

# Homework 4 Reminder!!

- Due tonight at 11:59pm

# Using Common Ground in Comprehension and Production

BCS 152

November 14 2018

# Brown-Schmidt et al. (2008)

- Can listeners predict what information a speaker is asking about?
- Game: ‘Barnyard Oscars’



track where  
listener is  
looking

Listener



board filled with  
cards

Speaker





both have  
card

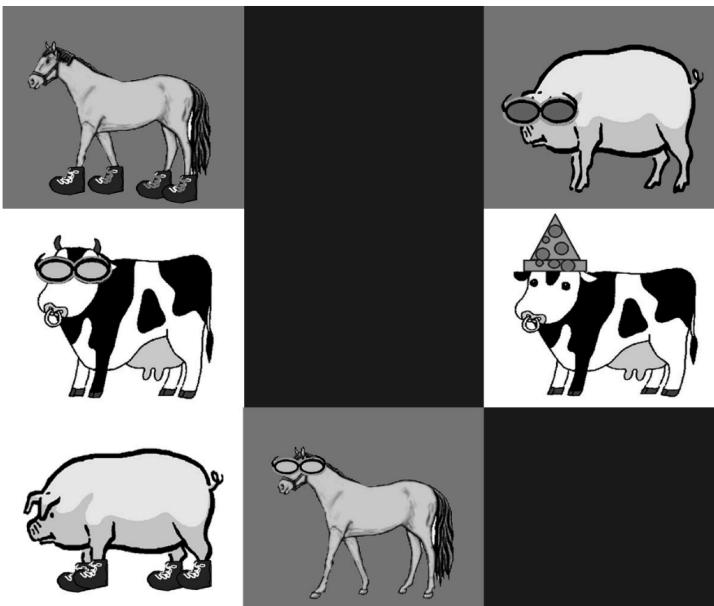


speaker doesn't  
have card

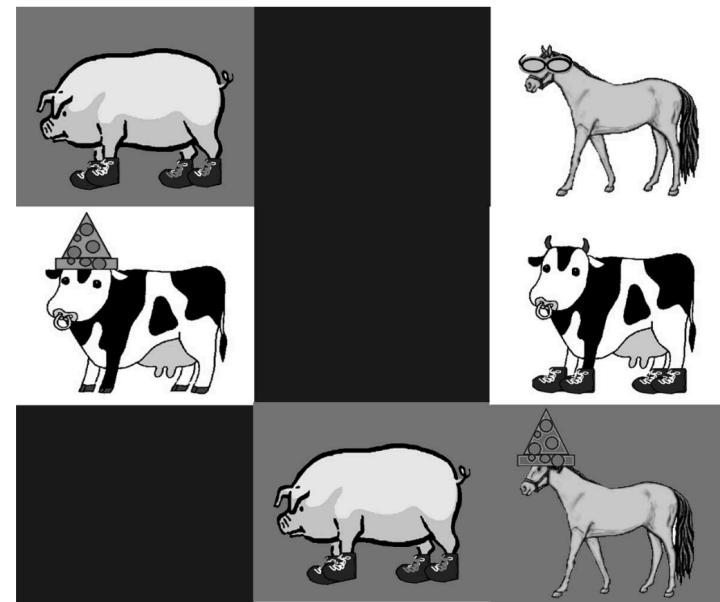


listener doesn't  
have card

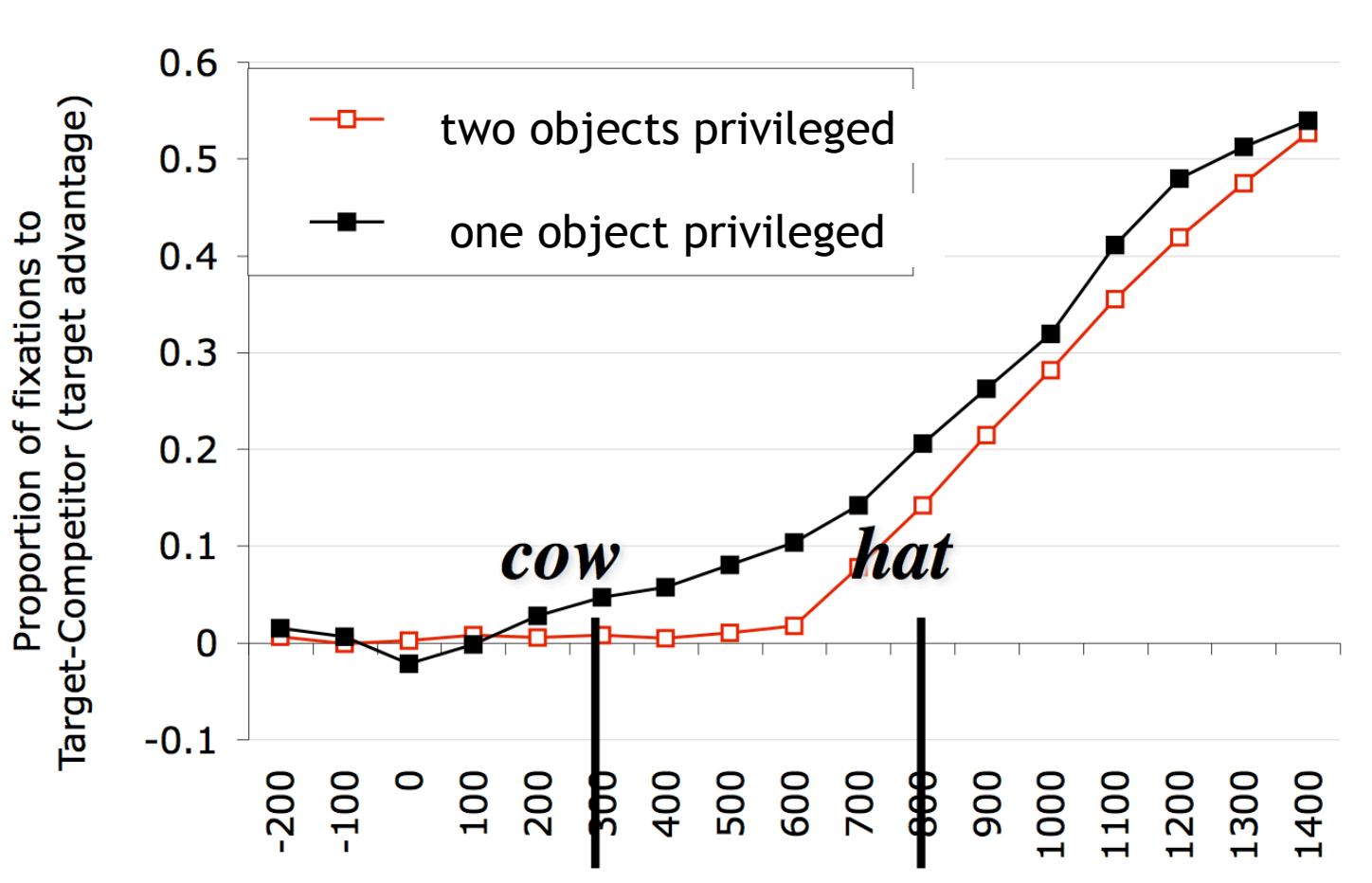
could be asking about  
either of these



why would they ask  
about this?! they  
can already see it!



**“What’s above the cow with....”**



- Listeners can quickly figure out what the speaker is asking about by using common ground
- Occurs immediately, before disambiguating information

# Heller, Grodner, & Tanenhaus (2008)

- Are listeners able to quickly use common ground to make quantity implicatures?

track where  
listener is  
looking

Listener

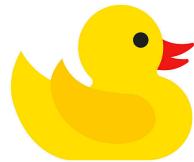
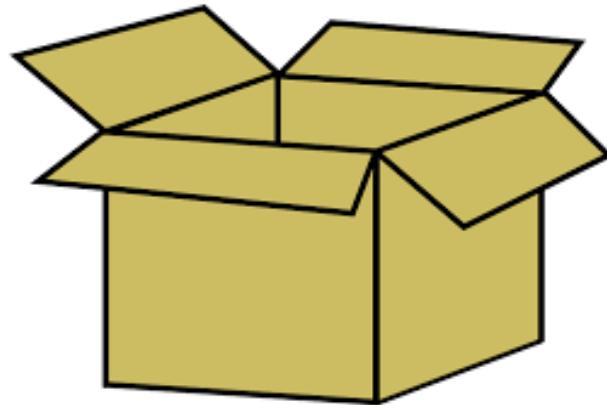
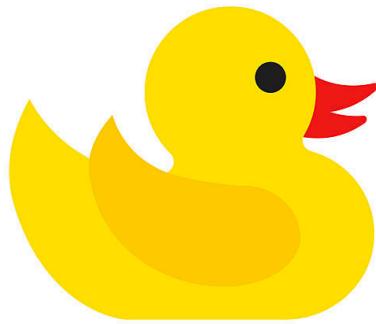


