

# Differential focus in ongoing and completed events

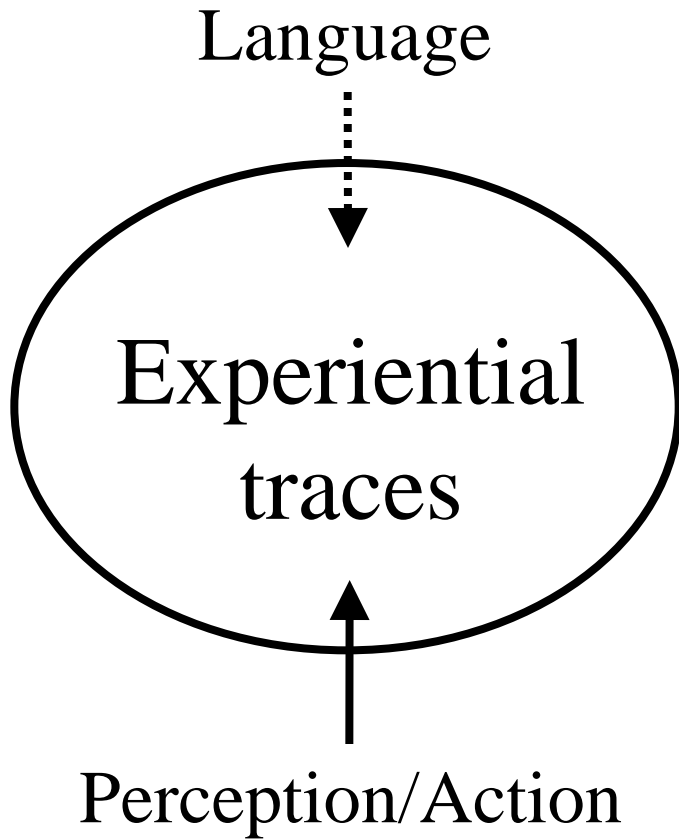
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CNRS / INSERM U1093

Cognition, Action, and Sensorimotor Plasticity (CAPS)

Université Bourgogne Franche-Comté

# Embodied Language Comprehension



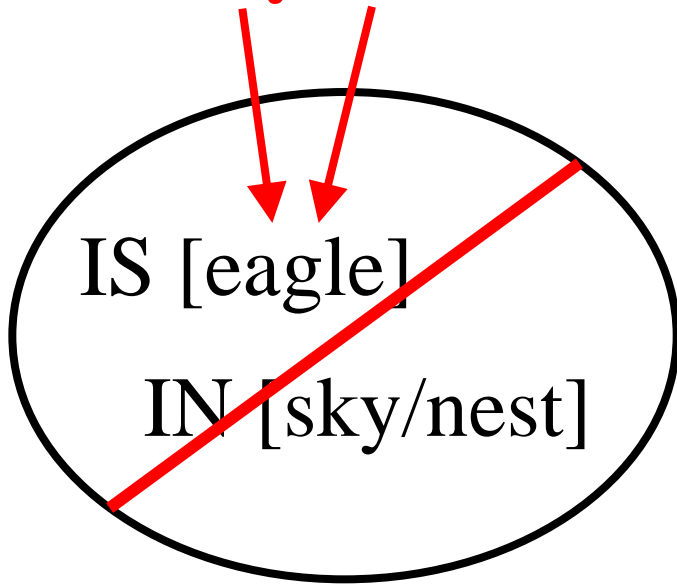
same systems for  
perception and  
action



simulation

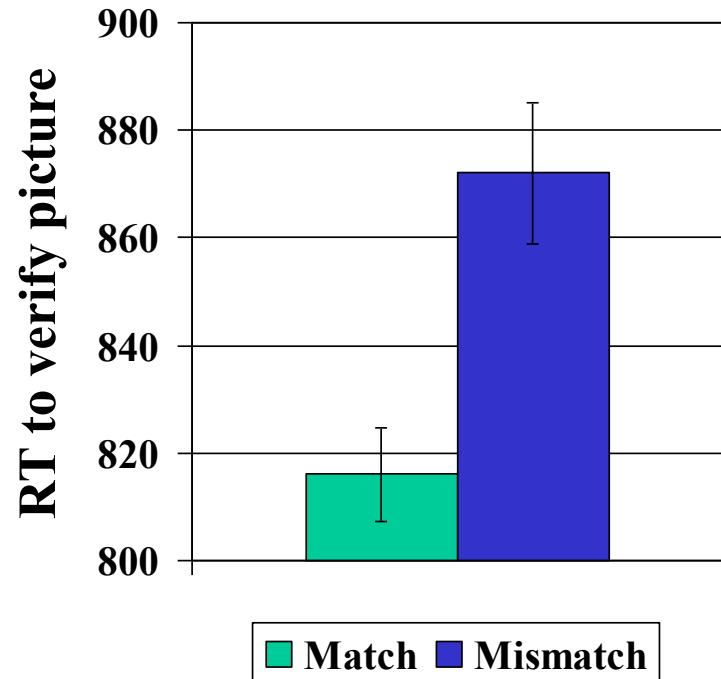
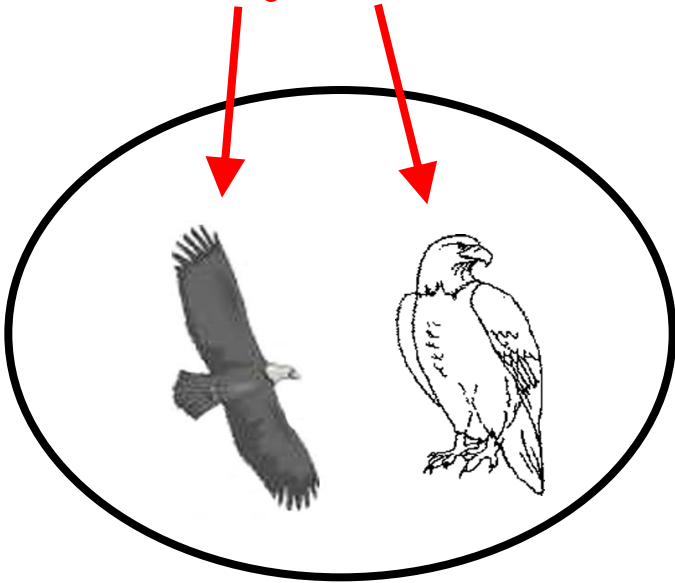
# Embodied Language Comprehension

In the **sky/nest** there was an eagle.



# Embodied Language Comprehension

In the **sky/nest** there was an eagle.



Madden & Zwaan, JEP:LMC, 2006

... but these are static images

# Embodied Language Comprehension

The pitcher threw the ball to you.



# Embodied Language Comprehension

The pitcher threw the ball to you.



# Embodied Language Comprehension

The pitcher threw the ball to you.



Did the two pictures  
display the same object?

