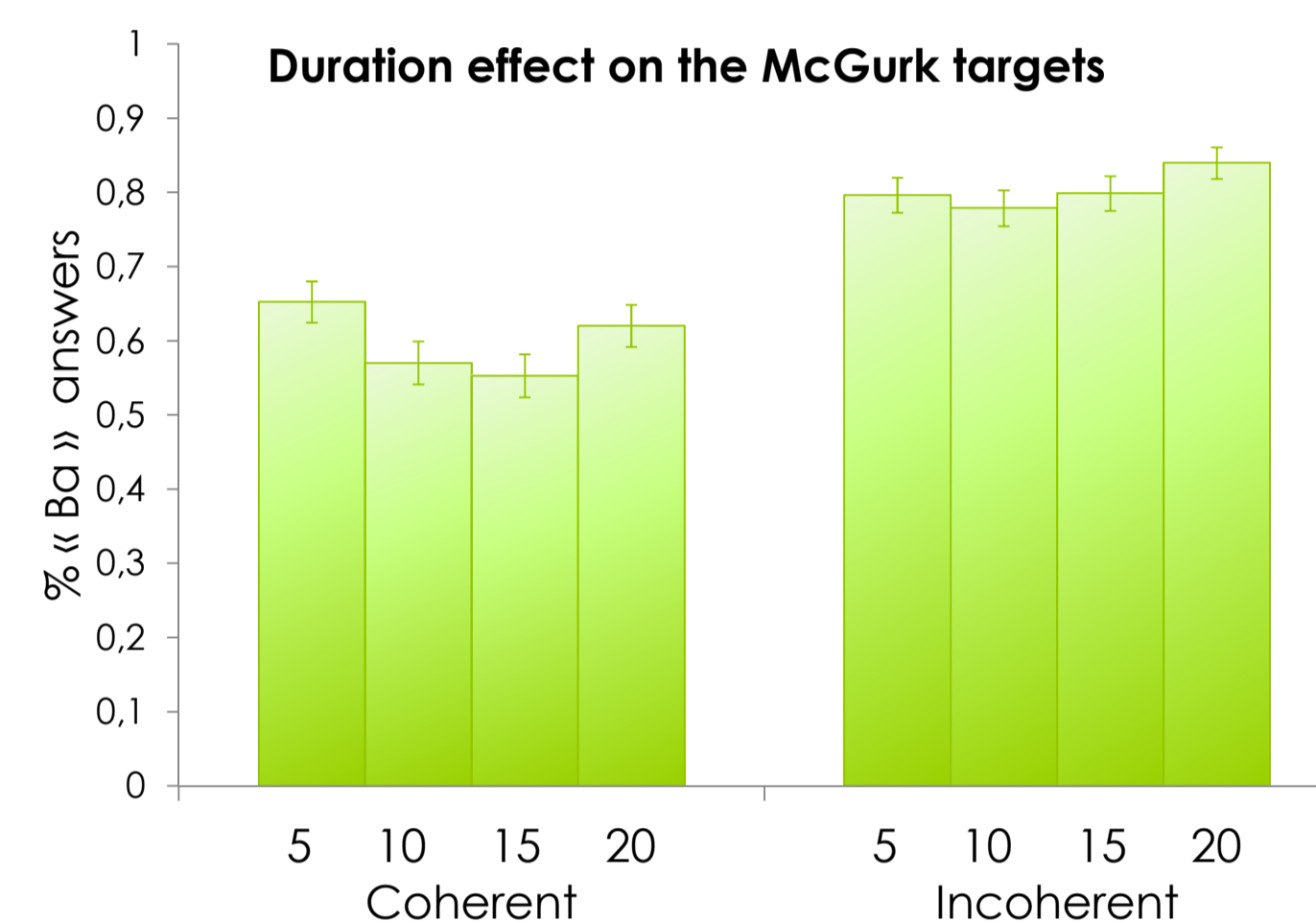
