# Lecture 11:
Linguistic Relativity

COGS 153

Does language shape thought and perception?

Today's topic

- Different languages are different…
- But, does the way a language breaks up the world change the way its speakers *think*?
  - If so, we should observe language-driven cognitive diversity: people who speak different languages will think differently
  - Where did this idea come from? (We'll cover a bit of history)

SHADES OF RED

Amaranth	Auburn	Burgundy	Candy Apple	Cardinal
Carmine	Carnelian	Cerise	Crimson	Lava
Maroon	Puce	Raspberry	Rose	Ruby
Scarlet	Terra cotta	Vermillion	Wine	
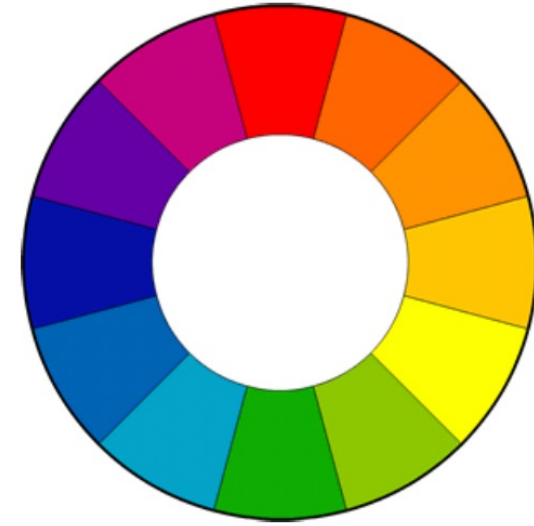
Are color terms grounded in universal perceptual constraints?

- If so, there should be a systematic relationship between the colors that different languages have names for. If not, there should be an arbitrary relationship

- Cross-cultural study:
  - Sampled participants from 20 indigenous languages
  - Step 1: List color names
  - Step 2: Indicate all the color chips that were examples & indicate the best example

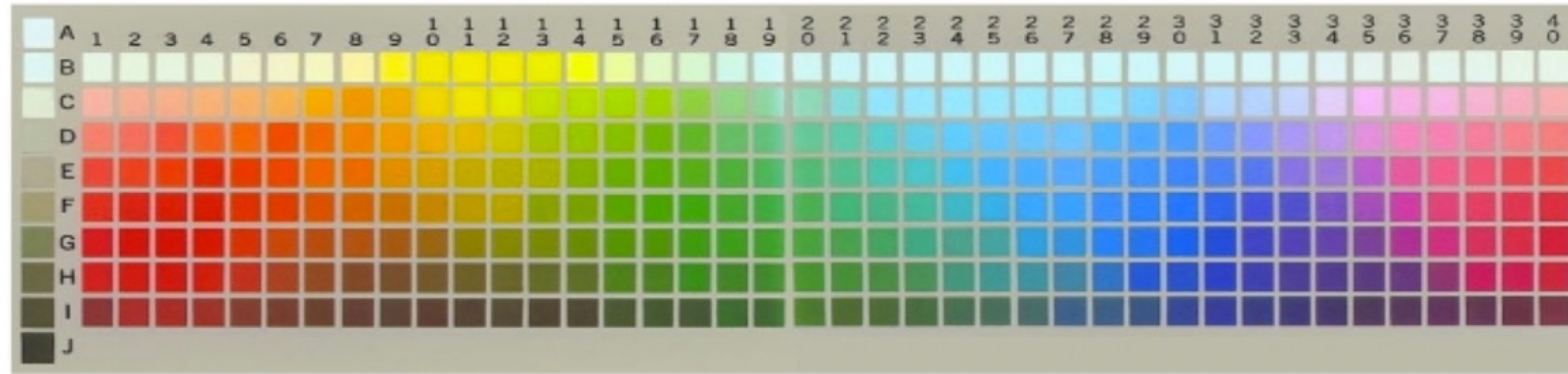**Figure 1 The World Color Survey (WCS) Array of Munsell Color Chips**