cubbyholes filled  
with objects

Speaker

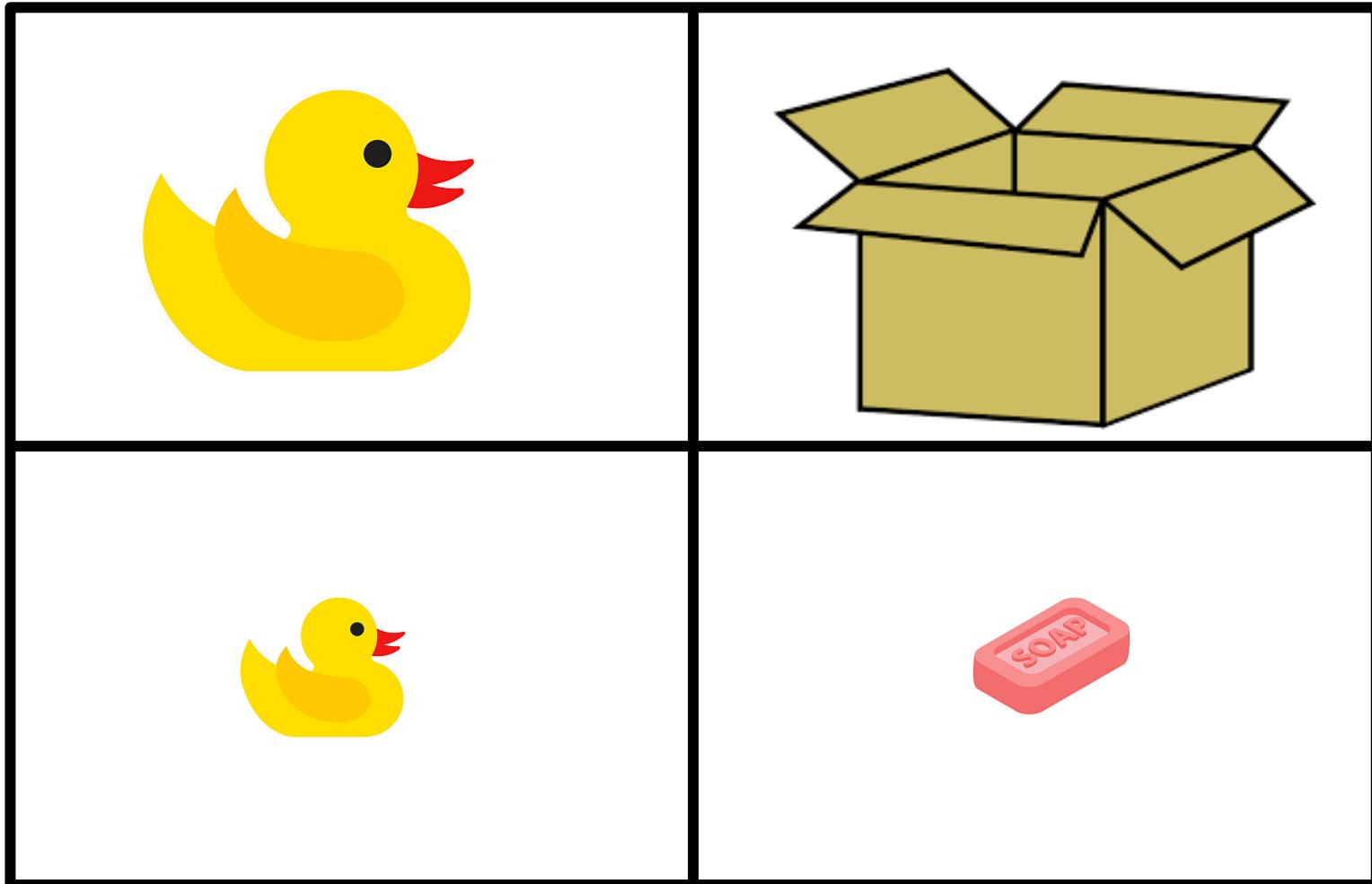


Speaker is cued to refer to one of the objects

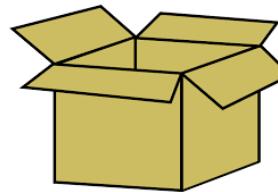
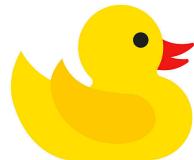
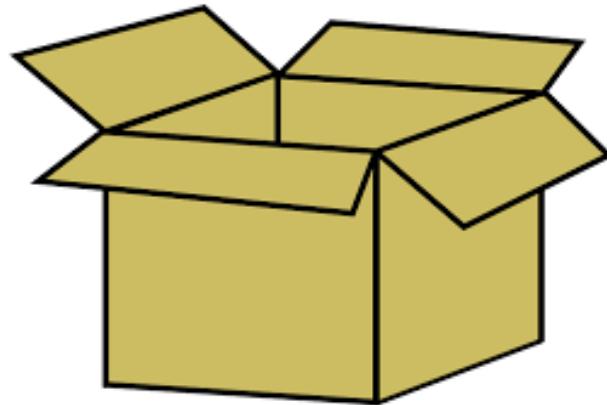
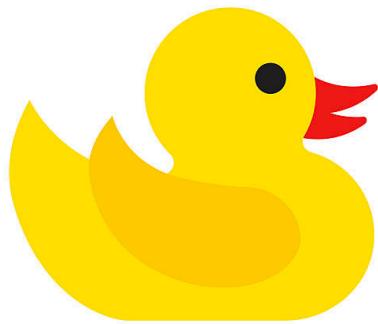


# ‘Pick up the big...’

‘big’ is over-informative

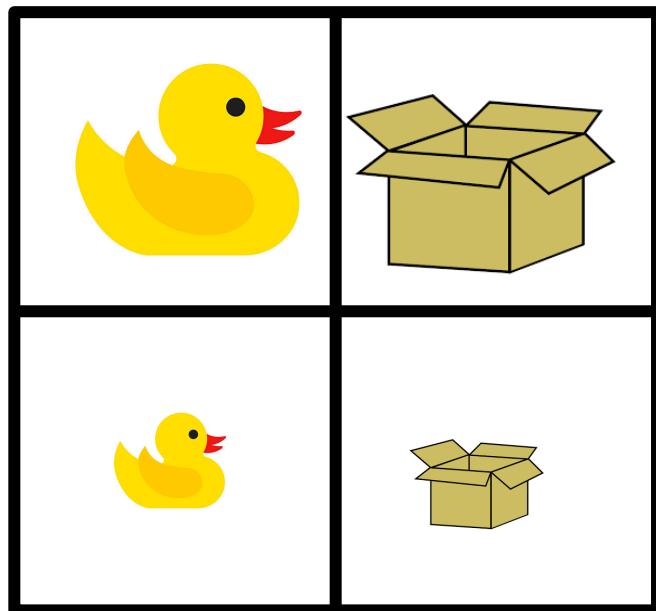


‘Pick up the big...’

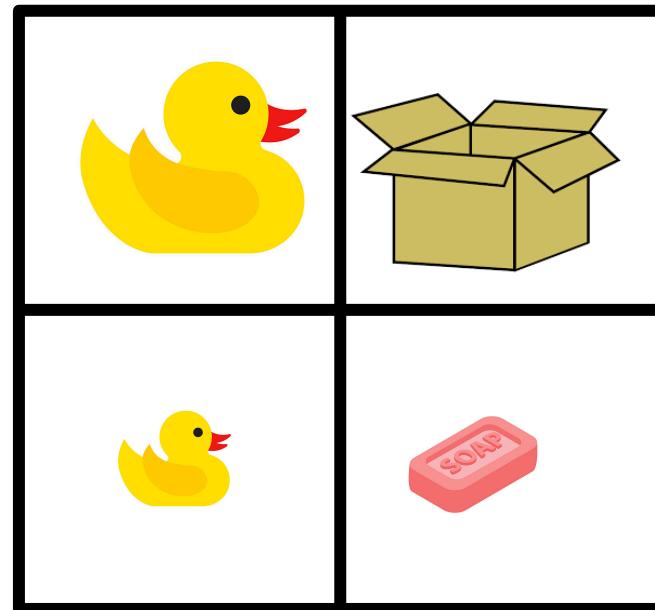


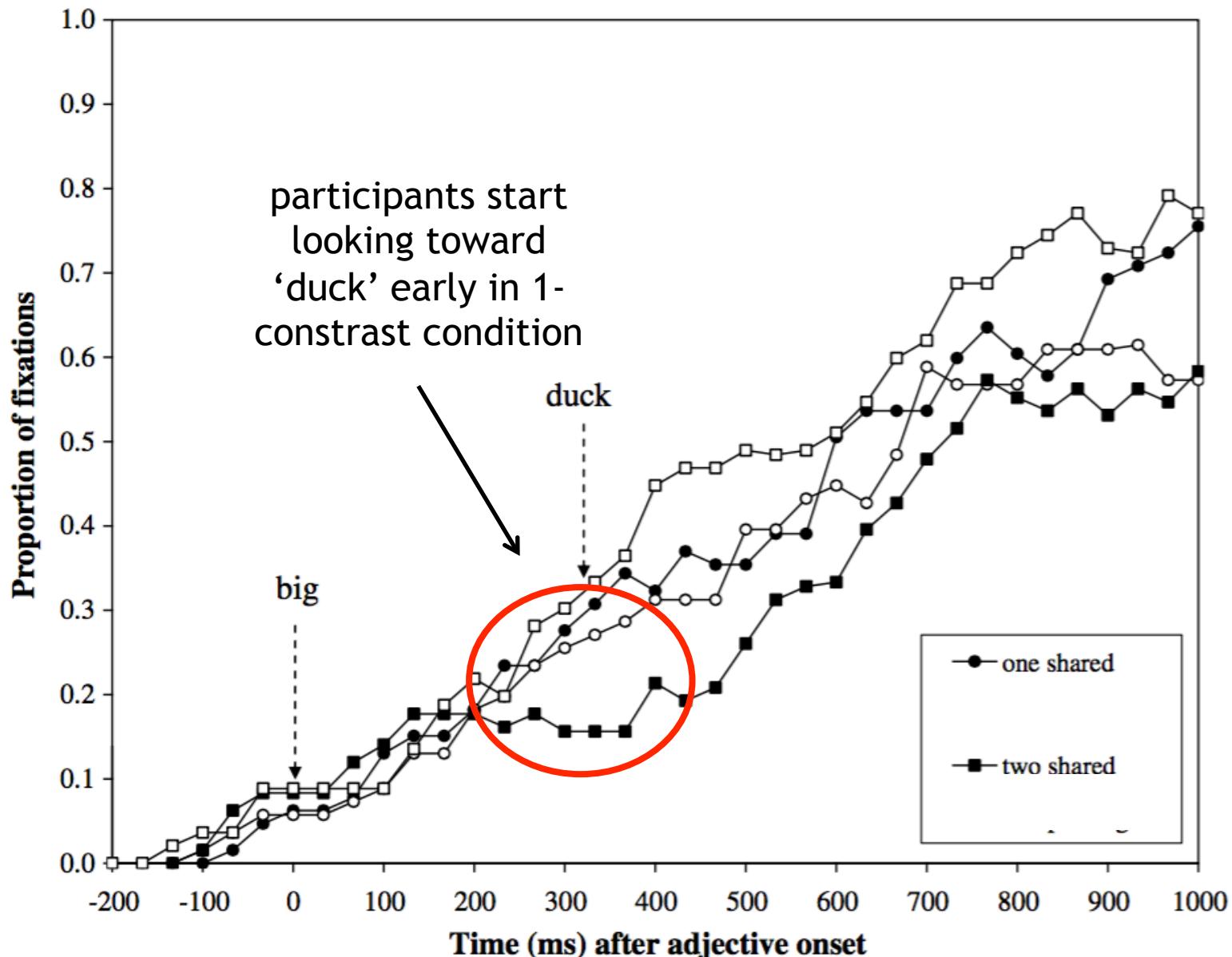
# ‘Pick up the big...’

**2-contrast condition**  
have to wait until noun



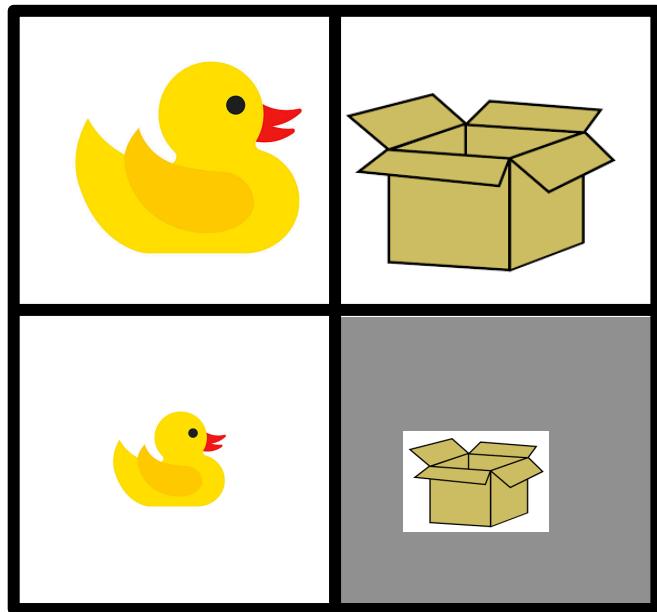
**1-contrast condition**  
‘big’ should refer to duck



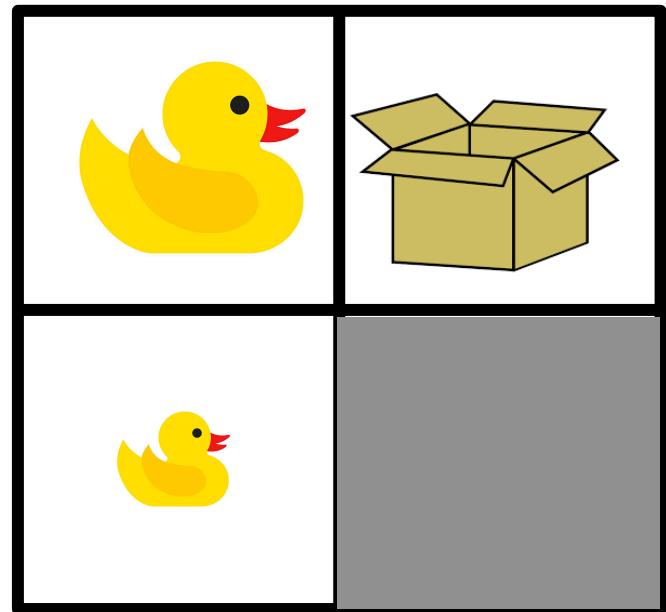


- What if not all the objects are in common ground?