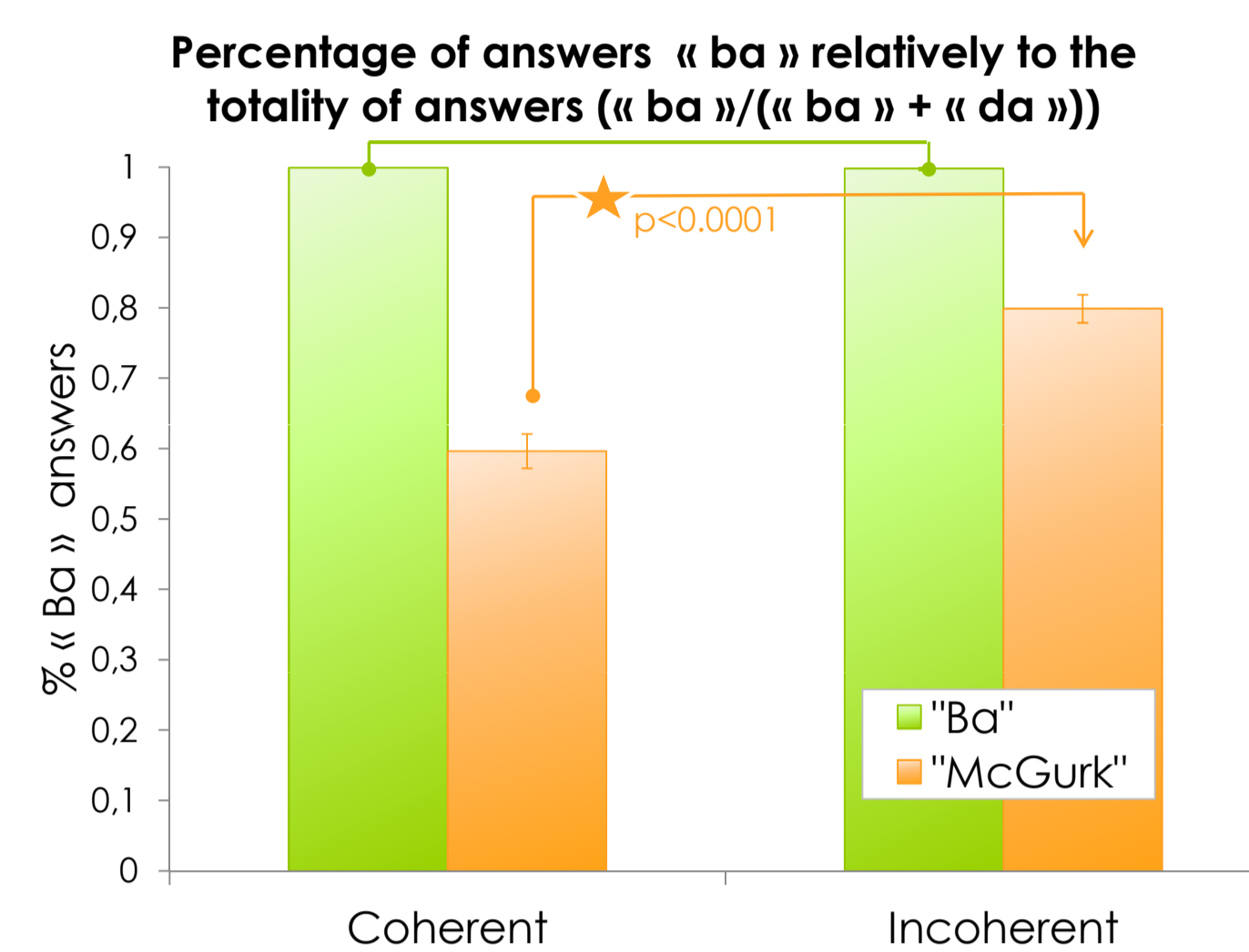