Berlin & Kay, 1969

Figure 1   The World Color Survey (WCS) Array of Munsell Color Chips

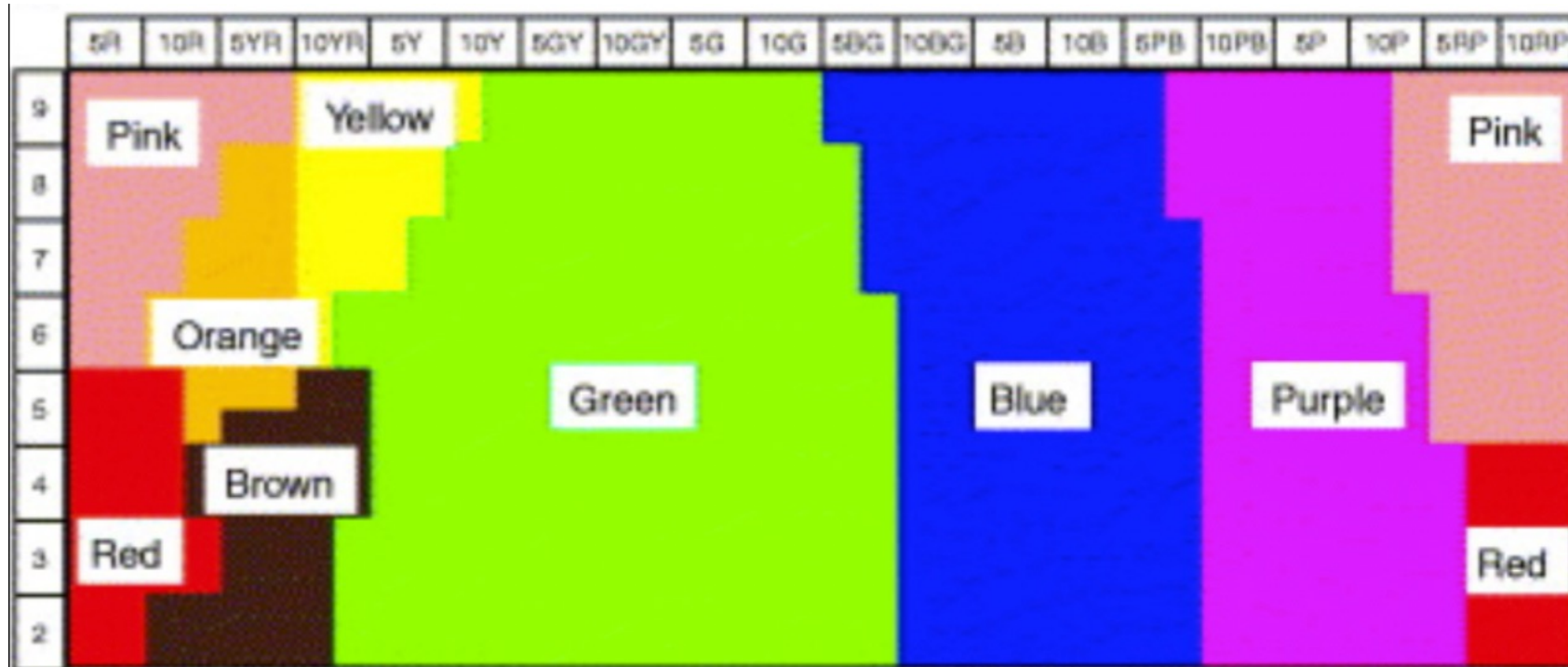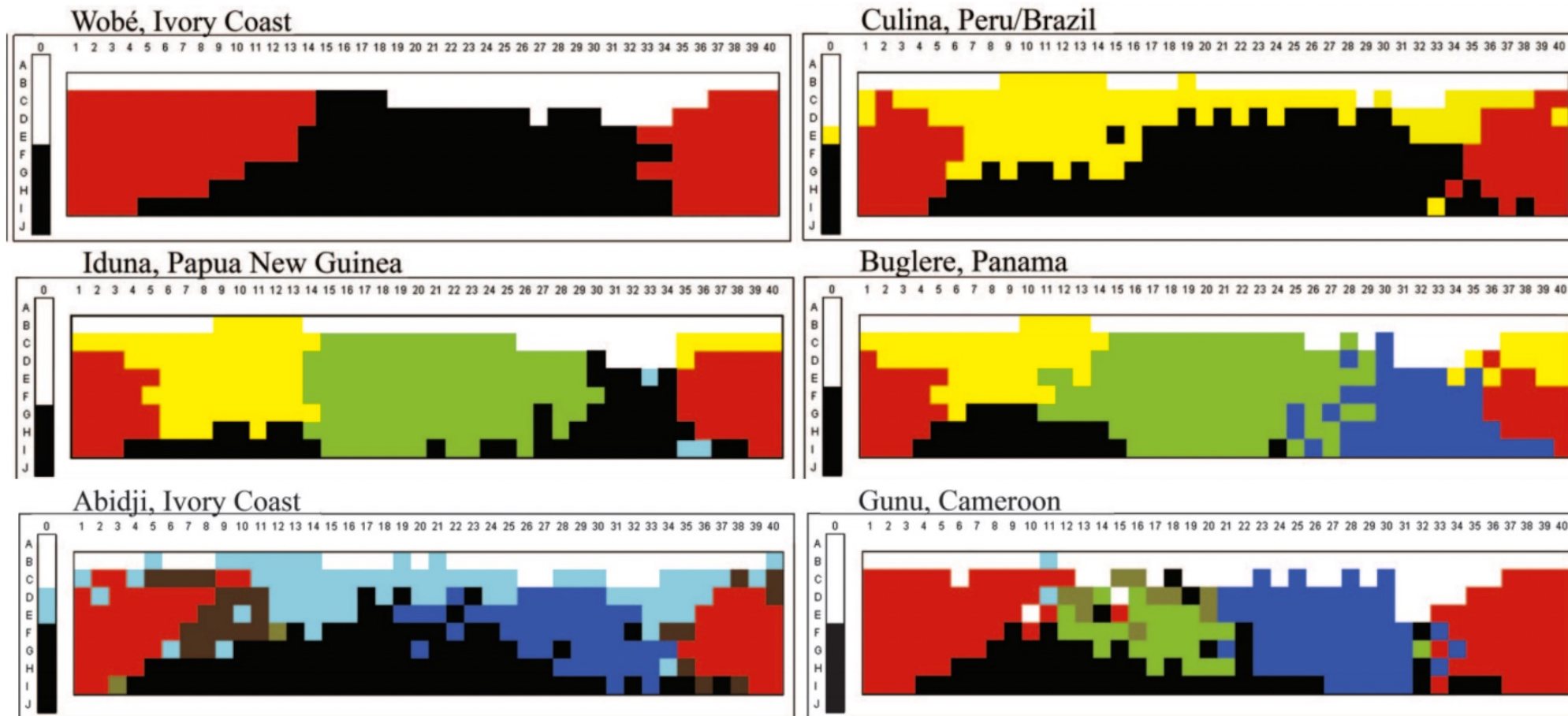**Figure 1**   The World Color Survey (WCS) Array of Munsell Color Chips