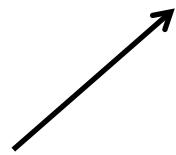
## Listener's View



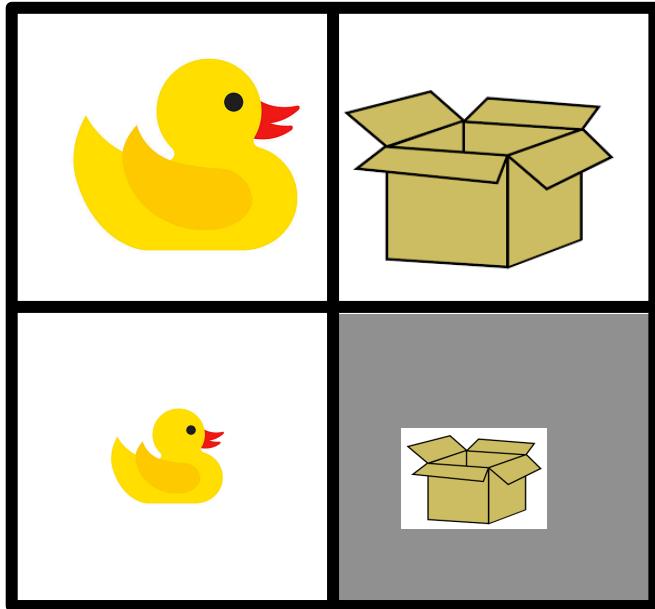
## Speaker's View



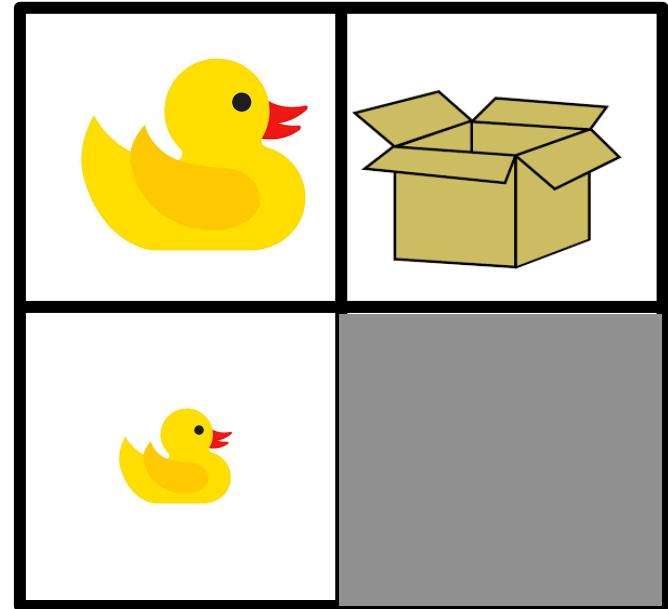
listener sees that this object is obscured to the speaker with gray sheet



## Listener's View

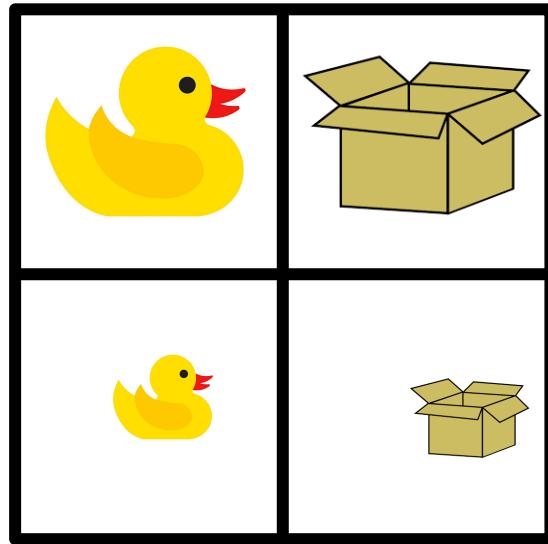


## Speaker's View

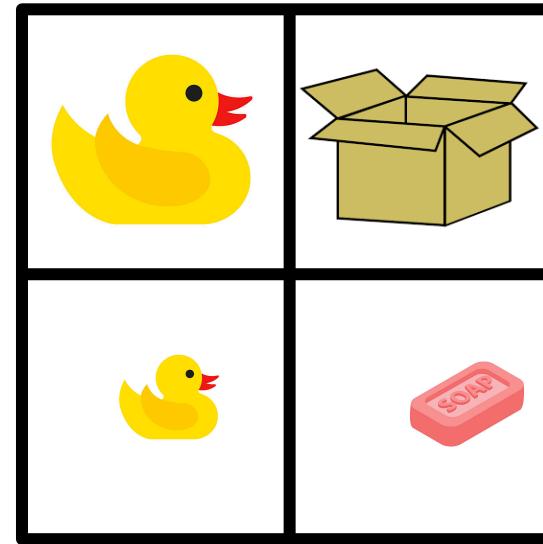


Small box is NOT in common ground  
Small box is *privileged ground* for the listener  
Listener knows what speaker can/can't see

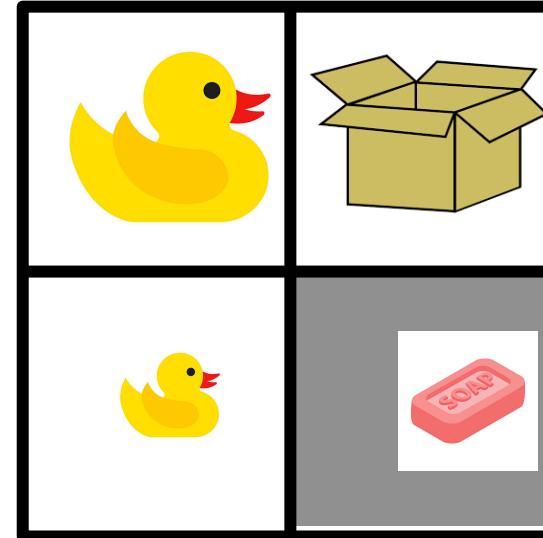
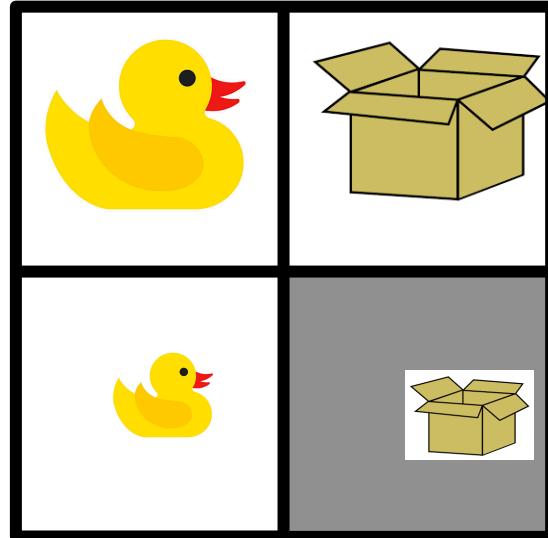
## 2-contrast



## 1-contrast



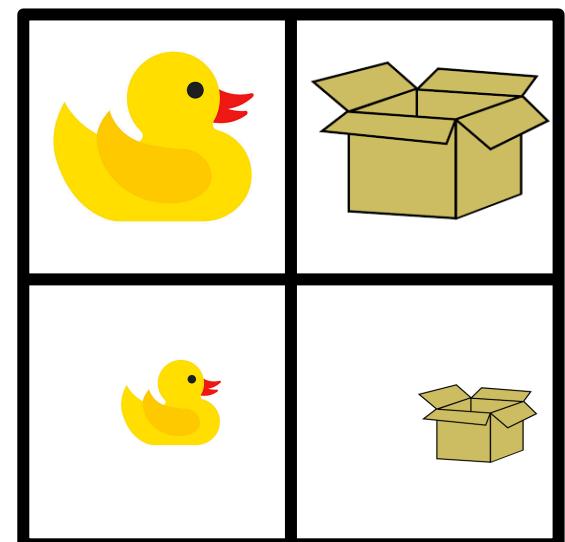
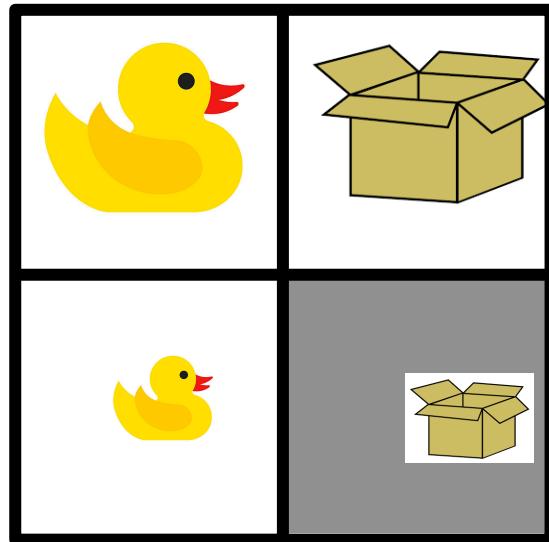
Common  
Ground



Privileged  
Ground

# If listeners DON'T take common ground into account quickly

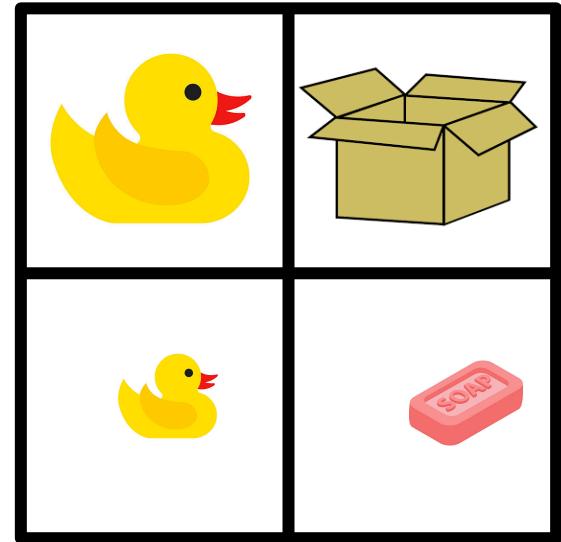
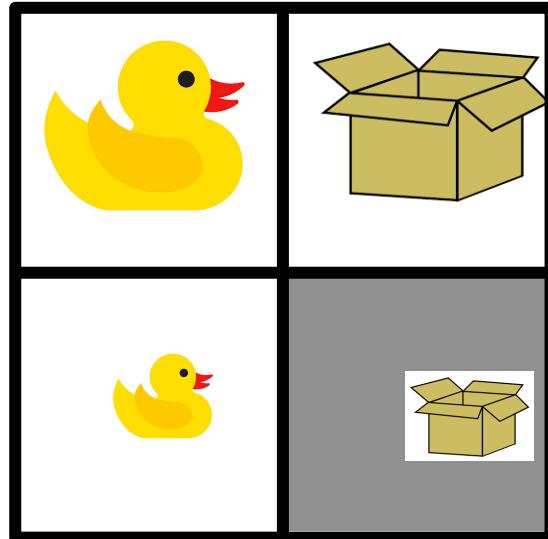
‘Pick up the big...’