Experiment 1

Experimental paradigm

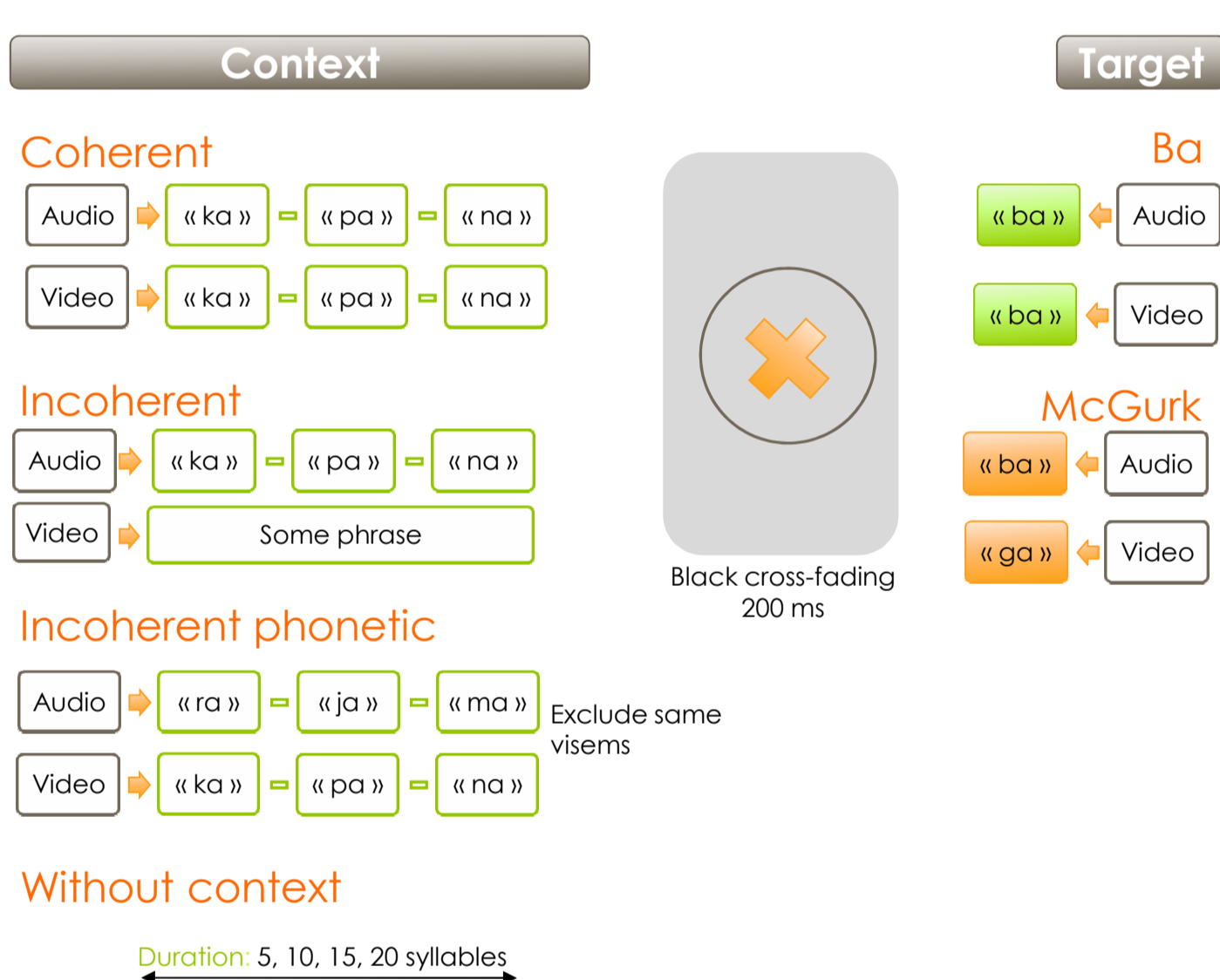


- Aim:** Attempting to «disrupt» fusion. The McGurk effect is taken as an indicator of fusion. A « McGurk » target is preceded by 2 types of contexts: coherent vs. incoherent
- Coherent context is generated by sequences of 5 to 20 French CV syllables within: « pa », « ta », « va », « fa », « za », « sa », « ka », « ra », « la », « ja », « cha », « ma », « na »
- Incoherent context: same audio content, video content is replaced by random sentences
- perceptual monitoring **task**, answers «ba» or «da», forced choice
- 19 French **subjects** with normal or corrected audition and vision
- Results:**
 - Audiovisual fusion is **NOT AUTOMATIC**, it is modulated by the context,
 - Demonstration of the existence of the binding process
 - The unbinding is already on maximum in the smallest context duration 5 syllables