Wobé, Ivory Coast

Culina, Peru/Brazil

Iduna, Papua New Guinea

Buglere, Panama

Abidji, Ivory Coast

Gunu, Cameroon

Regier et al., 2007

No. of basic color words	No. of languages
○ 3–4	20
○ 4.5–5.5	26
○ 6–6.5	34
○ 7–7.5	14
● 8–8.5	6
● 9–10	8
● 11	11

https://wals.info/feature/133A#2/32.5/151.7

	I	II	III	IV	V	VI	VII

[White / Black] → Red →
- "Grue" (green/blue) → Yellow →
- Yellow → "Grue" →
- Yellow-Green → Blue →

[Green / Blue / Yellow] → Brown → [Purple / Pink / Orange / Grey]
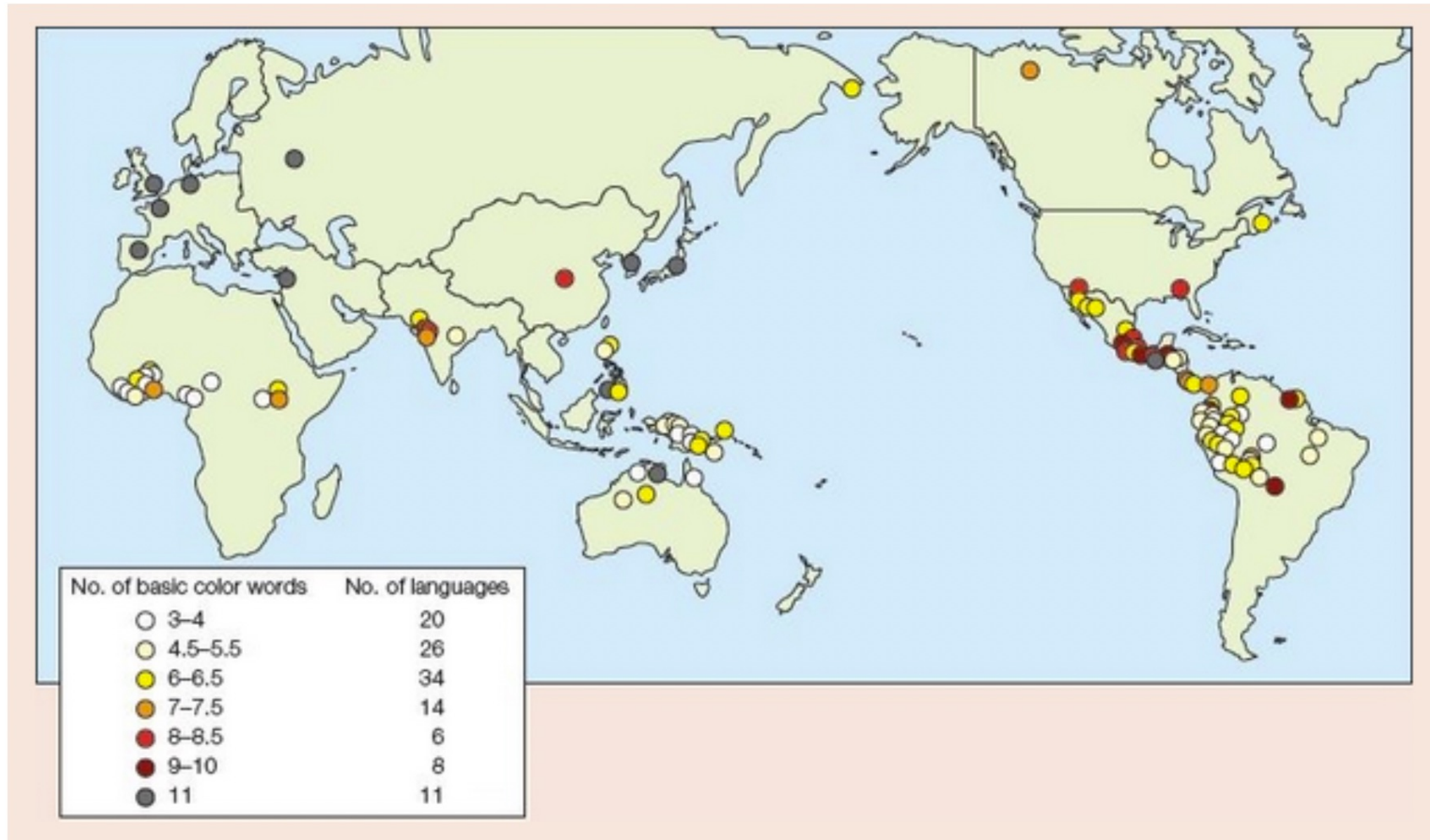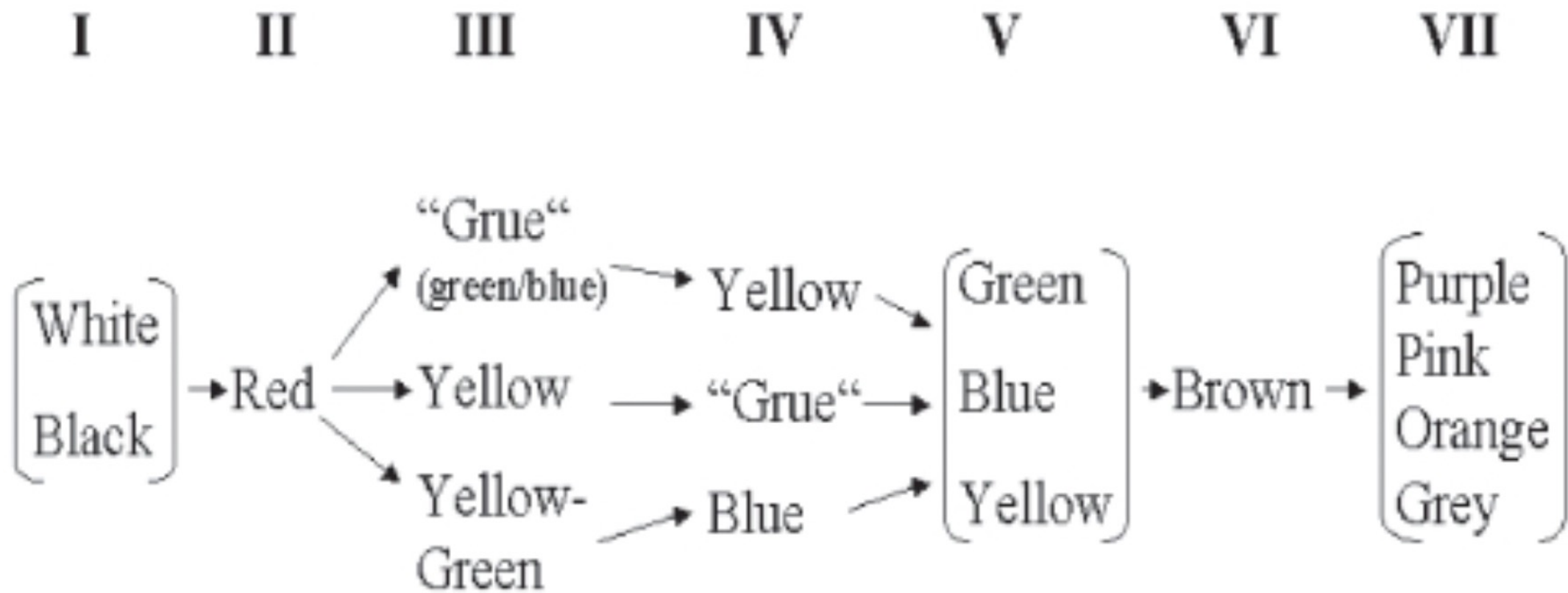
Berlin and Kay's work proposed that the basic color terms in a culture, such as black, brown, or red, are predictable by the number of color terms the culture has. All cultures have terms for black/dark and white/bright. If a culture has three color terms, the third is red (and so on, following this chart)