Listeners should wait until they hear the noun to look at the right object

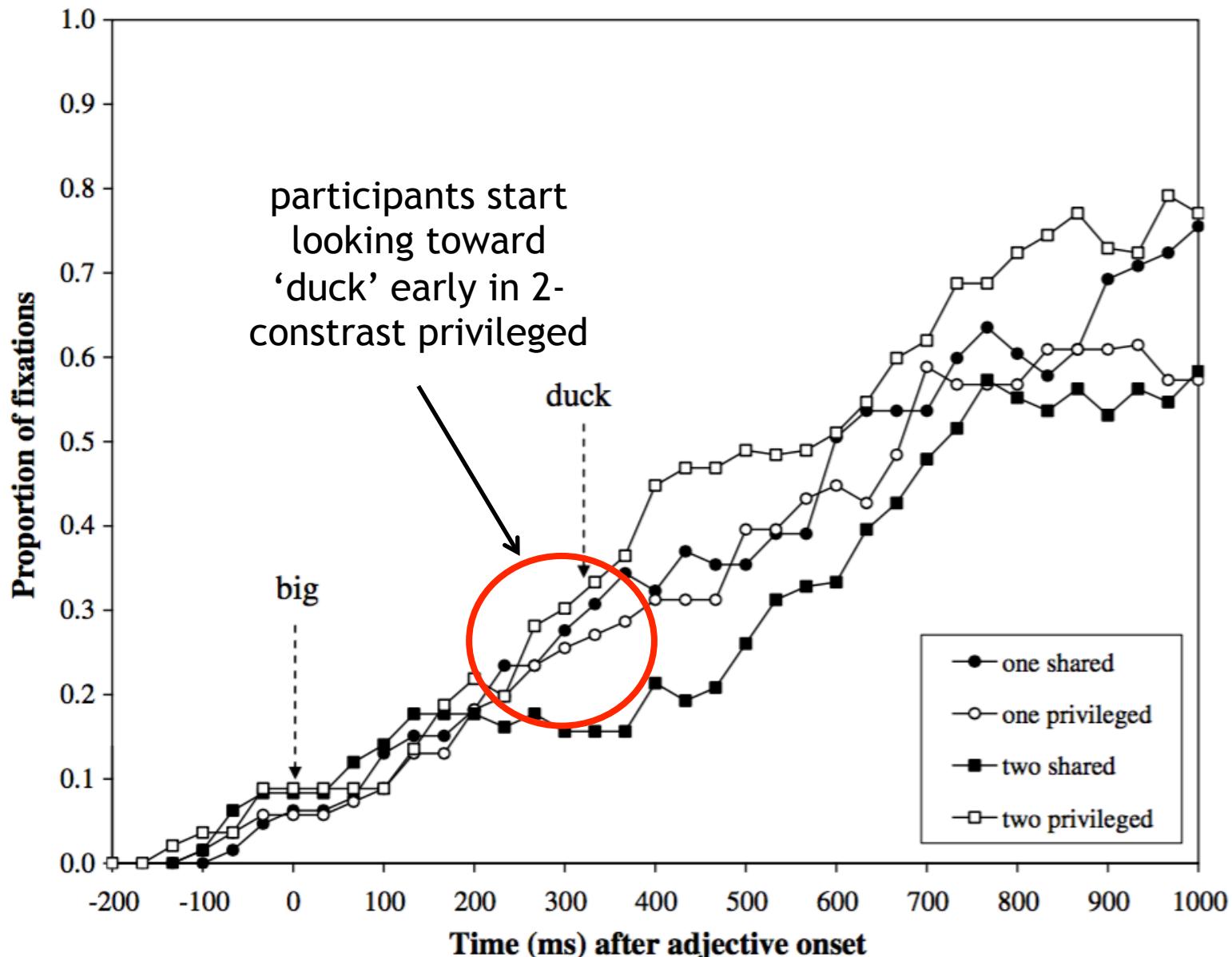
# If listeners DO take common ground into account quickly

‘Pick up the big...’



Listeners should look at ‘duck’ right away

- More complicated inference than in Barnyard Oscars study
  - Using common ground to guess what someone will want to talk about vs. using common ground to make Gricean inference



- Listeners infer the pragmatically likely meaning immediately
- Suggests information about common ground is integrated with current input as soon as it is available

# Common Ground in Comprehension

- Listeners are aware of what is and isn't in common ground
- They use this knowledge to infer their interlocuter's intended meaning
- Inference happens immediately

# Common Ground in Production: Audience Design or Production Ease?

- Listeners seem to integrate common ground into comprehension quickly
- Doesn't necessarily mean that speakers use common ground to shape their productions

# Two Views of Production

- **Production Ease:** just produce whatever is easiest, disregarding your interlocuter
- **Audience Design:** make things as easy to understand for your interlocuter as possible (even if it's harder to produce)

# Pros & Cons of Production Ease

- It's easier in the moment
- Risk of listener not understanding you
  - subsequent questions and back & forth dialogue could actually be costly for production!

# Pros & Cons of Audience Design

- Your listener will have better comprehension
- Knowing what's best for your specific listener could be taxing for attention/memory
- Utterances might take longer/more effort to produce
  - But you save on having to have a back-and-forth afterwards if the listener doesn't understand!

# Brown & Dell (1987)

- Do speakers mention items important to a story at a higher rate when their listener doesn't have knowledge of them?
- Storytelling task: speaker reads a story and then needs to retell it to a listener
- Manipulate:
  - typicality of object in story
  - listener's knowledge

## Typical Instrument

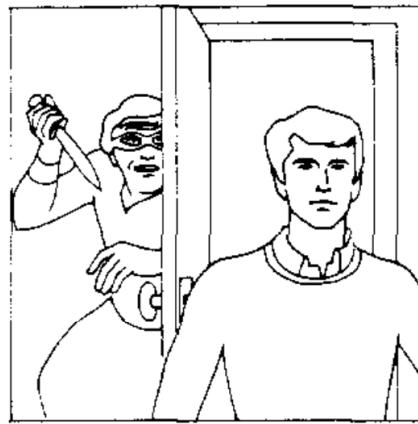
The robber hid behind the door and when the man entered the kitchen he stabbed him in the back. He wiped the blood off the **knife** and rummaged through the drawers. Later police investigators found his fingerprints all over the knife and had no trouble catching him.

## Atypical Instrument

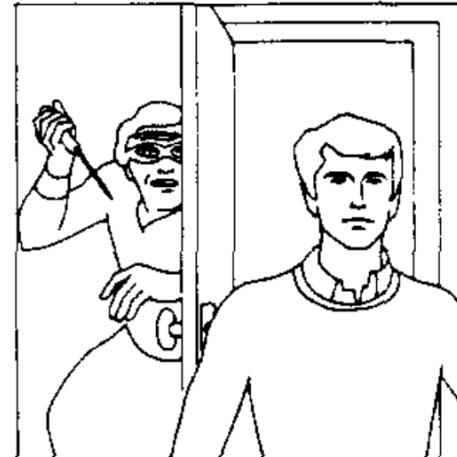
[...] He wiped the blood off the **icepick** and rummaged through the drawers. [...] investigators found his fingerprints all over the icepick and had no trouble catching him.

# Listener Knowledge

After reading story to themselves, speaker either gives or does not give listener a picture and re-tells the story



Typical- Informative

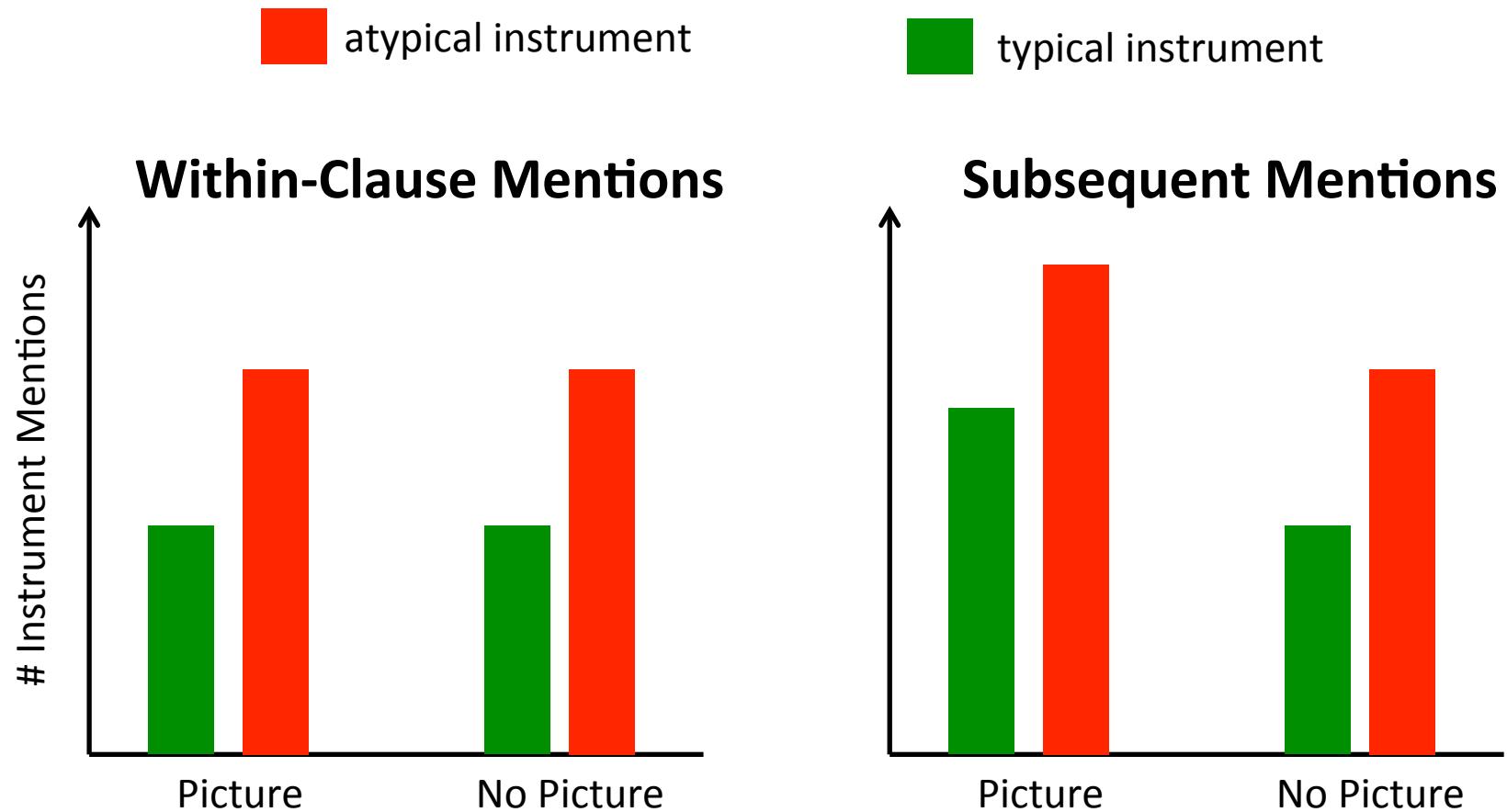


Atypical- Informative

# Analysis: when do speakers mention the instrument?

- Within-clause
  - “The robber stabbed a man with a knife.”
  - “The robber used a knife to stab the man.”
  - “The robber knifed the man.”
- Separate clause
  - “The robber stabbed the man. He used a knife.”
- Subsequent mention
  - “The robber stabbed the man. He wiped blood off the knife.”

# Brown & Dell (1987) Results



- Atypical instruments mentioned overall more often: ‘generic’ audience design
- ‘Specific’ audience design only occurs late (subsequent clause mentions)

- Speakers only take listener information into account late
- Brown & Dell (1987) conclusions:  
Production ease first, only repair later
  - audience design as an afterthought
- Case closed?...