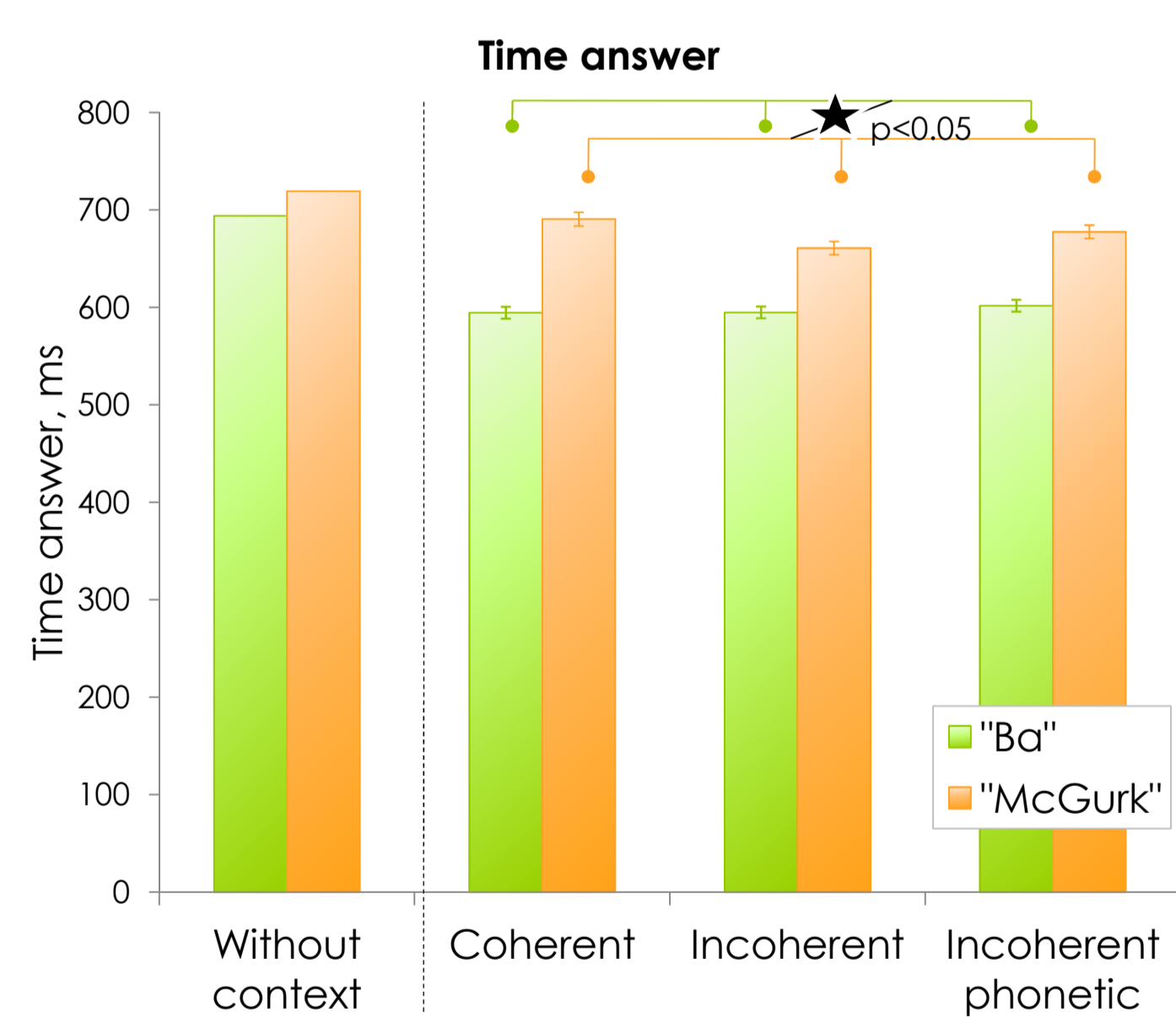