# Embodied Language Comprehension

The pitcher threw the ball to you.





# Embodied Language Comprehension

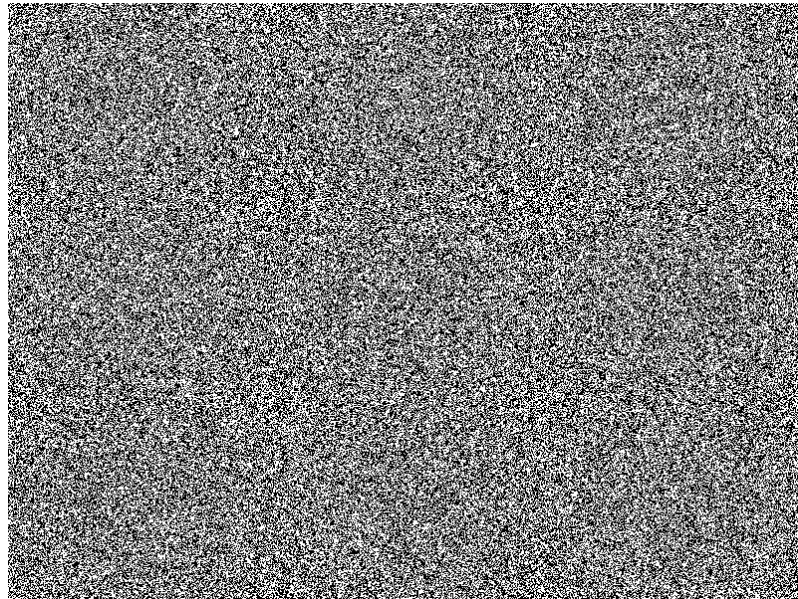
The pitcher threw the ball to you.



Did the two pictures  
display the same object?

# Embodied Language Comprehension

The pitcher threw the ball to you.



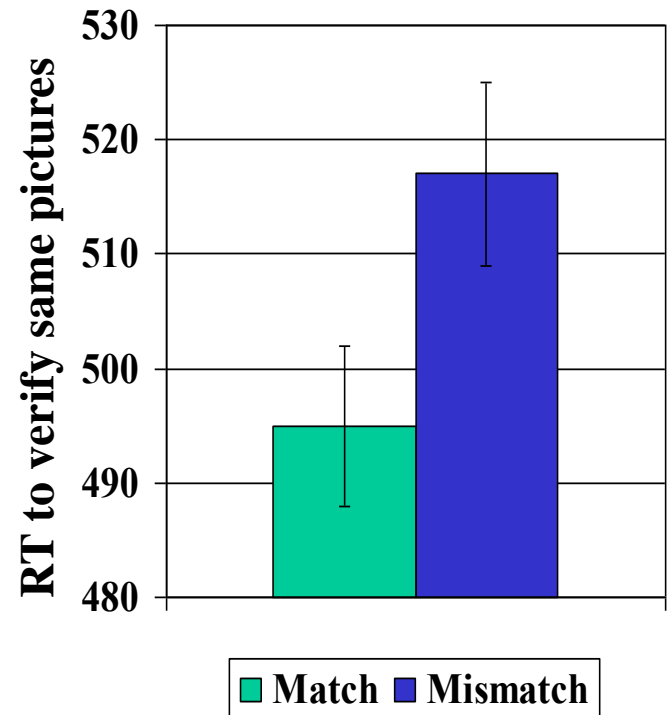
Did the two pictures  
display the same object?

# Embodied Language Comprehension

The pitcher threw the ball to you.

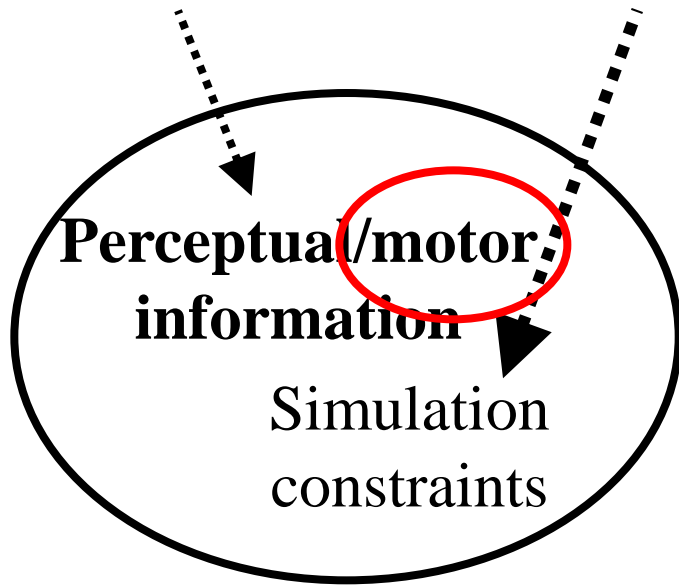


Did the two pictures display the same object?