# Lockbridge & Brennan (2002)

- Brown & Dell (1987) study wasn't very naturalistic
- Only 2 unique listener participants for the 80 speaker participants (!!)
- Conversational partners couldn't see each other
- Participants had no incentive to be accurate in their storytelling

# Lockbridge & Brennan (2002)

- Each speaker/listener pair were new participants
- Pairs were allowed to converse freely
- Pairs had to answer comprehension questions about the story afterwards

# **Lockbridge & Brennan (2002)**

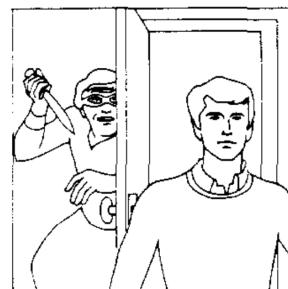
- **No visual co-presence**
  - similar to Brown & Dell ‘no picture’ condition
  - participants are separated by a divider and listener doesn’t have a picture
- **Full co-presence**
  - participants seated so they could see each other
  - informative picture displayed between the participants

# Brown & Dell No Picture Condition

person who's heard this  
story 20 times already



divider

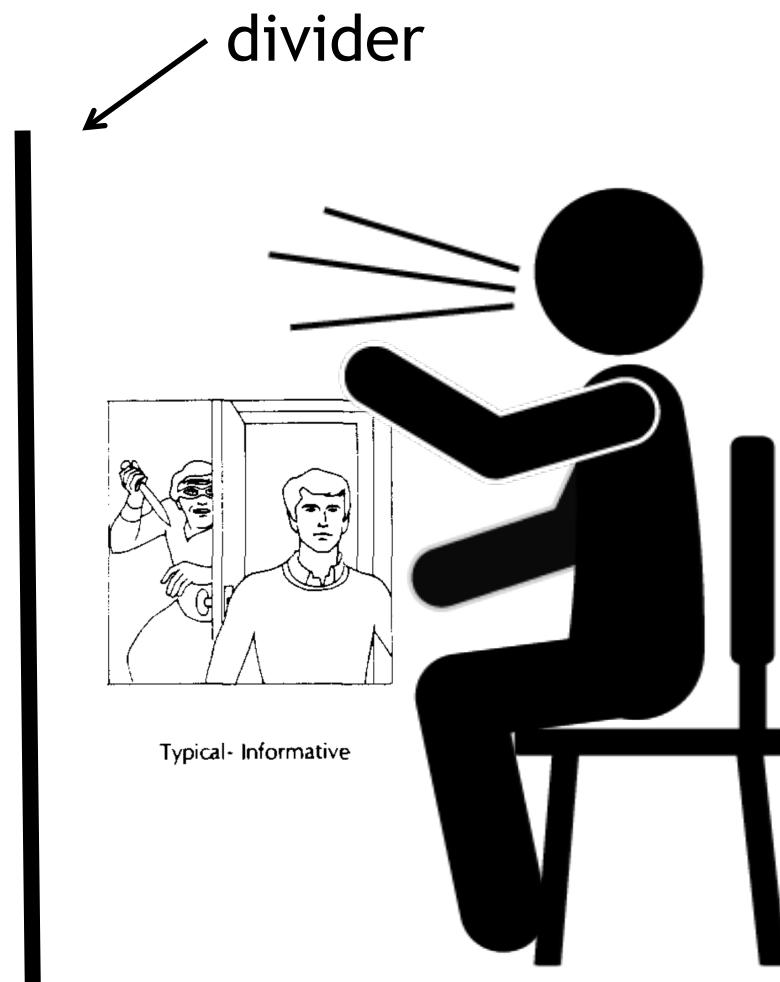


Typical- Informative



# Brown & Dell No Picture Condition

person who's heard this story 20 times already



# Lockbridge & Brennan No Co-Presence

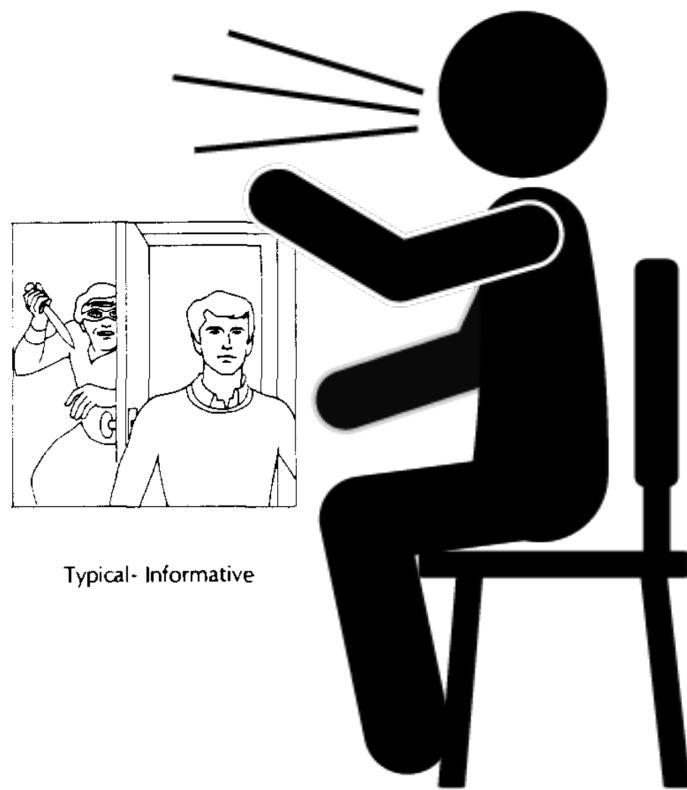
never heard the story



divider



They have to understand the story completely...



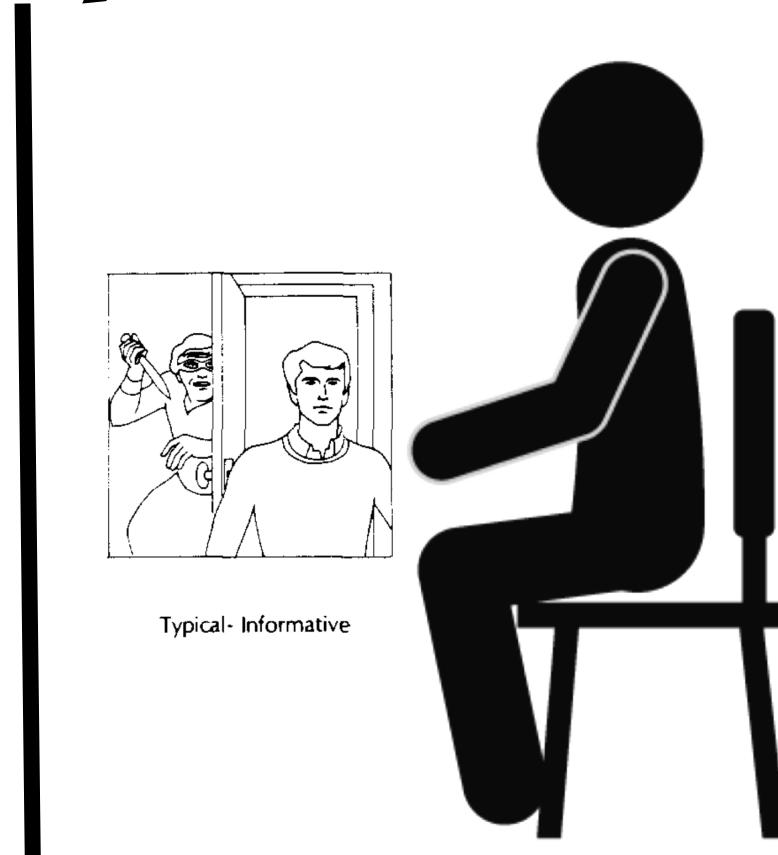
Typical- Informative

# Brown & Dell Picture Condition

person who's heard this  
story 20 times already



divider



# Brown & Dell Picture Condition

person who's heard this  
story 20 times already

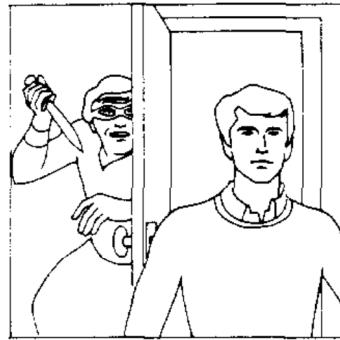


Typical- Informative

divider



# Lockbridge & Brennan Full Co-Presence



Typical- Informative



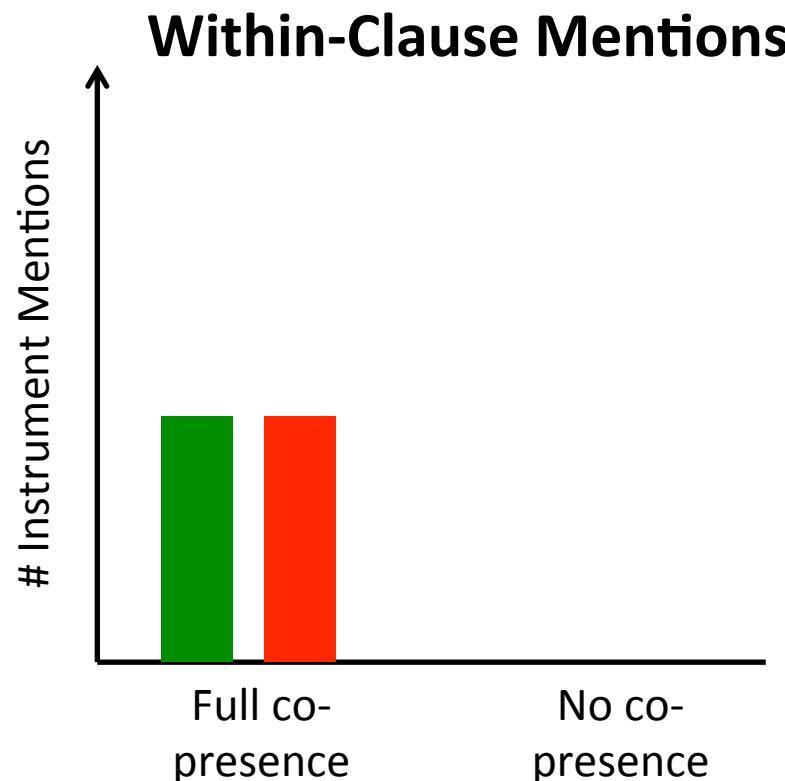
# Brown & Dell Results

█ atypical instrument      █ typical instrument



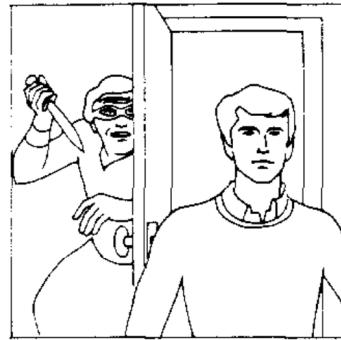
# Lockbridge & Brennan Results

█ atypical instrument      █ typical instrument



- Where did the typicality effect go?