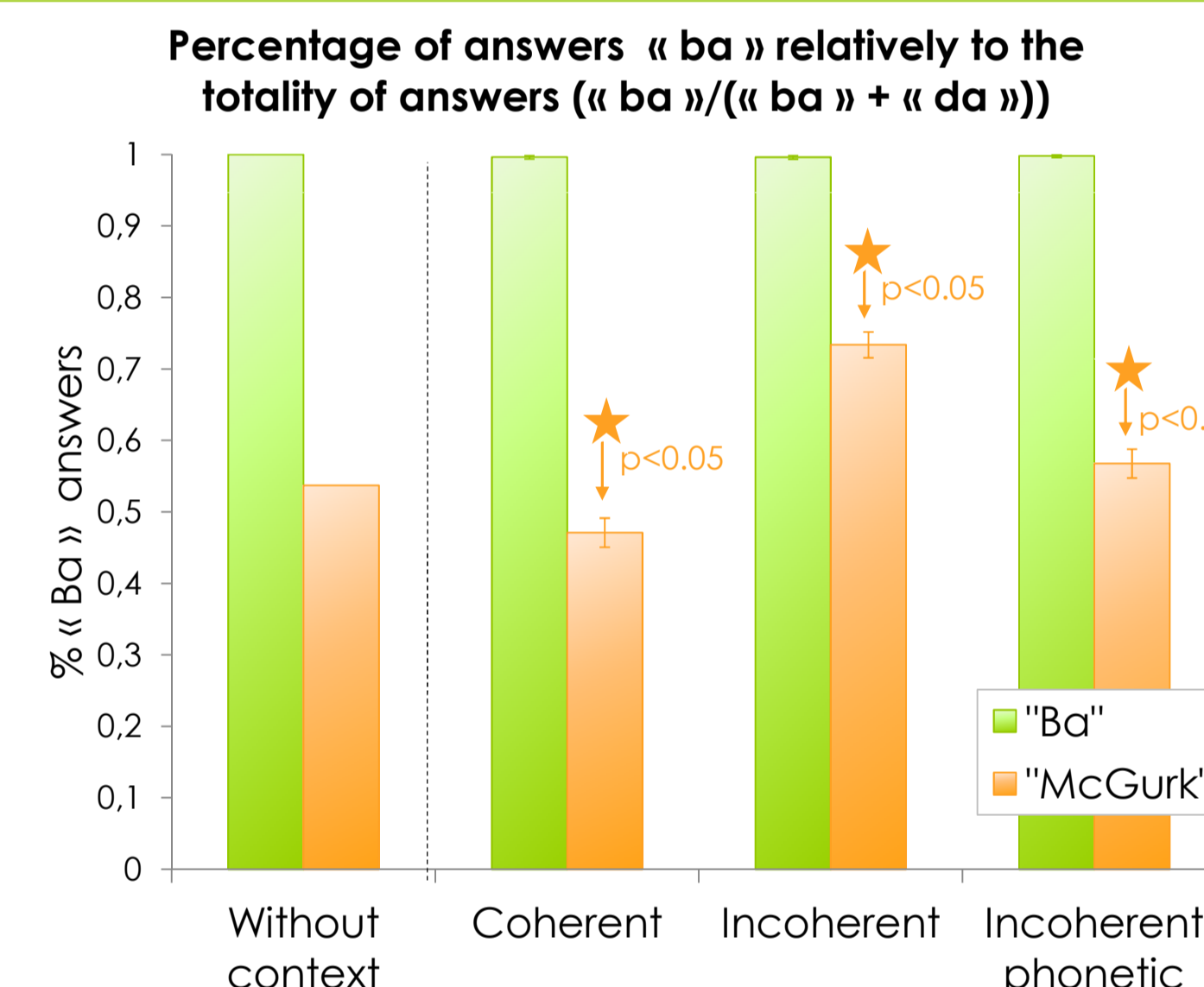