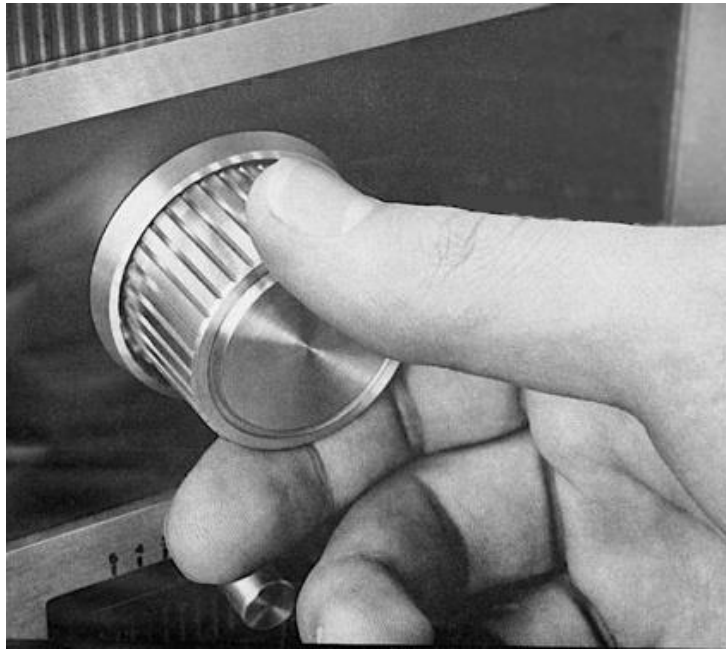
# Embodied Language Comprehension

**Content words / Grammar**



# Embodied Language Comprehension

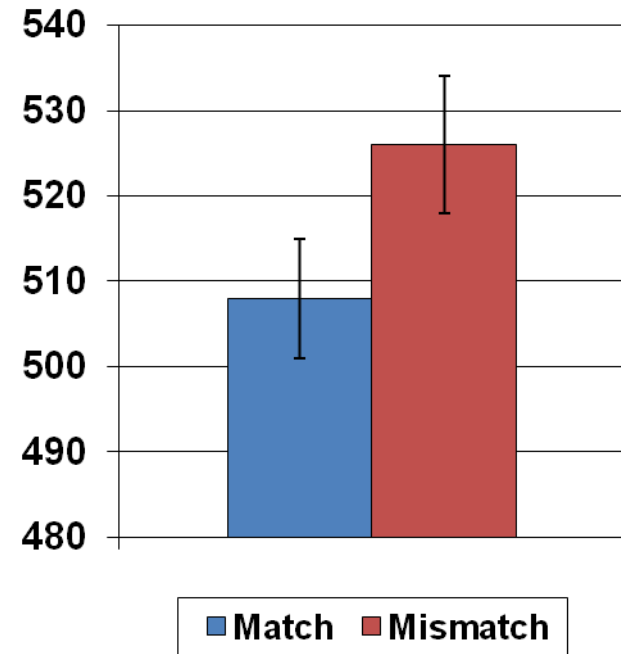
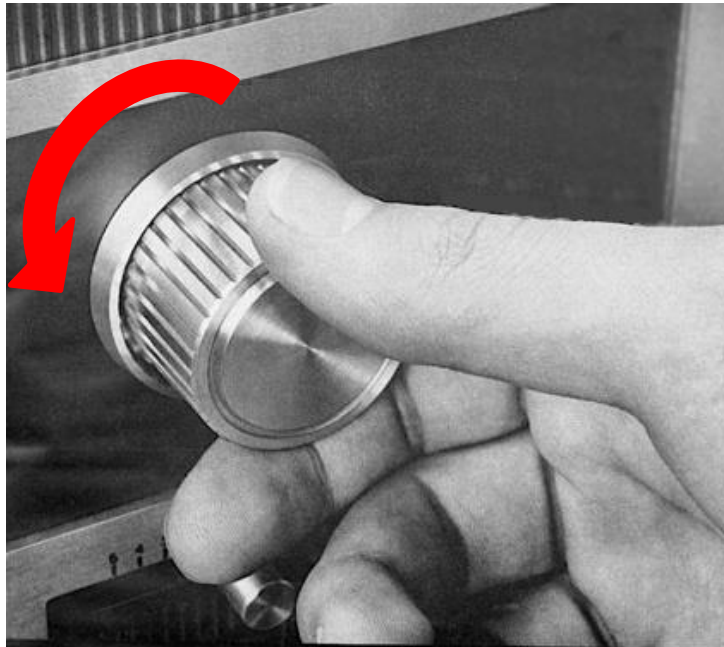
Reading by rotation – motor resonance  
during language comprehension



Taylor & Zwaan (2008). Quarterly Journal of Psychology.

# Embodied Language Comprehension

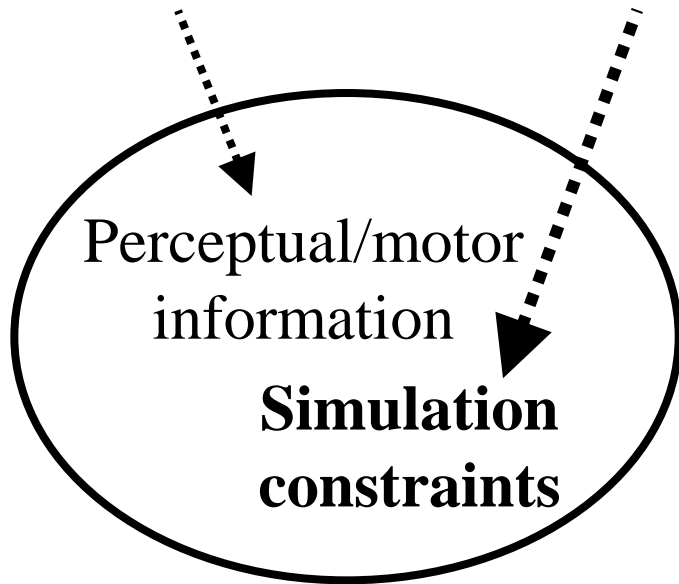
You turned down/up the volume  
quickly/obediently.



Taylor & Zwaan (2008). Quarterly Journal of Psychology.

# Embodied Language Comprehension

Content words / **Grammar**



Perspective

Relations between referents

Temporal structure

Verbs!

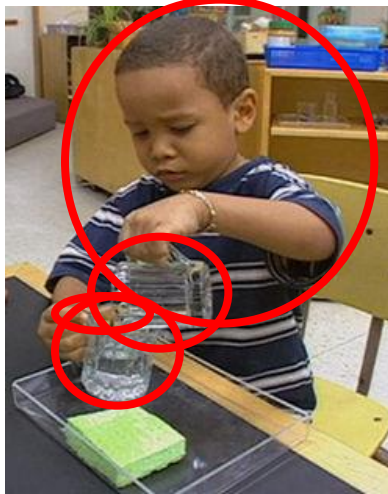
# Verb Representations



pour



# Verb Representations



pour

# Verb Representations



is poured

(passive voice)

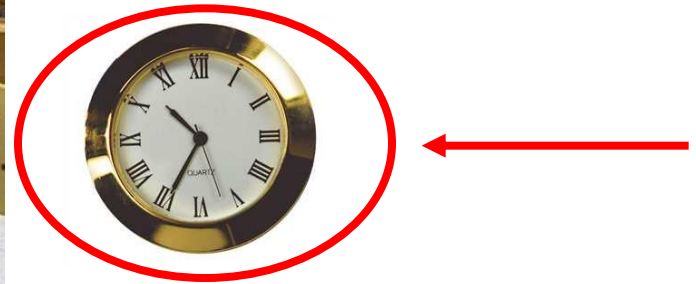
# Verb Representations



will pour

(future tense)

# Verb Representations



is pouring

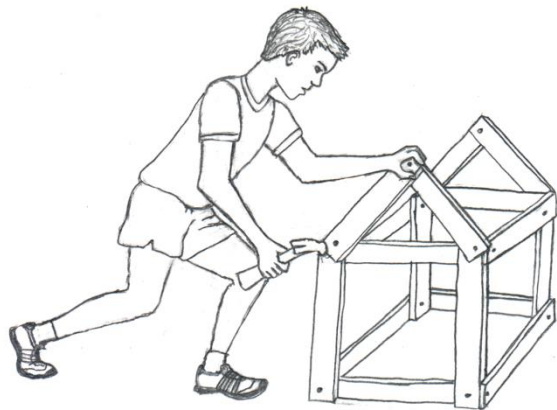
(imperfective aspect)

# Grammatical Verb Aspect

Imperfective

was building

----- b u i l d -----



Perfect

had built

-----  
^  
build



# Grammatical Verb Aspect

Imperfective

was building

..... b u i l d .....

Perfect

had built

—————  
      ^  
      b u i l d

+

Activation of  
instruments,  
characters,  
locations

—

# Grammatical Verb Aspect

- Language representations are simulations

sentence about working on a laptop...