# Lockbridge & Brennan Full Co-Presence



Typical- Informative



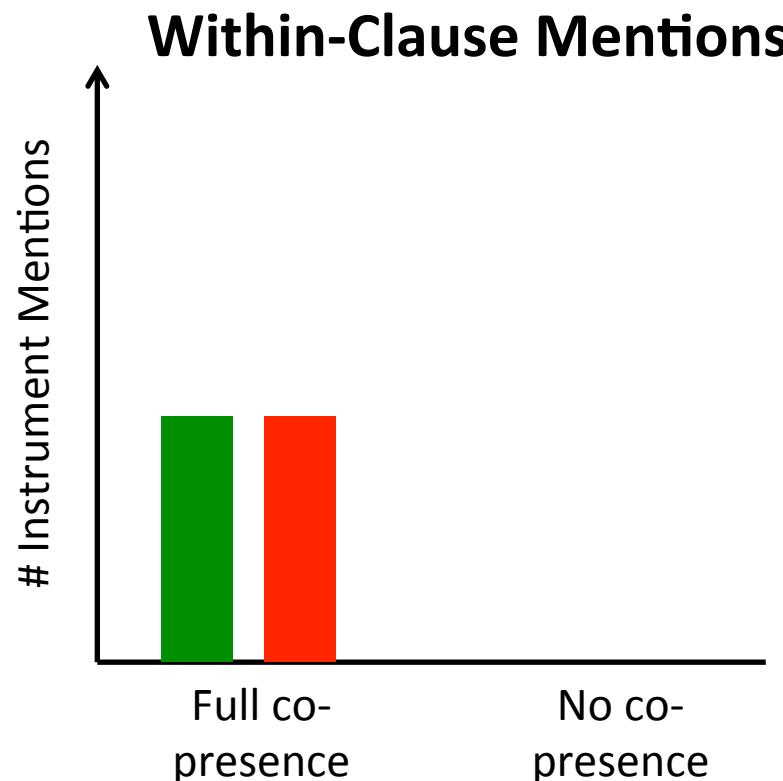
# Lockbridge & Brennan Results



atypical instrument



typical instrument



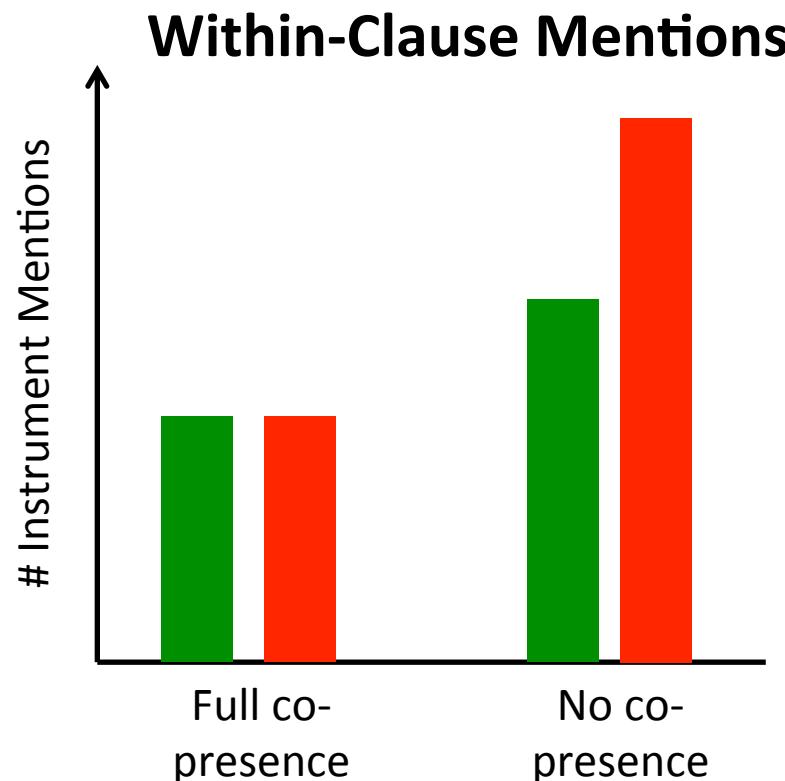
# Lockbridge & Brennan Results



atypical instrument



typical instrument



# Lockbridge & Brennan (2002)

- Vastly different results when design is more naturalistic
- ‘Generic’ audience design effect goes away when participants and information are fully co-present
- Large ‘specific’ audience design effect when participants are naive and have incentive to be accurate

- Big audience design effect when speaker *knows* what the listener does and doesn't know
- What about when it's less clear?
  - Novel objects learned together or separately
  - Common vs. Rare objects & expertise

# Wu & Keysar (2007)

- How do speakers refer to novel objects when their listener does or doesn't know their names?
- Strategy: referential game with novel objects
- Some object names learned together, others separately

# Training Phase

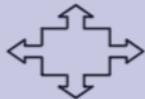
learned  
together:  
*shared*



danzo



nelke



foogle



banpar



abypit



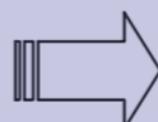
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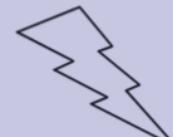
pright



grampent



buttly



jovethun



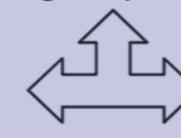
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archow



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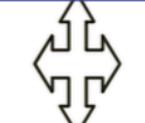
speaker  
only:  
*privileged*



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cortlog



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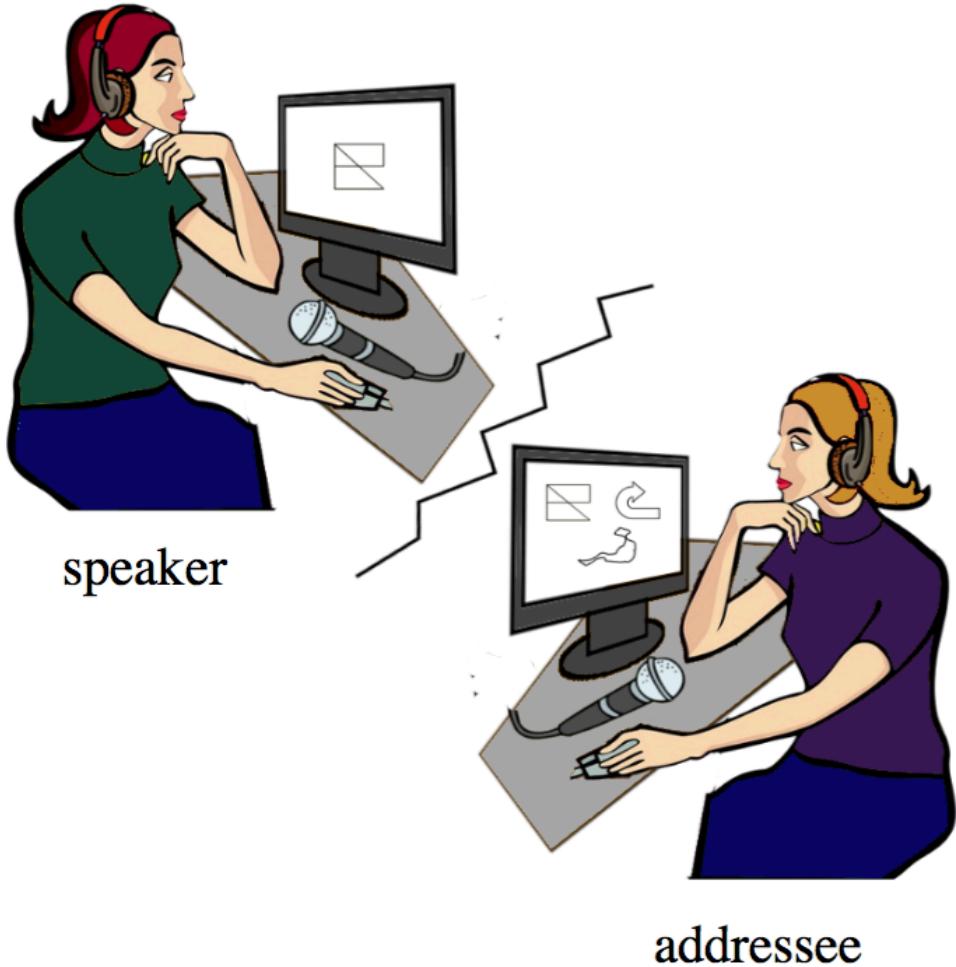


molget

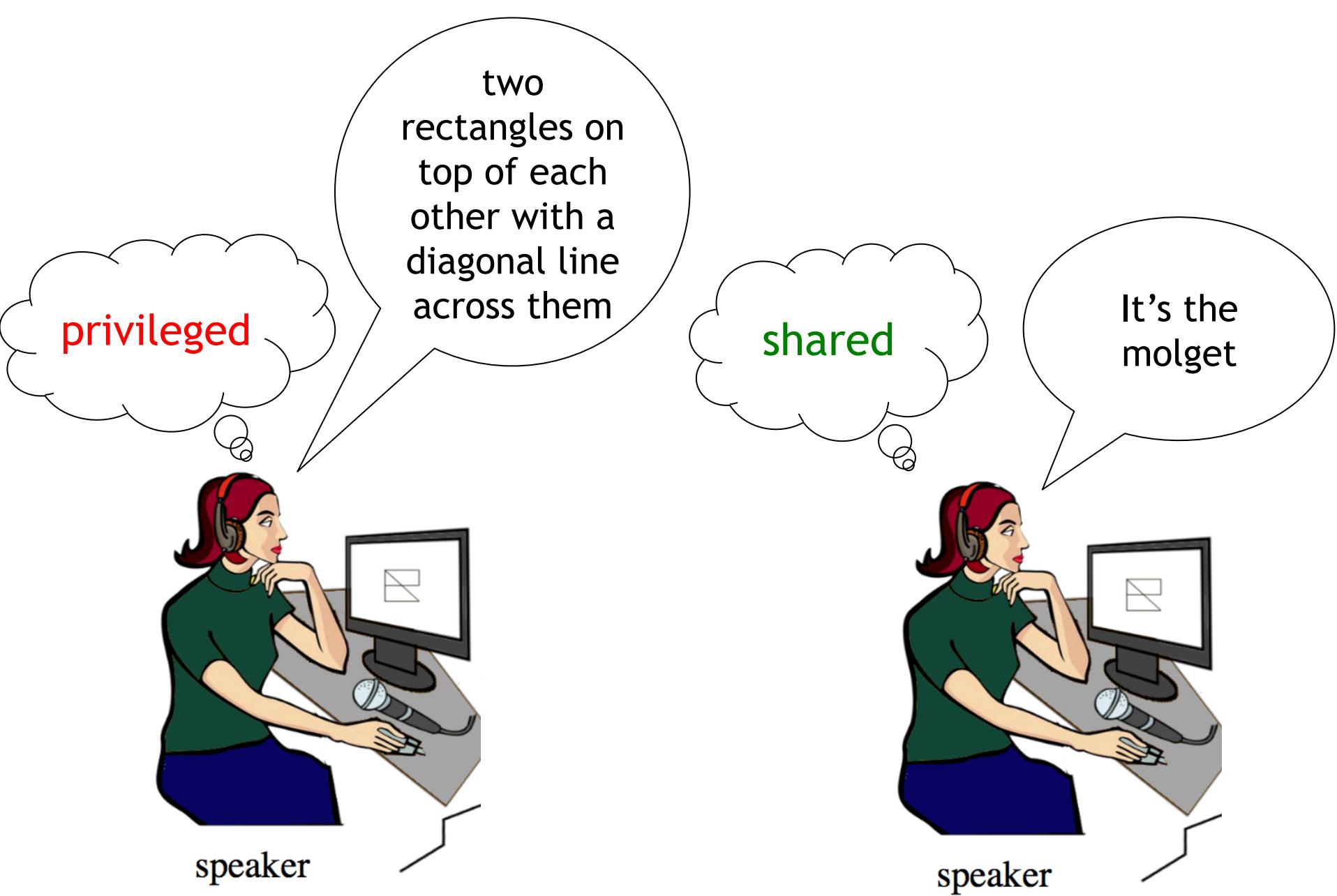


flazap

# Test Phase



Instructions:  
get your  
partner to pick  
out the correct  
object as  
quickly and  
accurately as  
possible



- Perfect audience design requires remembering which objects were learned together or separately
- Wu & Keysar: that's too costly for memory! What if speakers use a general strategy?