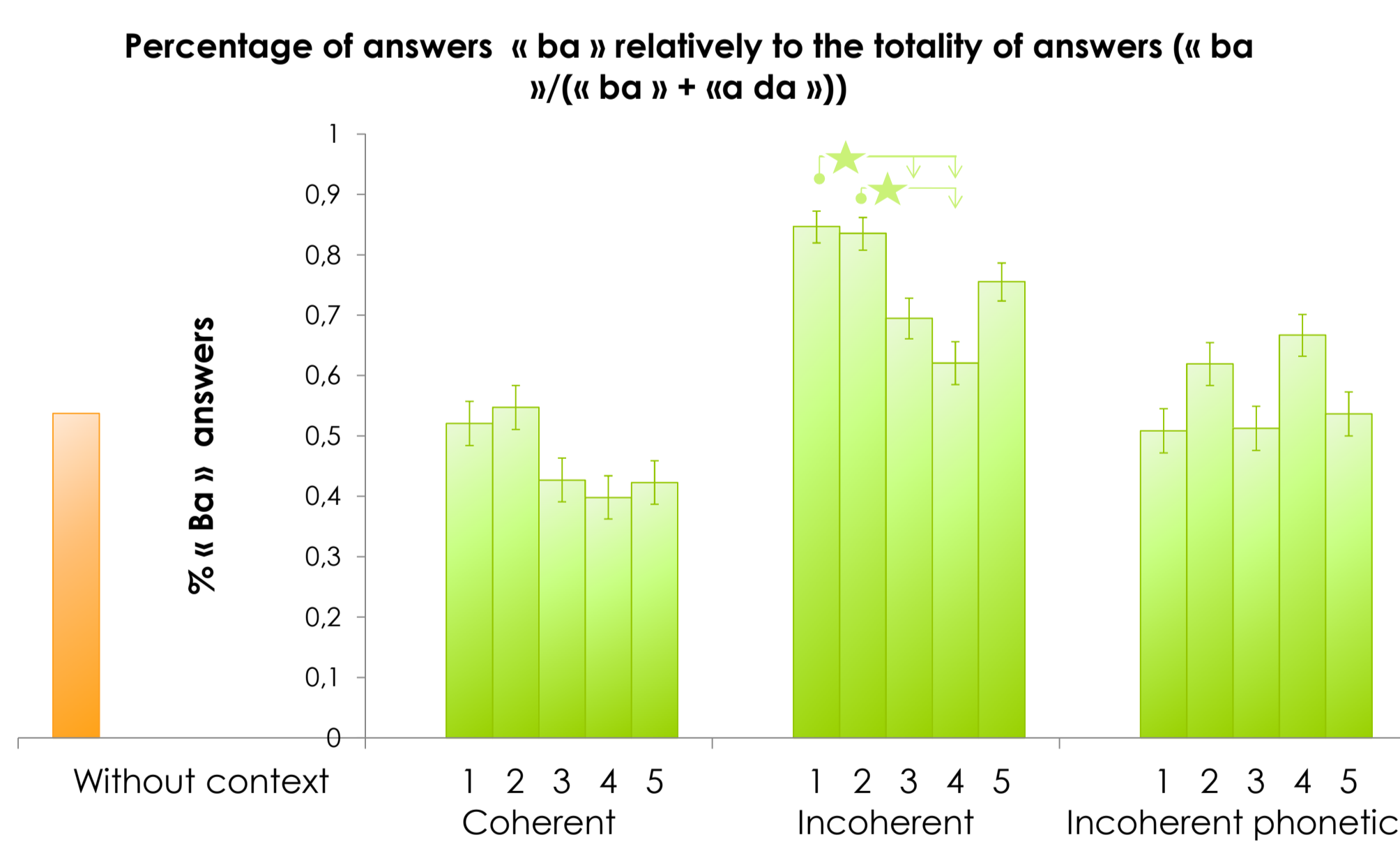