# Grammatical Verb Aspect

- Does imperfective aspect activate a stronger simulation of a described situation??





John was working/had worked on his



or



in the study.

(one word at a time, self-paced reading)

John

was

working

on

his



in



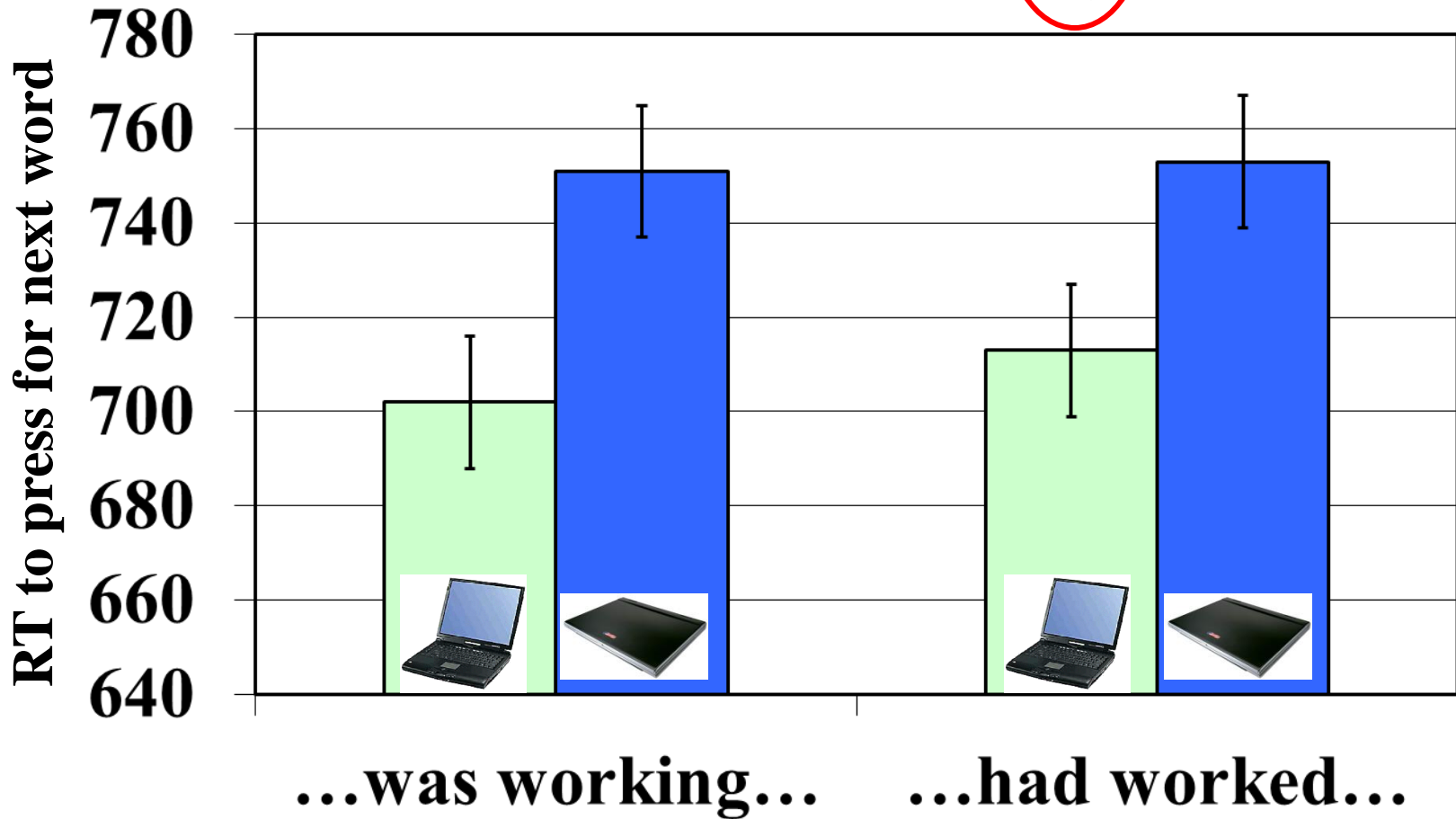
the

study.