# Training Phase: High-Overlap Learning

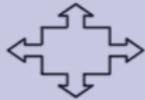
learned  
together:  
*shared*



danzo



nelke



foogle



banpar



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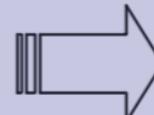
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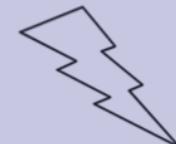
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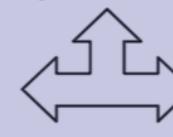
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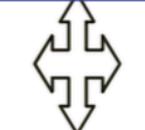
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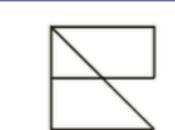
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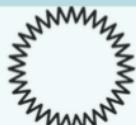
flazap

# Training Phase: Low-Overlap Learning

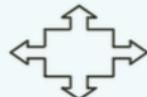
learned  
together:  
*shared*



danzo



nelke



foogle



banpar

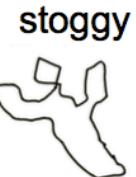


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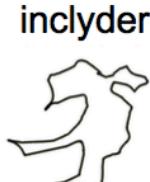
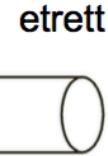
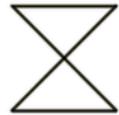


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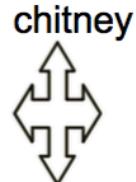
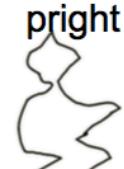
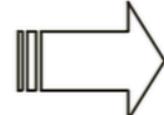
speaker  
only:  
*privileged*



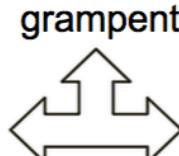
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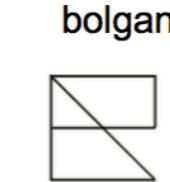
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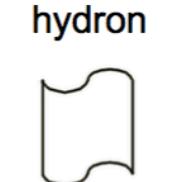
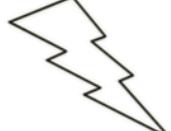
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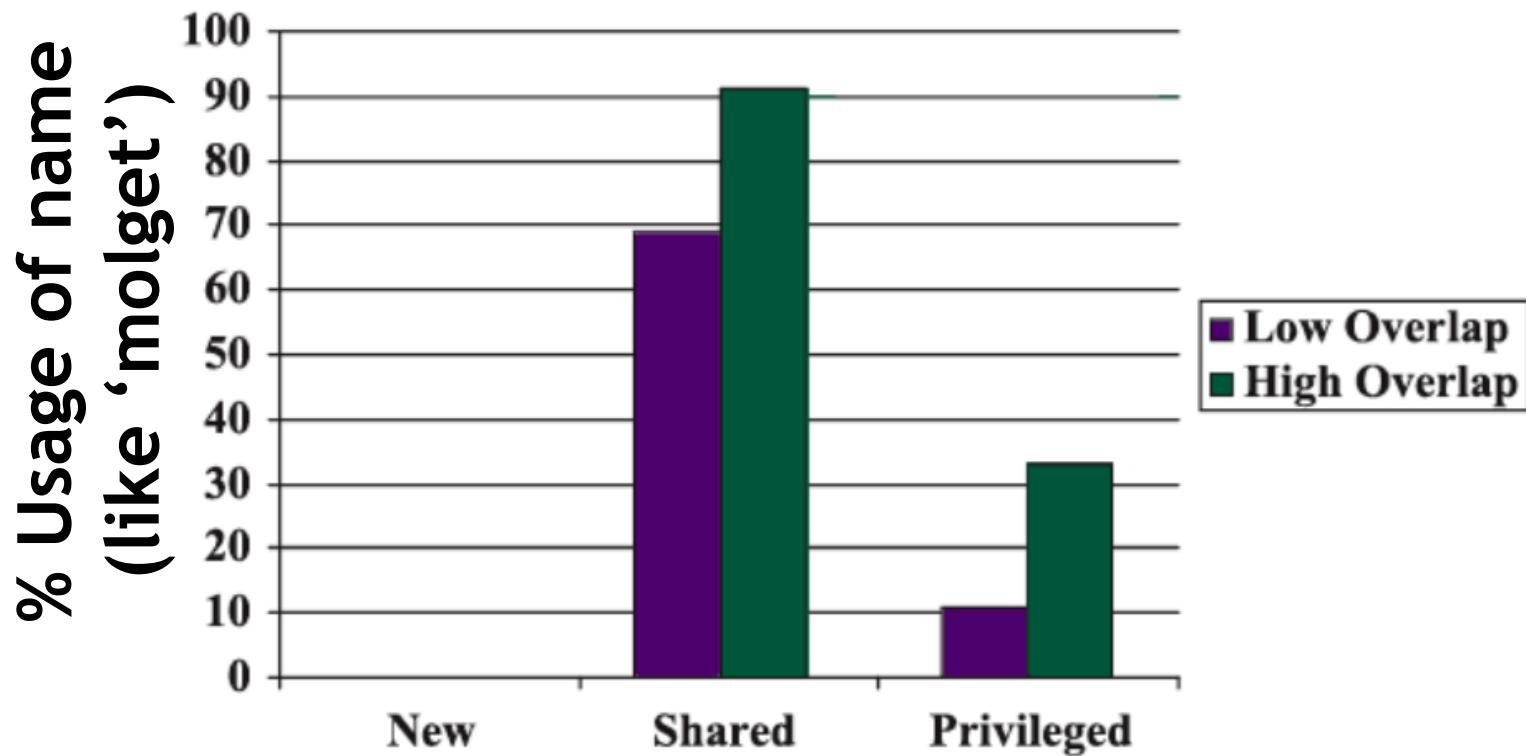
# Low-Overlap Condition



# High-Overlap Condition



# Results



- Speakers sometimes used names for privileged objects
- Suggests they applied a *general* audience design strategy
  - didn't specifically remembering every single object learned together or separate

# Ibarra (2018)

- How do we do this kind of audience design in day-to-day life?
- Strategy: investigate common vs. rare everyday objects