Experiment 2

Experimental paradigm

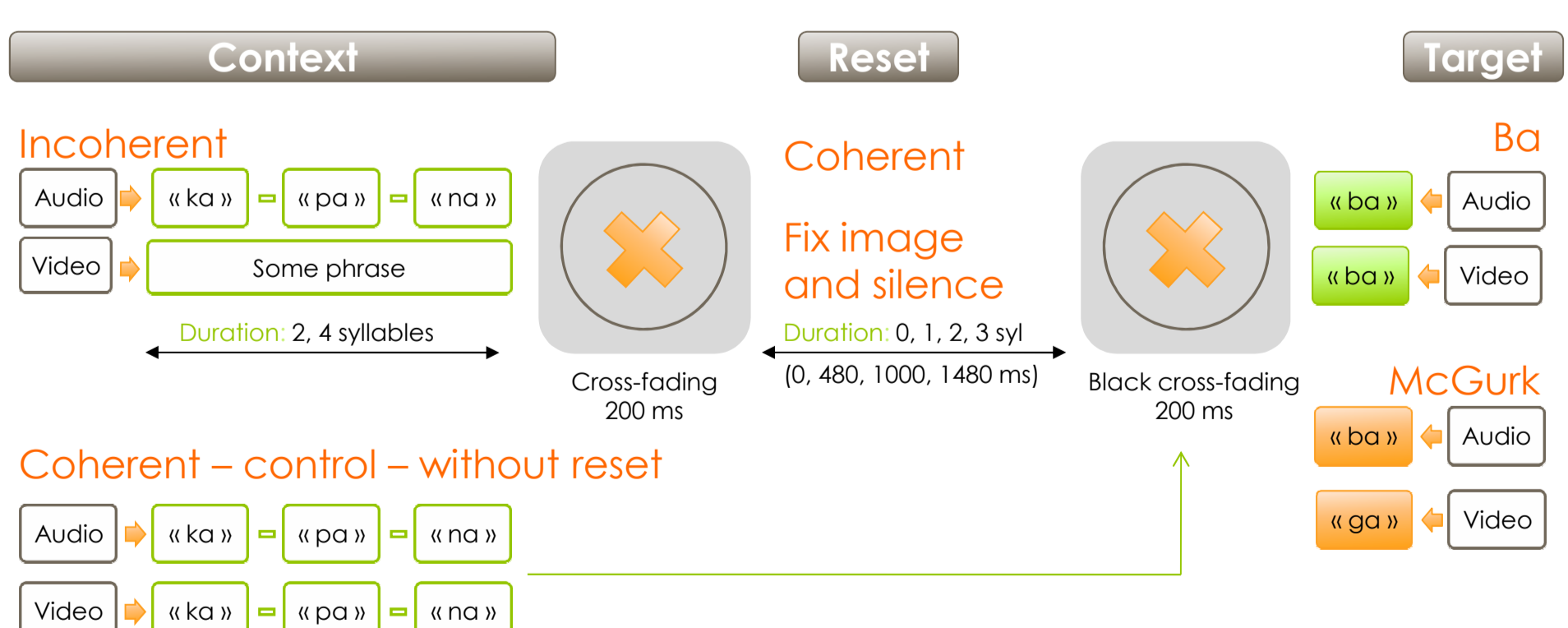


- Aim:** Characterization of temporal dynamics of binding process in the period less than 5 syllables (<3s)
- perceptual monitoring **task**, answers «ba» or «da», forced choice
- 20 French **subjects** with normal or corrected audition and vision
- Results:**
 - Confirmation of previous results
 - One syllable is sufficient to obtain the maximal unbinding
 - Both incoherent and phonetic contexts are sufficient to unbind
 - McGurk targets take more time to be processed compare to Ba targets