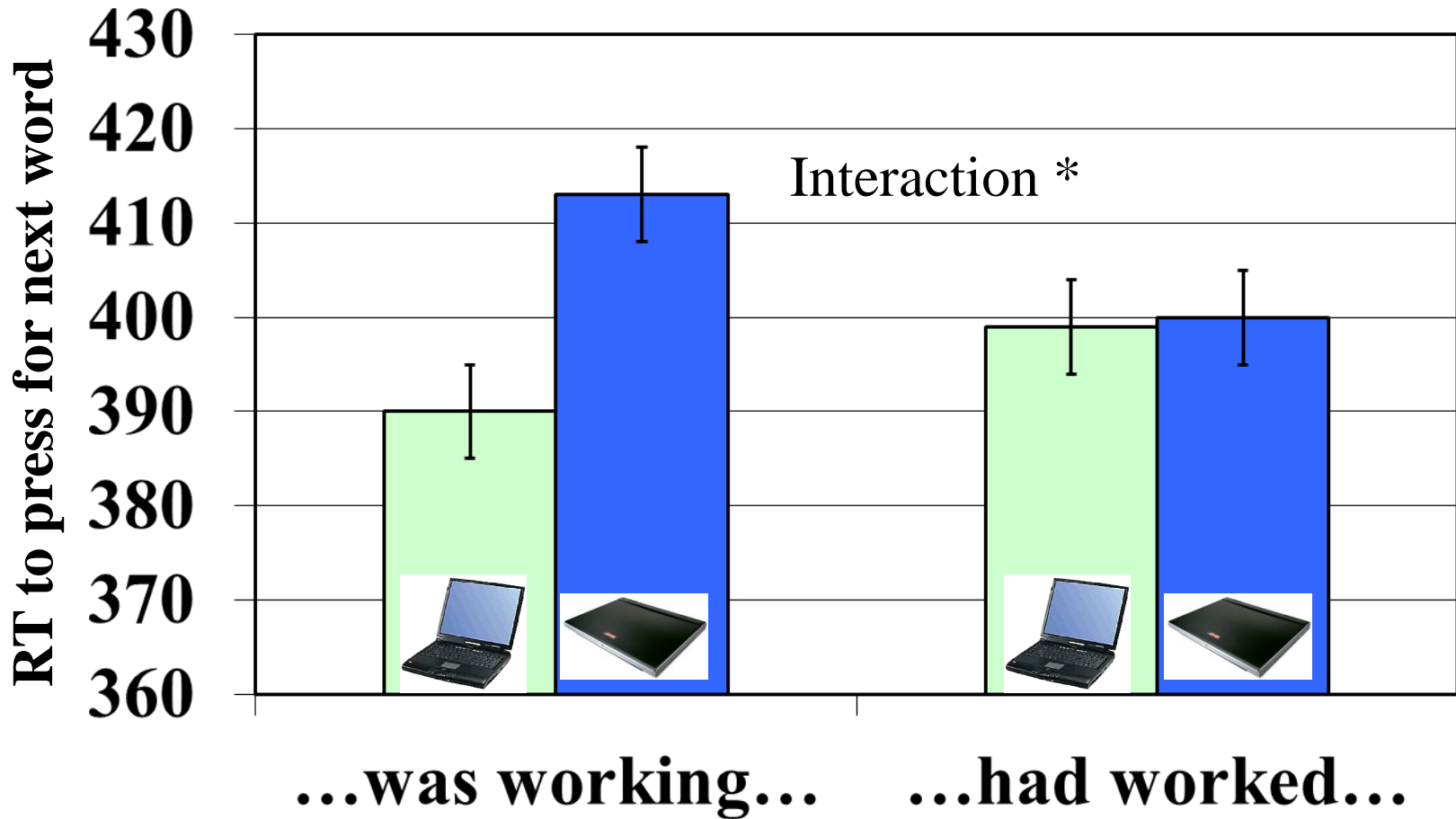
YES/NO

(sensitivity judgment)

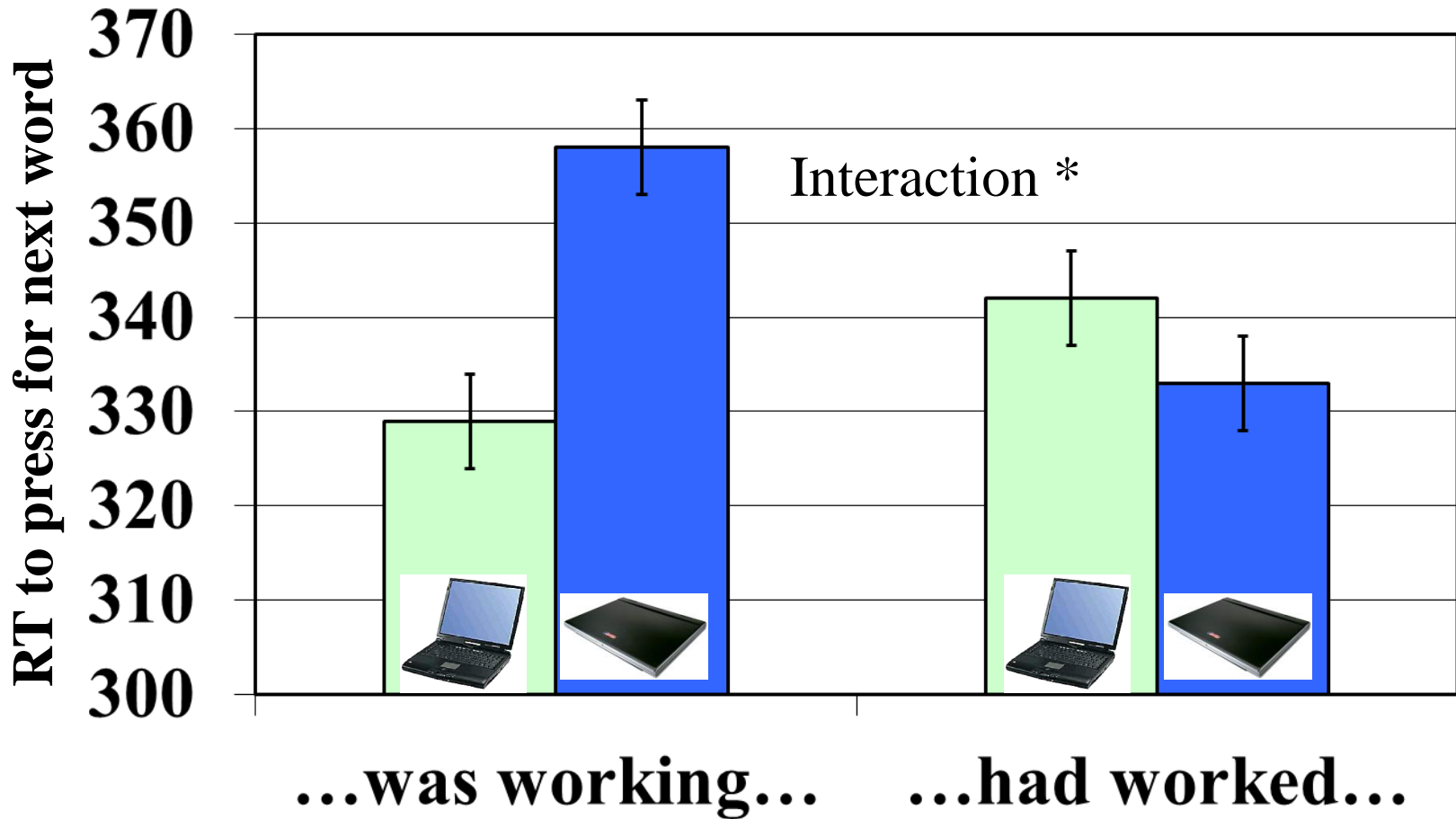
John was working/had worked on his  in the study.