Berlin & Kay, 1969

Does the way a language carve up the world change the way its speakers think?

Does the way a language 'carves up the world' *change* the way its speakers think?

- Edward Sapir (1884-1939)
  - Anthropologist-linguist

No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct worlds, not merely the same world with different labels attached.

What do you think?

Does the way a language carve up the world change the way its speakers think?

- Benjamin Whorf (1897-1941)
  - Linguist

> We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds—and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way—an agreement that holds throughout our speech community and is codified in the patterns of our language. The agreement is, of course, an implicit and unstated one, BUT ITS TERMS ARE ABSOLUTELY OBLIGATORY; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees.

Sapir-Whorf Hypothesis

- **Sapir-Whorf Hypothesis**: a hypothesis (first advanced by Edward Sapir in 1929 and subsequently developed by Benjamin Whorf) that the <u>structure of a language determines a native speaker's perception and categorization of experience</u>

  - **Linguistic determinism**: Language defines the way you can possibly think (that is, language determines thought)

  - **Linguistic relativism**: Language affects habitual/frequent patterns of thought, but it does not limit them

Does vocabulary influence thoughts?

- A lifetime of using words may influence how you perceive things…
  - How can we test this?
- Do speakers of languages with different color terms *perceive colors* differently?
  - If you speak a language that doesn't distinguish between two colors, does this influence the way you perceive the two colors?
  - And if so—do these differences persist even when language isn't being used?

Predictions based on Whorfian hypotheses

- **Linguistic determinism**: Language defines the way you can possibly think (that is, language determines thought)
  - <u>Prediction</u>: People can only perceive differences between colors that their language categorizes differently

- **Linguistic relativism**: Language affects habitual/frequent patterns of thought, but it does not limit them
  - <u>Prediction</u>: People are more likely to attend to differences that are encoded in their language, but people can perceive differences between colors in the same linguistic category if needed

Can the language you speak affect how you perceive color?

Cross-linguistic difference:
- Tarahumara has only one word (siyo'name) for blues and greens
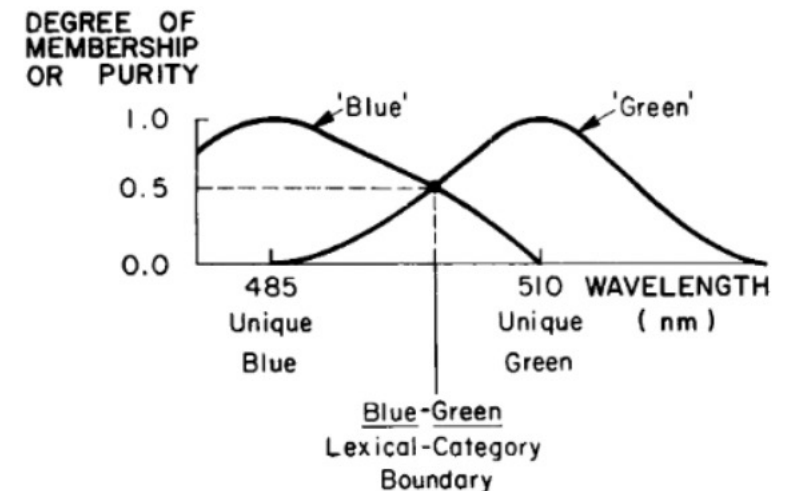- English has the words blue and green