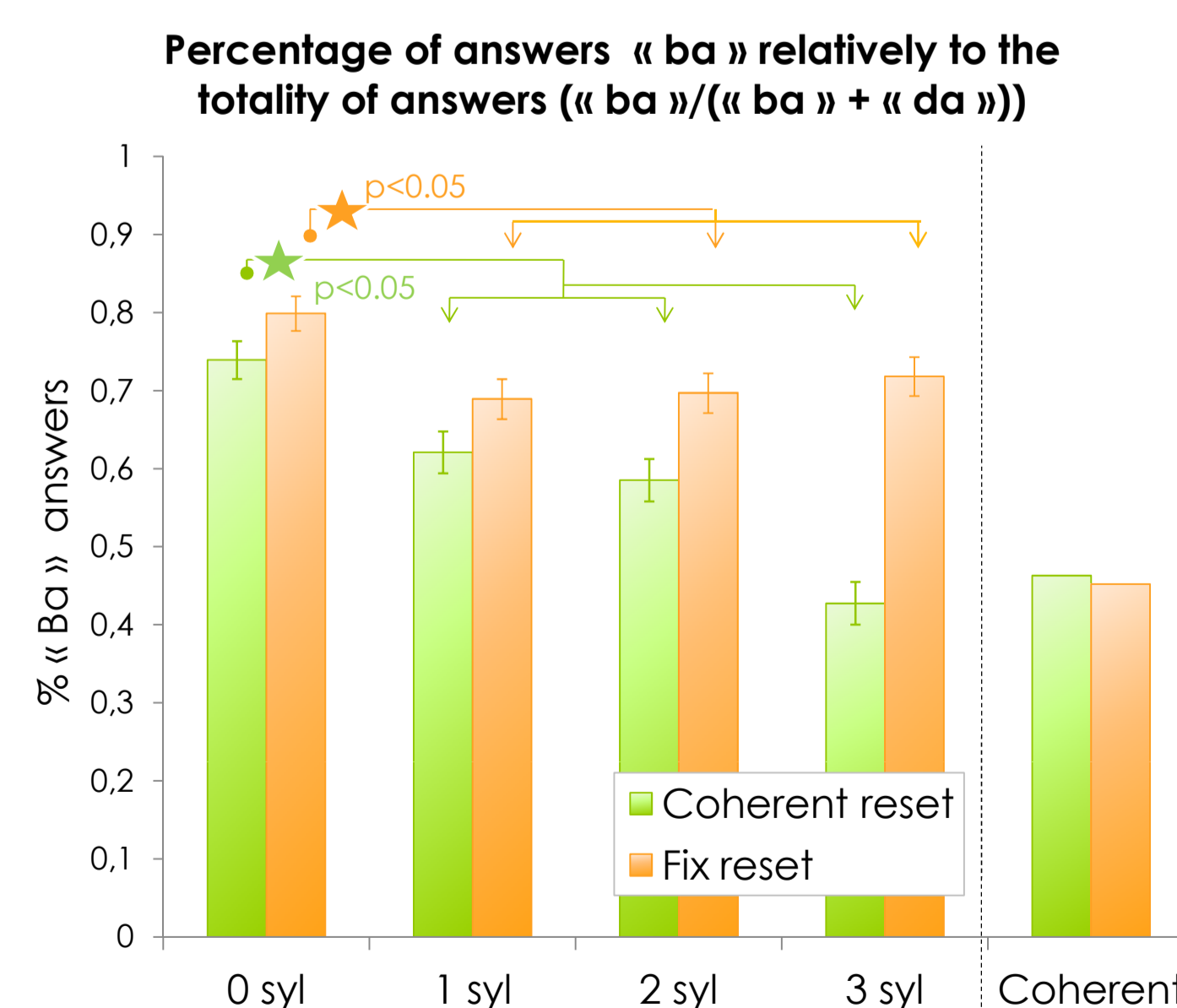


Experiment 3

Experimental paradigm



- Aim:** Studying the rebinding process. We suppose that default state is «bound». We will first unbind both sources with incoherent context and then we will try to rebind them using a reset. We test 2 types of reset: coherent and fix.
- perceptual monitoring **task**, answers «ba» or «da», forced choice
- 20 French **subjects** with normal or corrected audition and vision
- Results:**
 - Unbinding is fast, rebinding is progressive
 - 3 coherent syllables are sufficient to restore the bound state
 - Fix reset is not sufficient to restore the bound state



General conclusions

- The McGurk effect is modulated by the preceding context (conditional binding). It is not automatic
- One syllable is sufficient to obtain maximal unbinding in both incoherent and incoherent phonetic contexts.
- The rebinding is progressive. Three coherent syllables are sufficient to restore the bound state.
- Fix reset is not sufficient to restore the bound state
- We propose a two stage model, that include the evaluation of the signal coherence