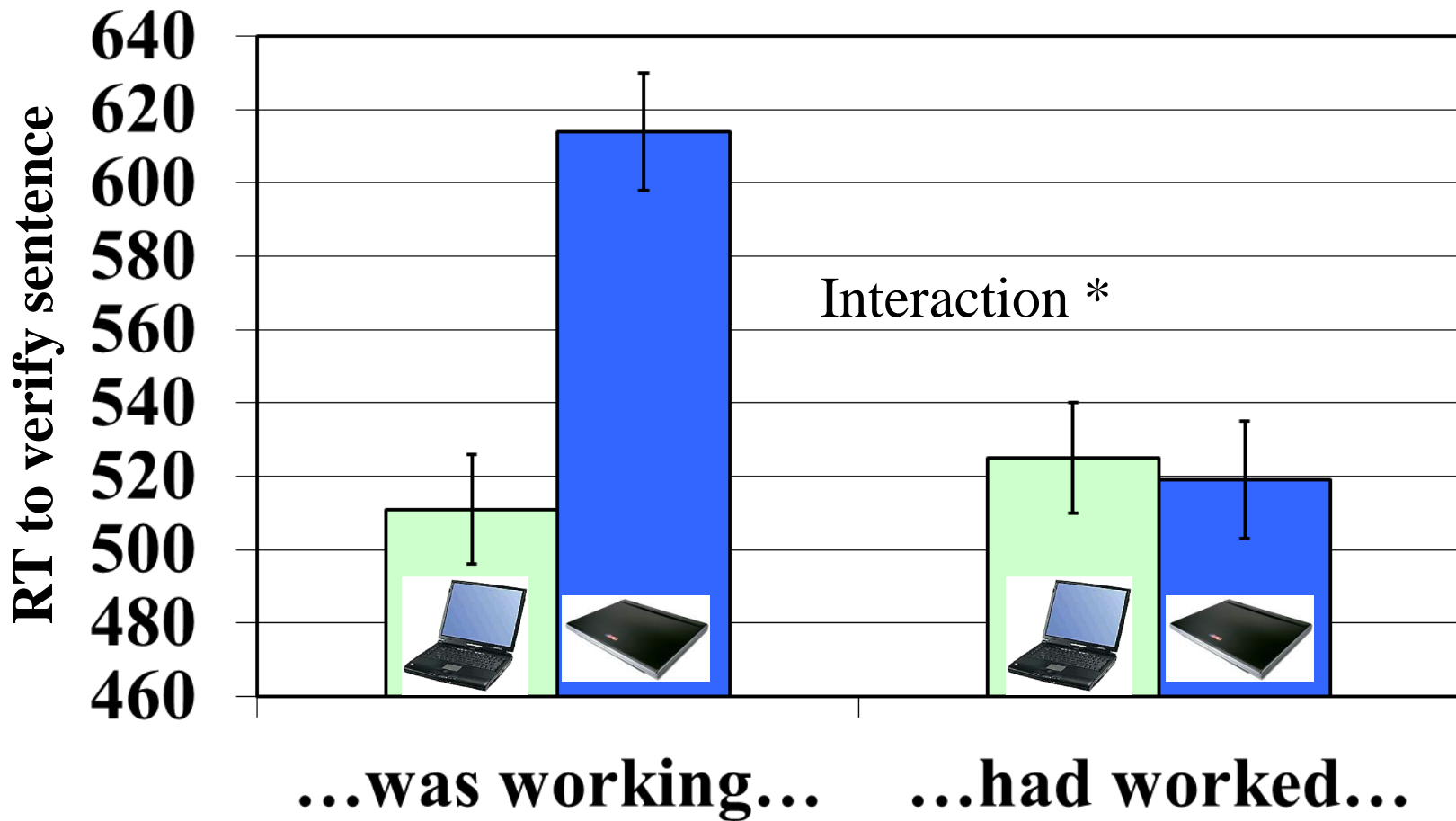
John was working/had worked on his   **in** the study.



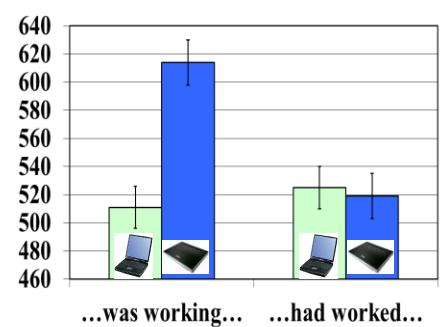
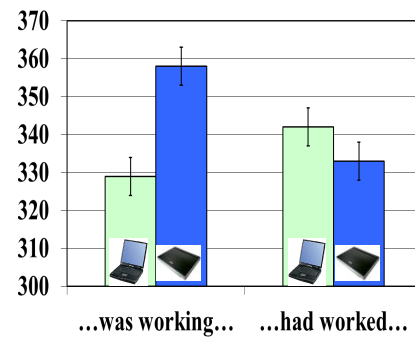
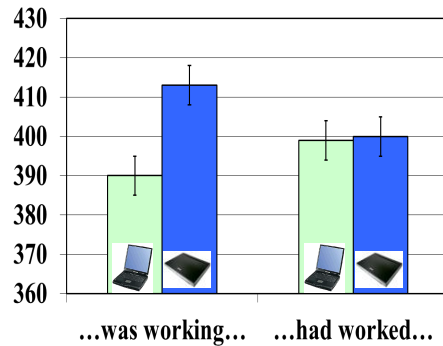
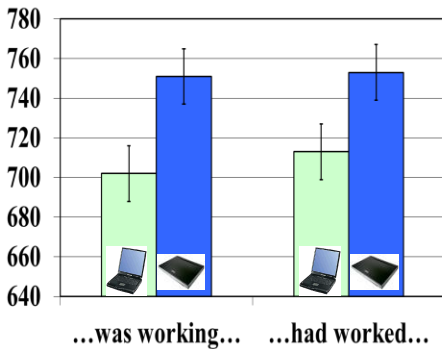
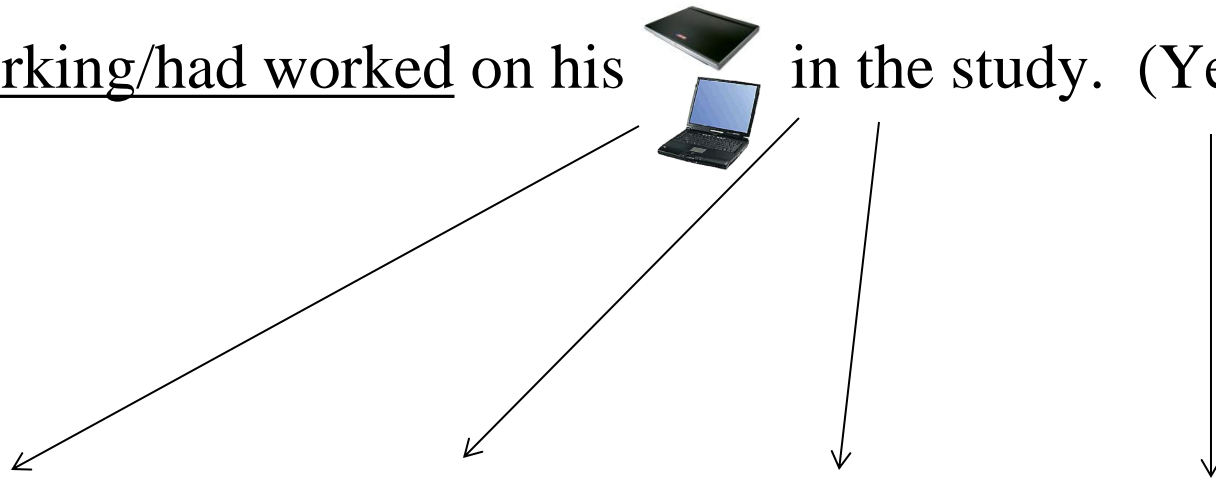
John was working/had worked on his  in **the** study. 