Task:
- See 3 color chips & identify the "odd one out"

Manipulation
- How different the hues were and whether or not they straddled the green-blue categories

Kay & Kempton (1984)

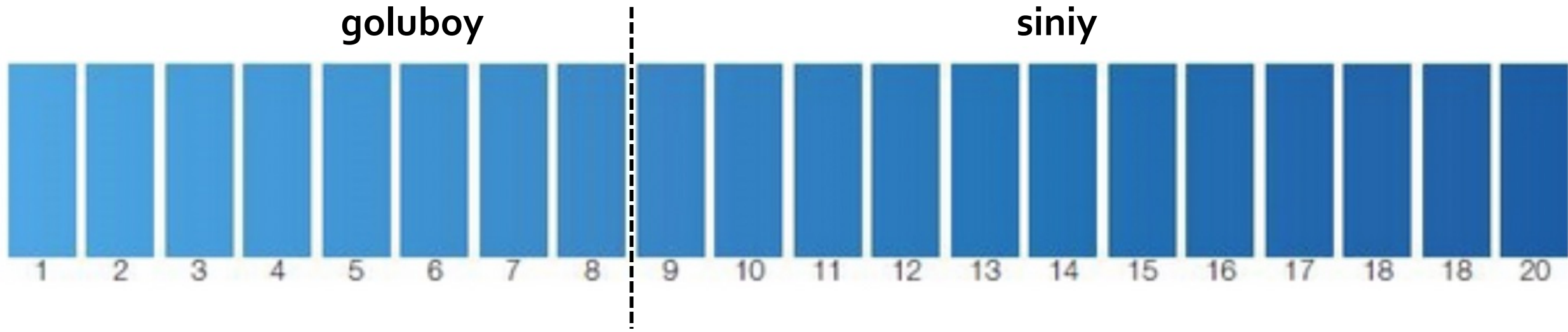# Can the language you speak affect how you perceive color?

Results

- English speakers exaggerated the perceived differences between colors when they crossed the blue-green boundary; Tarahumara speakers did not

Critique

  - Maybe the task was just difficult and English speakers stopped using perceptual differences and instead thought, 'well these two are greenish and this one is blue'

Kay & Kempton (1984)