Rare Kitchen

**Mandoline**

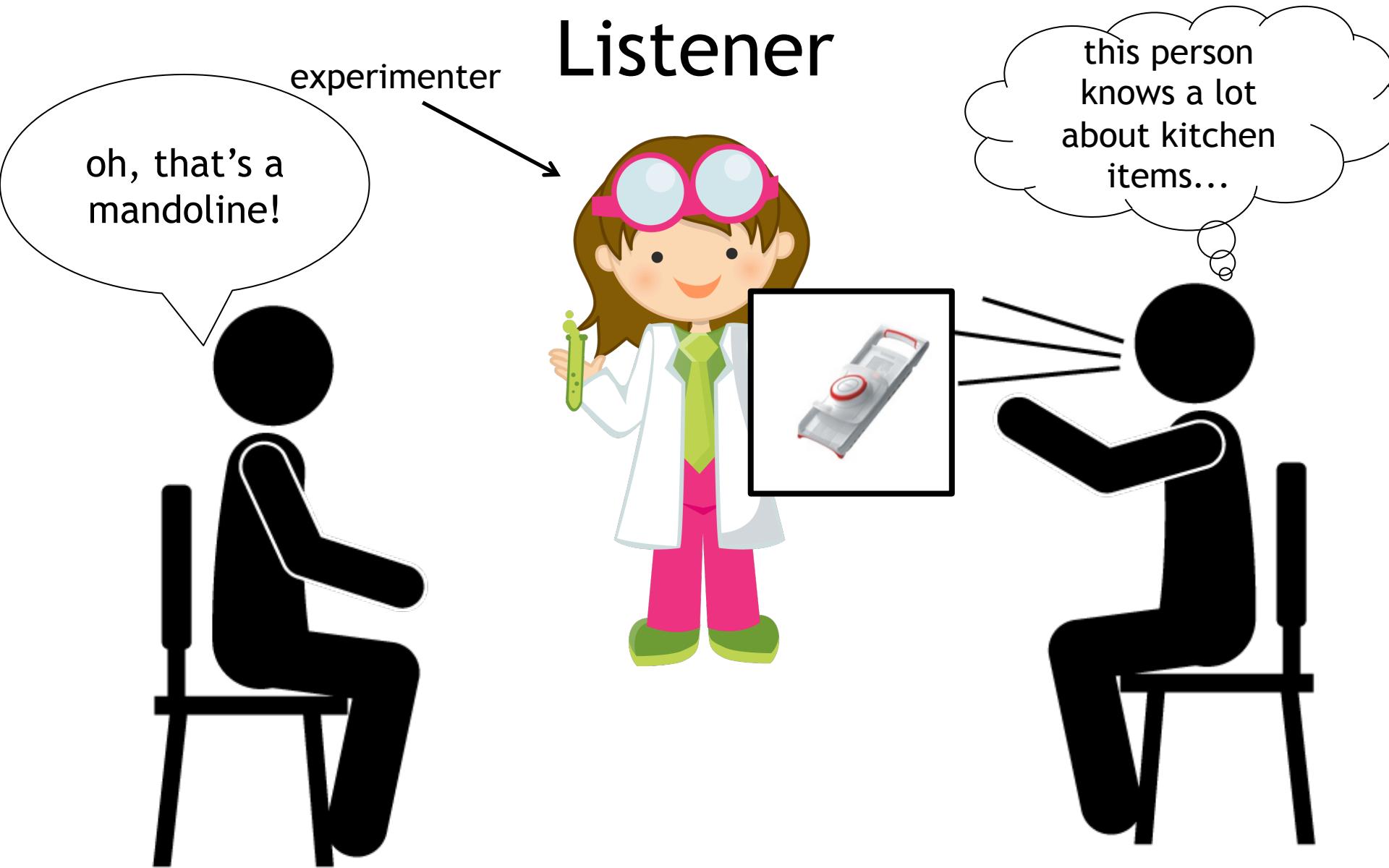


Common Kitchen

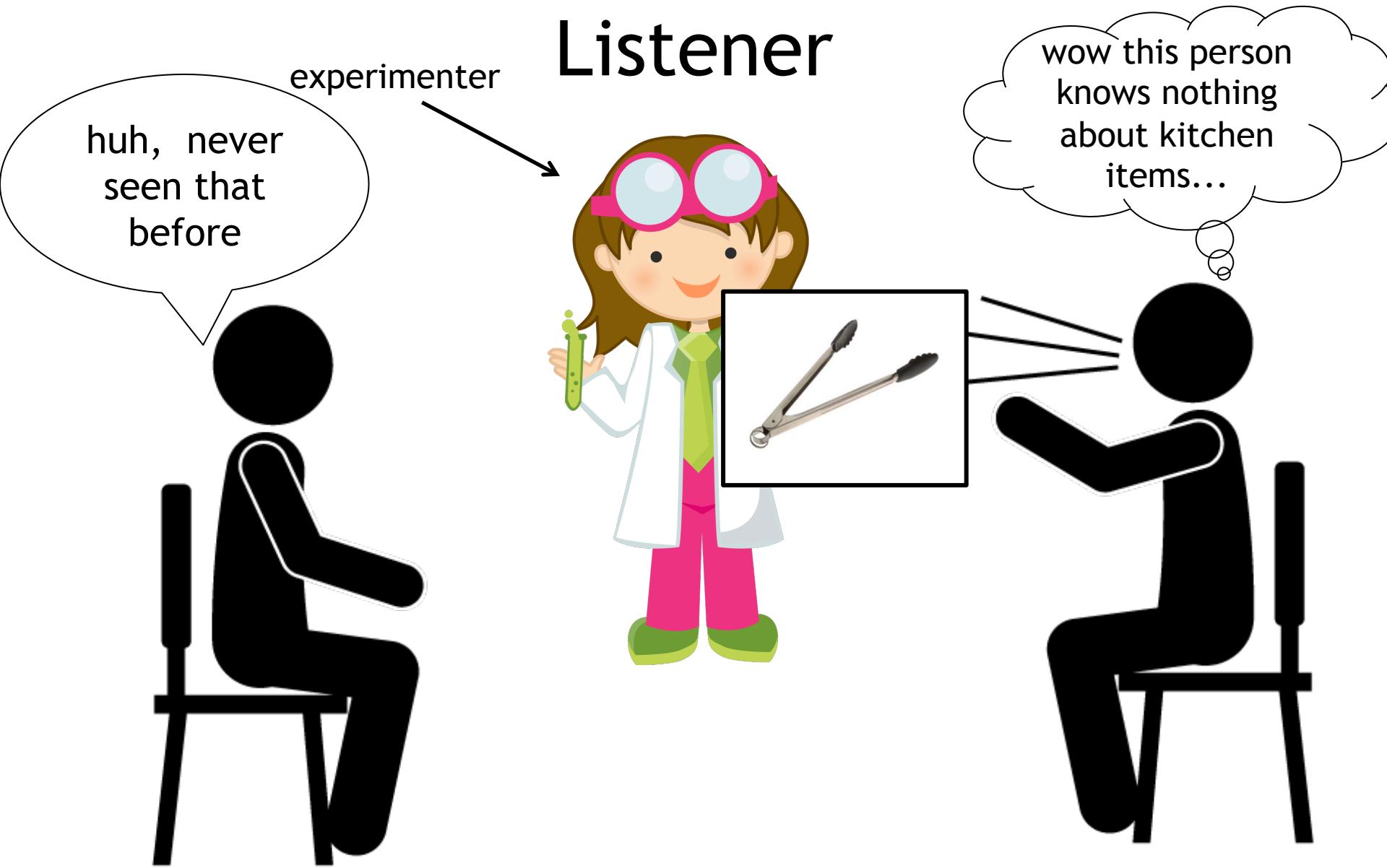
**Tongs**



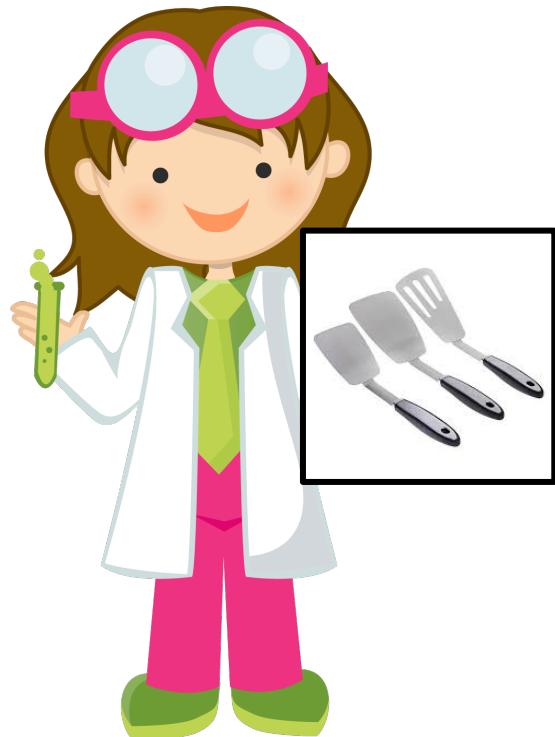
# Training Phase 1: Speaker & Listener



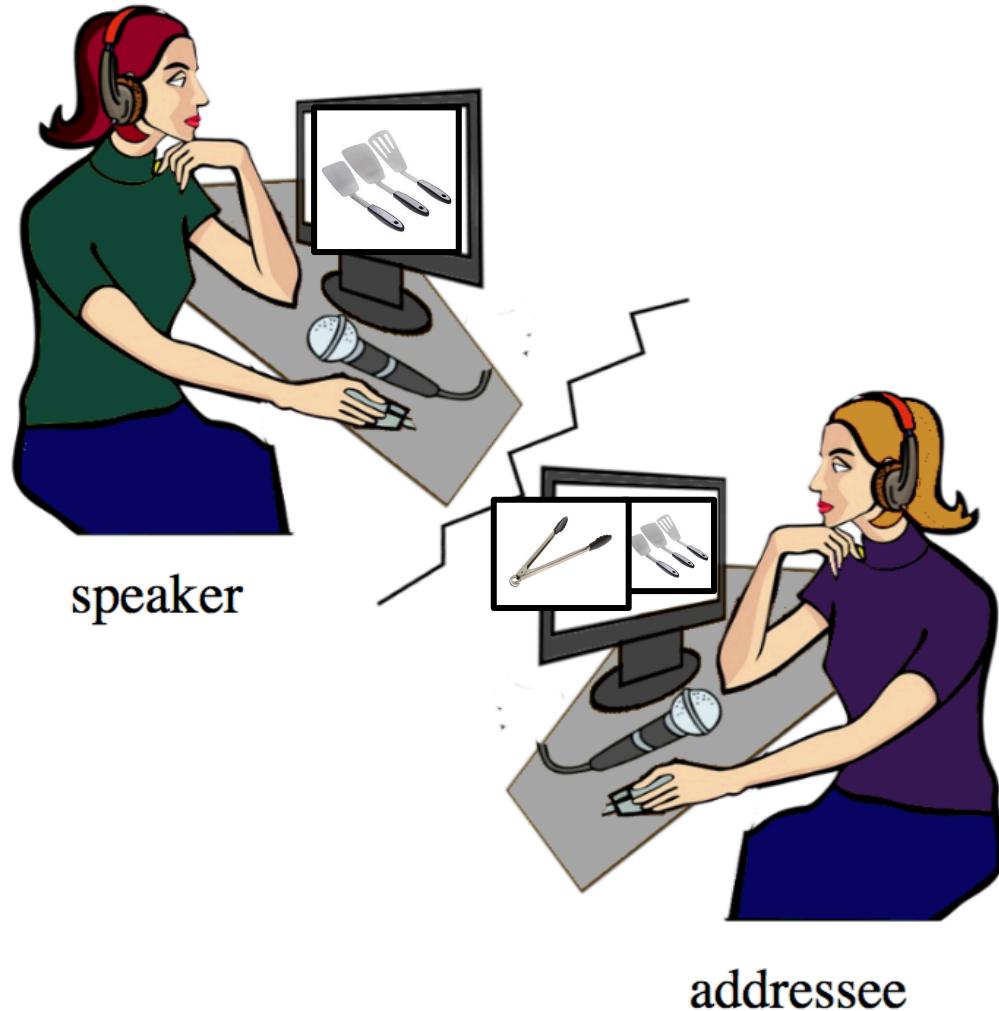
# Training Phase 1: Speaker & Listener



# Training Phase 2: Speaker Only



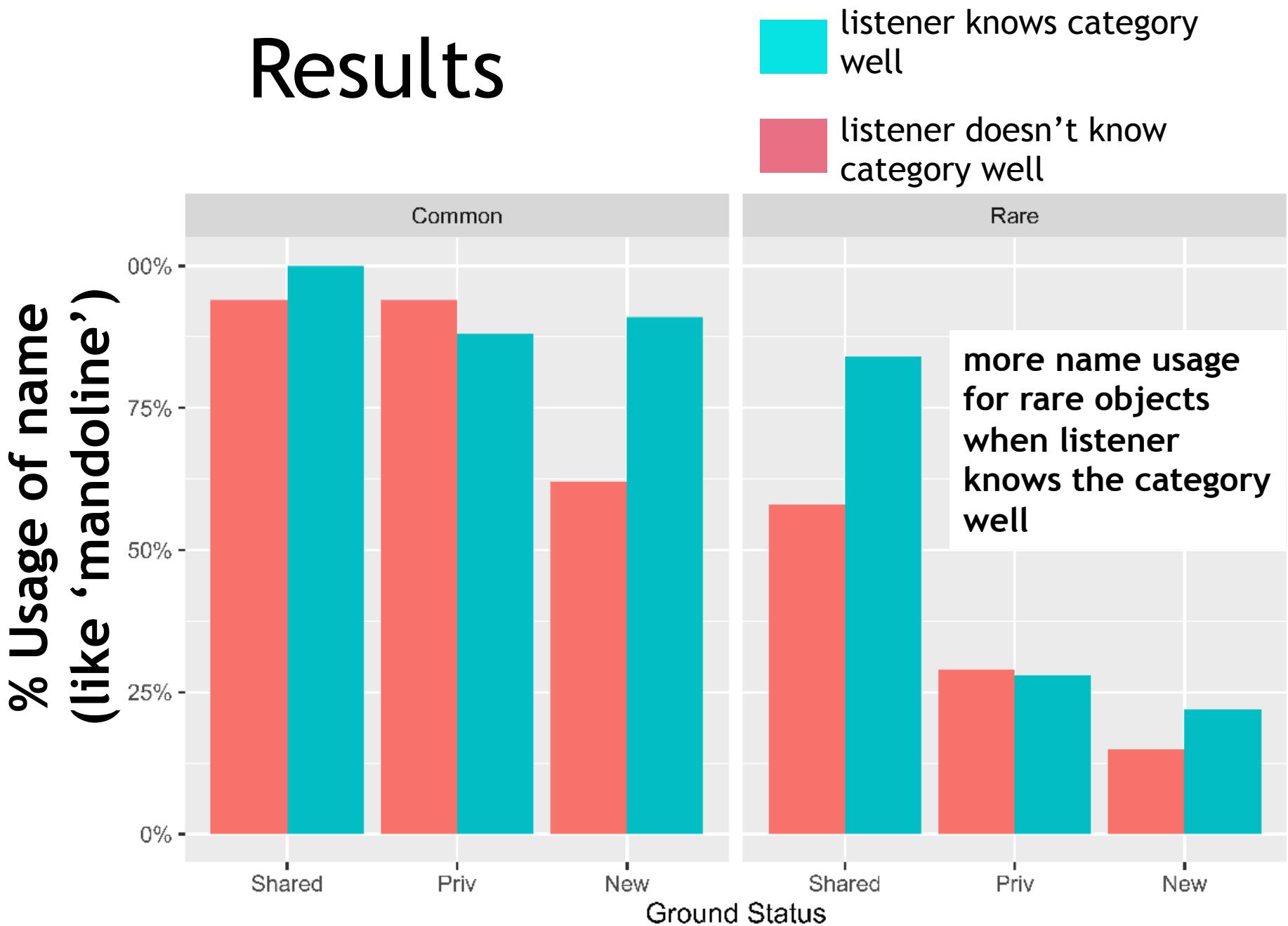
# Testing Phase



# Post-Test

- Speaker and listener rate how well each other seemed to know the category

# Results



# Ibarra (2018)

- We tailor the terms we use based on what we think our listener probably does/ doesn't know
- This general strategy is quite useful
  - always verifying what your interlocuter knows can be time-consuming!

# So...Production Ease or Audience Design??

- Both, kind of
- When we're **confident** about what our listener knows, we tailor our utterances to them
- When we're not sure, we make an educated guess given the context
  - how much did we learn together?
  - how much of an expert do I think you are at kitchen tools?

# Pragmatics & Common Ground/ Discourse Wrap-Up

- We don't always mean what we exactly say
- Have to infer meaning from speaker's possible intentions
  - “Do you want coffee?” “I'd love some *caffeine*”
- These inferences are built up out of mutual knowledge about conversational rules (e.g., Gricean maxims)

# Pragmatics & Common Ground/ Discourse Wrap-Up

- In discourse, we establish common ground through *conceptual pacts*
  - binding and long-lasting, but also flexible to new goals and situations
- Listeners can use common ground to infer what a speaker means

# Pragmatics & Common Ground/ Discourse Wrap-Up

- Speakers use common ground to craft helpful utterances
  - not always perfectly!
  - General strategies based on inferences about what a listener might/might not know