# Sensibility judgment



John was working/had worked on his  in the study. (Yes/No)

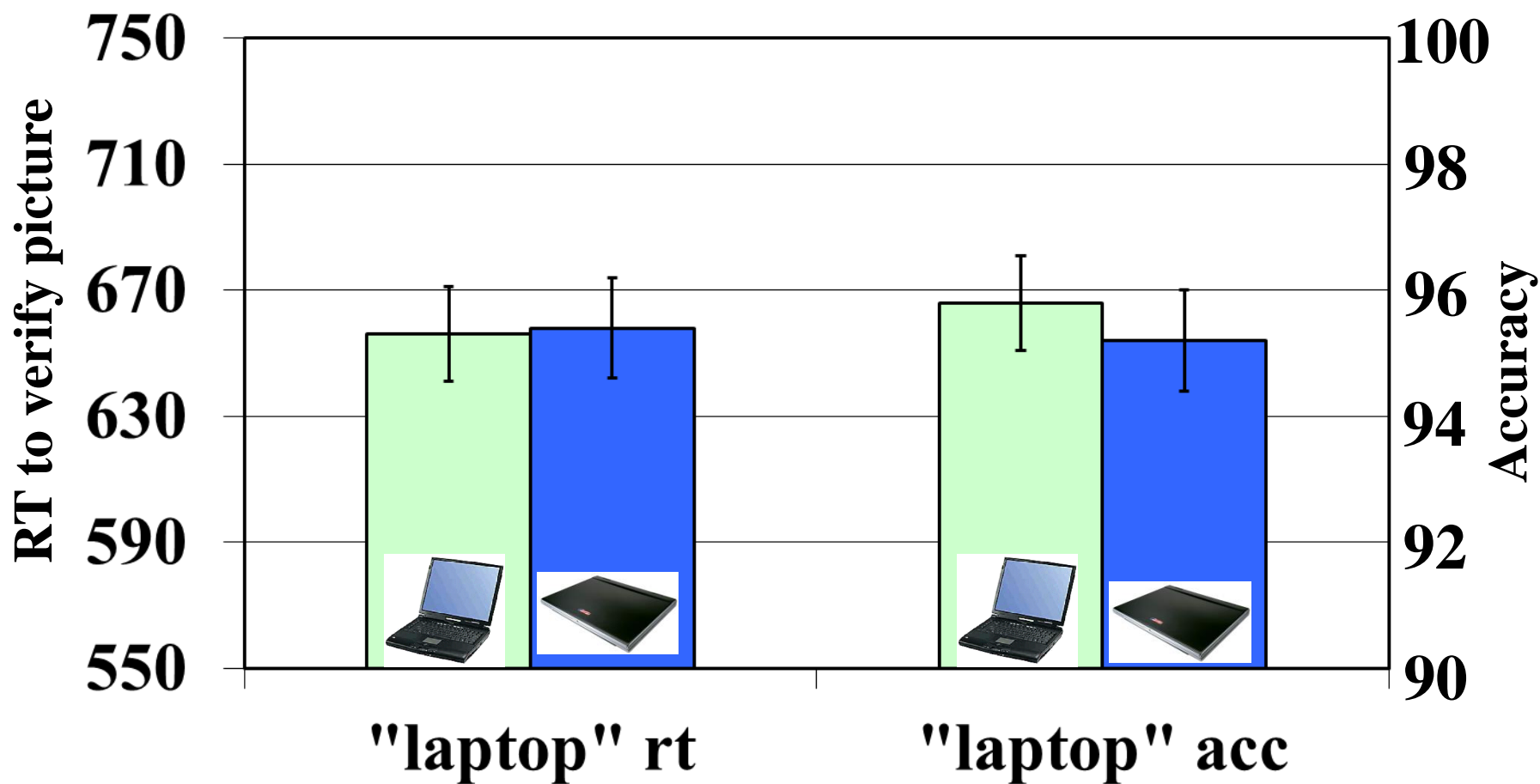


Simulation for  
lexical access

Simulation for integrated sentential context



# Control Picture Verification



# Aspect and event roles

Imperfective aspect keeps  
the event simulation running/focused.

What about perfect aspect ??

# Aspect and event roles

- perfect aspect: finished event, focus on the resulting object or state
- imperfective aspect: ongoing event, (stages, instruments, objects, agents, locations, etc.).

Jean <sup>was using</sup> a corkscrew to open the bottle.  
Jean <sub>had used</sub> a corkscrew to open the bottle.

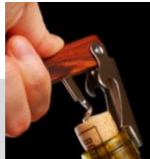













# Aspect and event roles



Jean was using a corkscrew to open the bottle.  
had used



60 event stimuli

Imperfective Aspect	Instrument & object match	John was using a 	to open the 	in the restaurant.
		Jean utilisait un	pour ouvrir la	dans le restaurant.
	Instrument mismatch	John was using a 	to open the 	in the restaurant.
	Jean utilisait un	pour ouvrir la	dans le restaurant.	
Object mismatch	John was using a 	to open the 	in the restaurant.	
	Jean utilisait un	pour ouvrir la	dans le restaurant.	
Perfect Aspect	Instrument & object match	John had used a 	to open the 	in the restaurant.
		Jean avait utilisé un	pour ouvrir la	dans le restaurant.
	Instrument mismatch	John had used a 	to open the 	in the restaurant.
	Jean avait utilisé un	pour ouvrir la	dans le restaurant.	
Object mismatch	John had used a 	to open the 	in the restaurant.	
	Jean avait utilisé un	pour ouvrir la	dans le restaurant.	
Filler	John had used a 	to pour the 	in the pool.	
	Jean avait utilisé un	pour verser du	dans la piscine.	