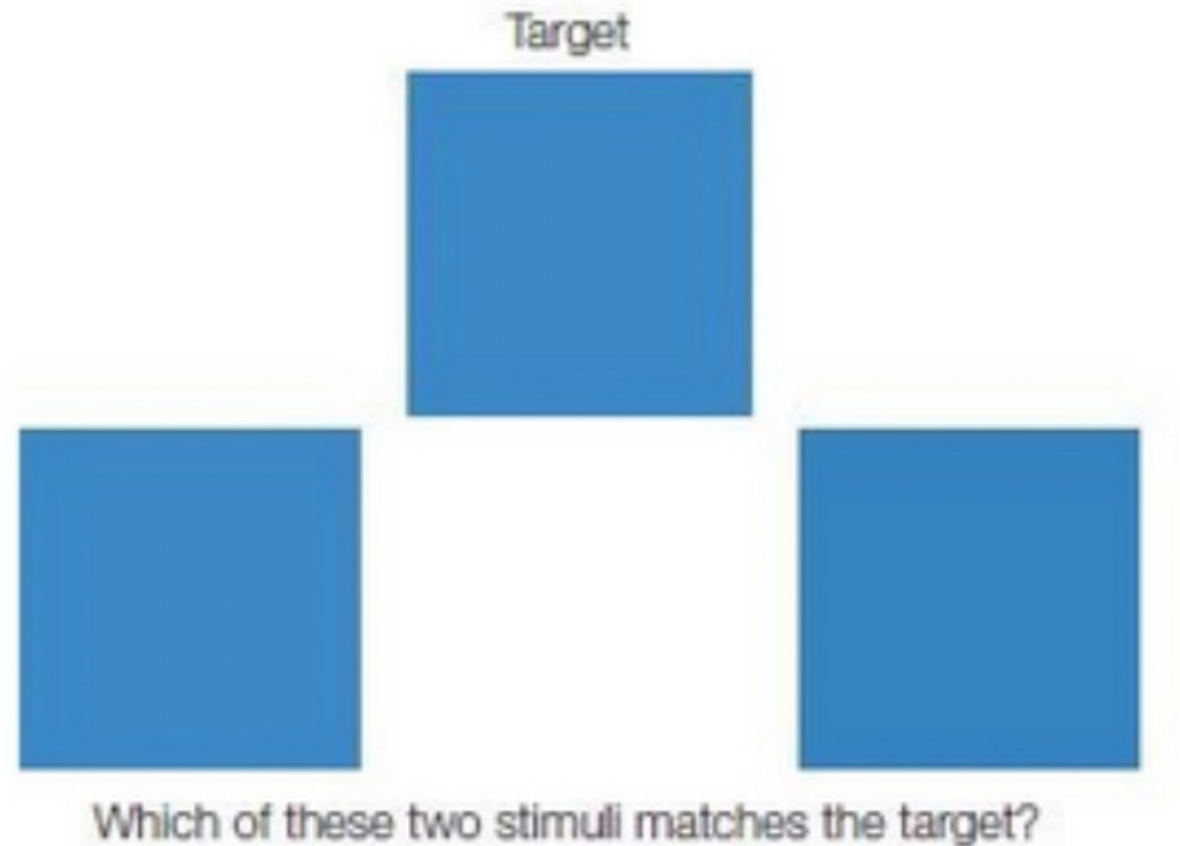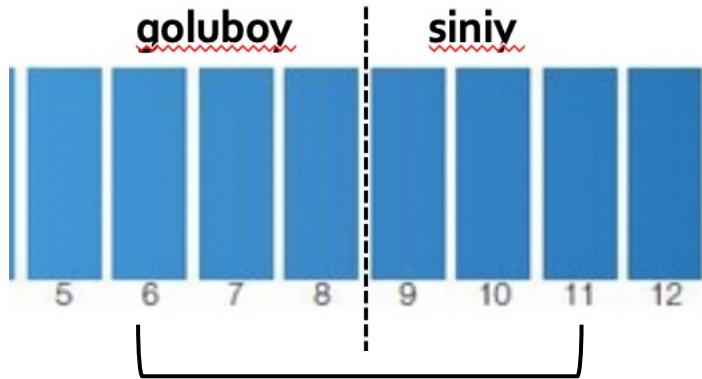# Can the language you speak affect how you perceive color? (Part 2: the 'Russian Blues' study)

- In Russian, there is a word for dark blue (siniy) and one for light blue (goluboy)

goluboy   **siniy**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 18 20

Winawer et al., 2007

Can the language you speak affect how you perceive color? (Part 2: the 'Russian Blues' study)

- In Russian, there is a word for dark blue (siniy) and one for light blue (goluboy)
  - Participants: English & Russian speakers
  - Color Discrimination Task
    - Measured speeded response times

Target

Which of these two stimuli matches the target?

Winawer et al., 2007

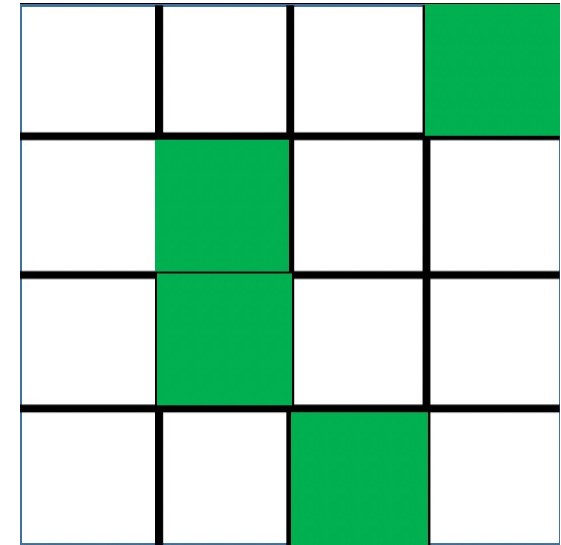# Can the language you speak affect how you perceive color? (Part 2: the 'Russian Blues' study)

Results:

- Russian speakers were **faster** to discriminate two colors when they **fell into different linguistic categories** in Russian (one siniy and the other goluboy) than when they were from the same linguistic category (both siniy or both goluboy)

- English speakers tested on the identical stimuli did not show a category advantage in any of the conditions (but were faster compared to Russian speakers overall)