John

was

using



**a**



to

open

the



at

the

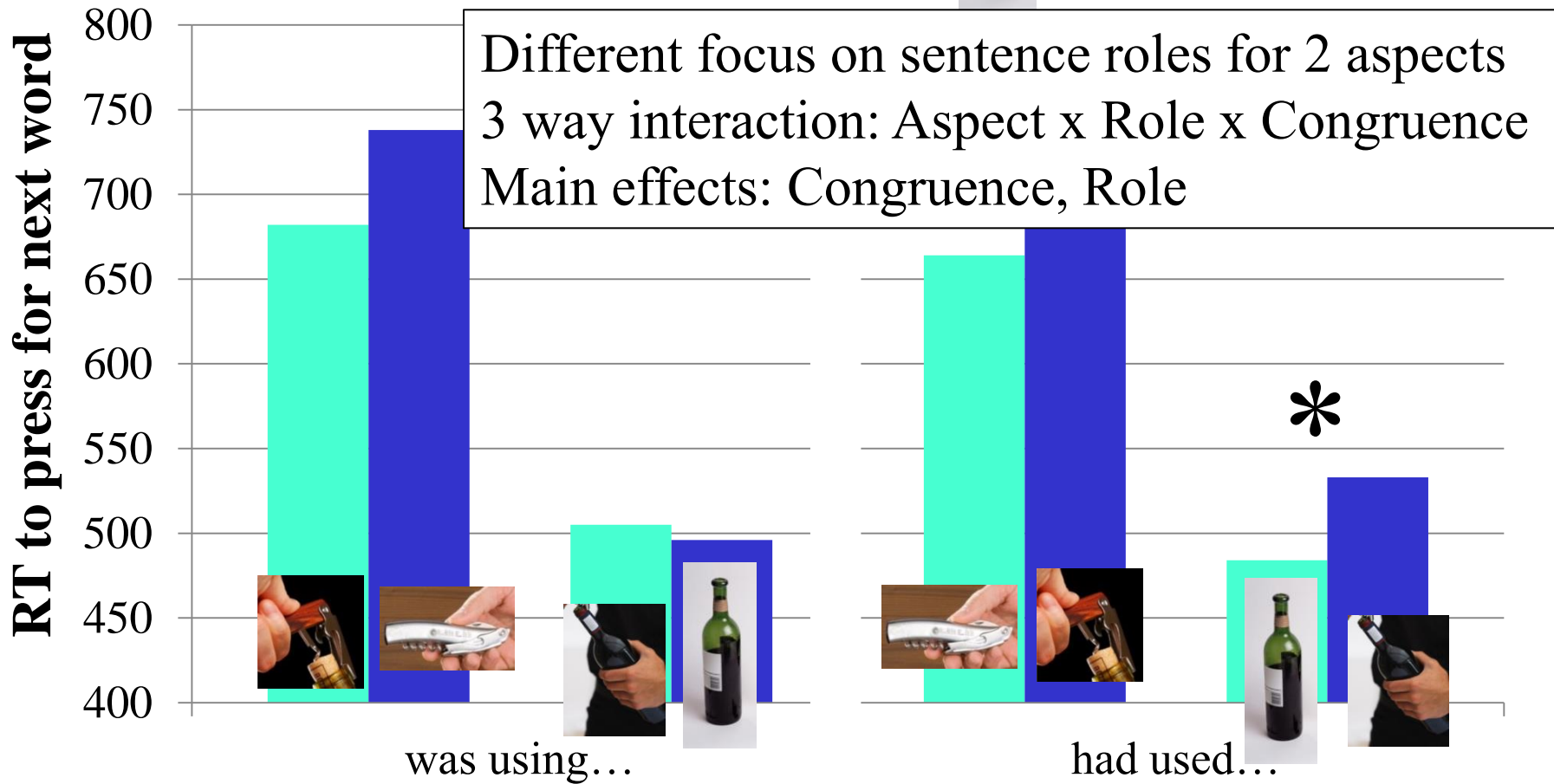


restaurant.

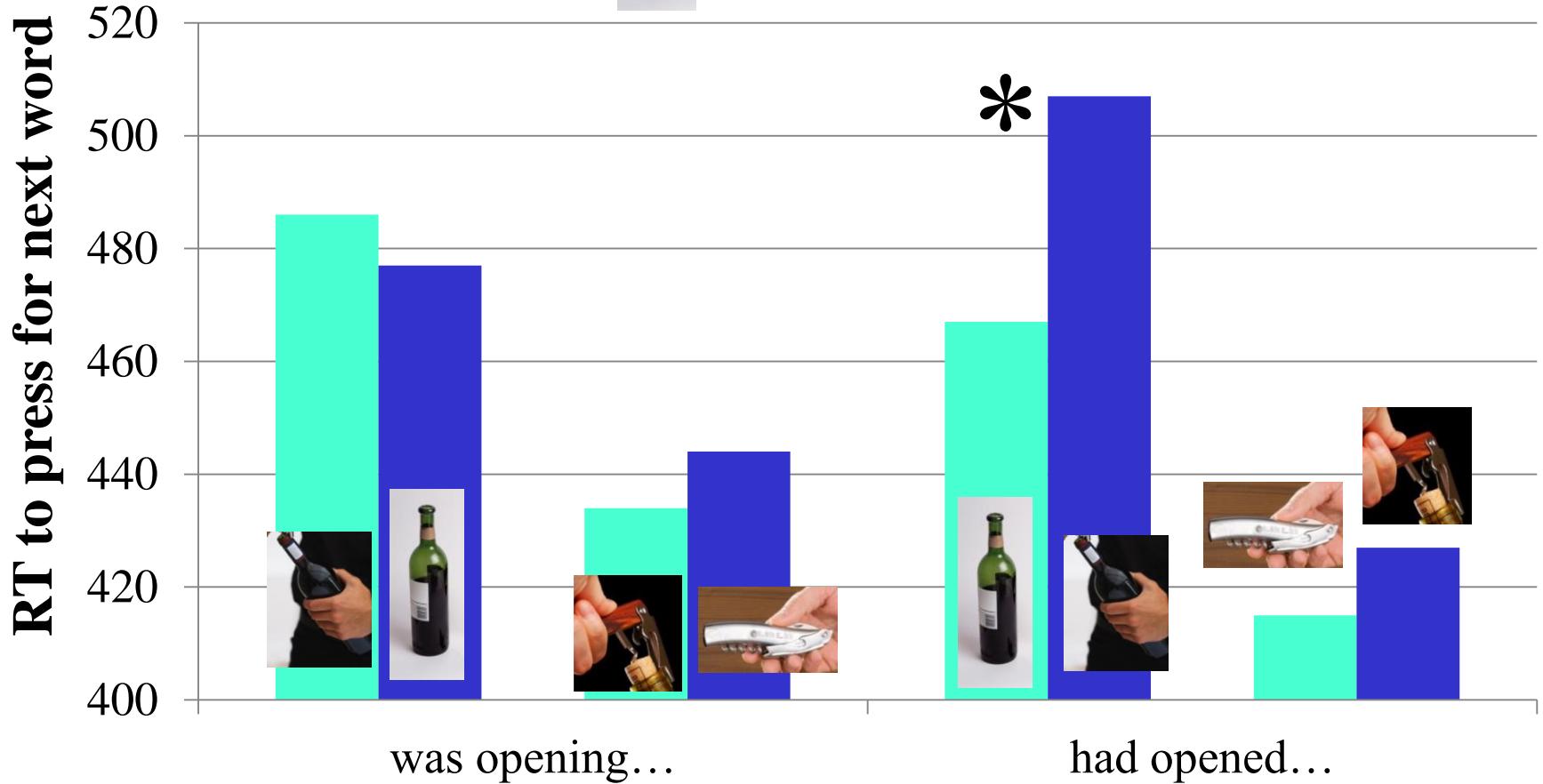
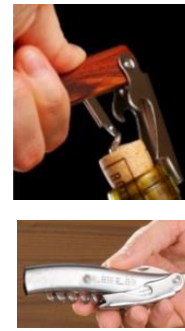
YES/NO

(sensitivity judgment)

Jean was using a  to open the  at the restaurant.  
 Jean had used a  to open the  at the restaurant.



Jean was opening the [bottle] with a [corkscrew] at the restaurant.  
 Jean had opened the [bottle] with a [corkscrew] at the restaurant.



# Aspect and event roles

- Verb aspect constrains simulations to ongoing or completed events
  - Imperfective aspect maintains the event simulation running/focused.
  - Perfect aspect shifts focus to resulting state/object

# Acknowledgments

Much of this research was supported by a fellowship to Carol Madden from Erasmus University Rotterdam, and funding from the ANR and European FP7 projects.