Winawer et al., 2007
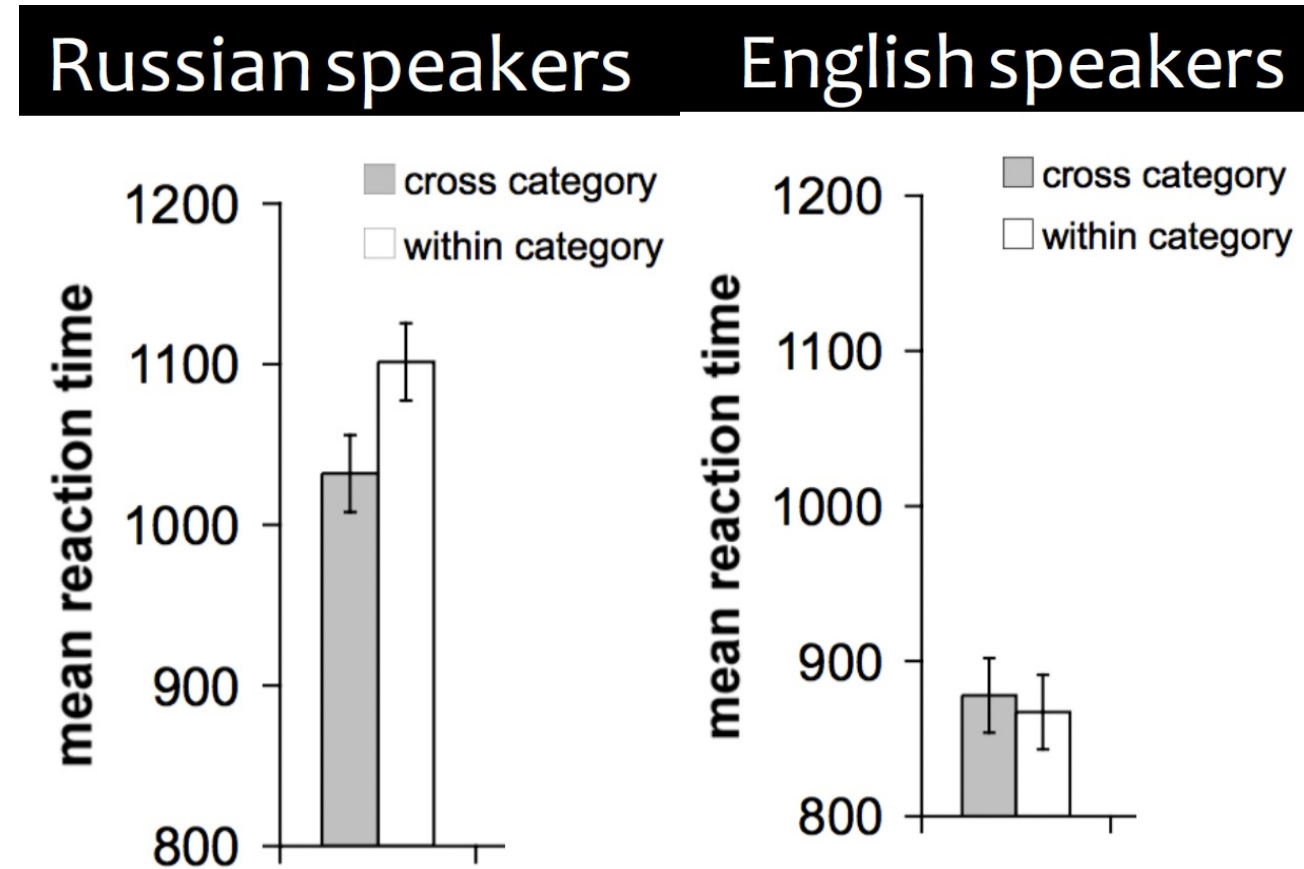
Can the language you speak affect how you perceive color? (Part 3: the 'Russian Blues' study)

- What happens if you reduce verbal or spatial working memory?
  - <u>Interference tasks</u>: Same design except ppts also had to remember a list of numbers (verbal) or positions of squares in a grid (spatial) while performing the task
    - Verbal:
      "Remember this string of digits": 93842132
   - Spatial:
      "Remember this grid"

Can the language you speak affect how you perceive color? (Part 3: the 'Russian Blues' study)

- Verbal WM interference: category advantage in Russian speakers went away

- Spatial WM: no effect, the difference in performance between Russian and English speakers remained

→ The perceptual differences seem to be tied to **verbal working memory**
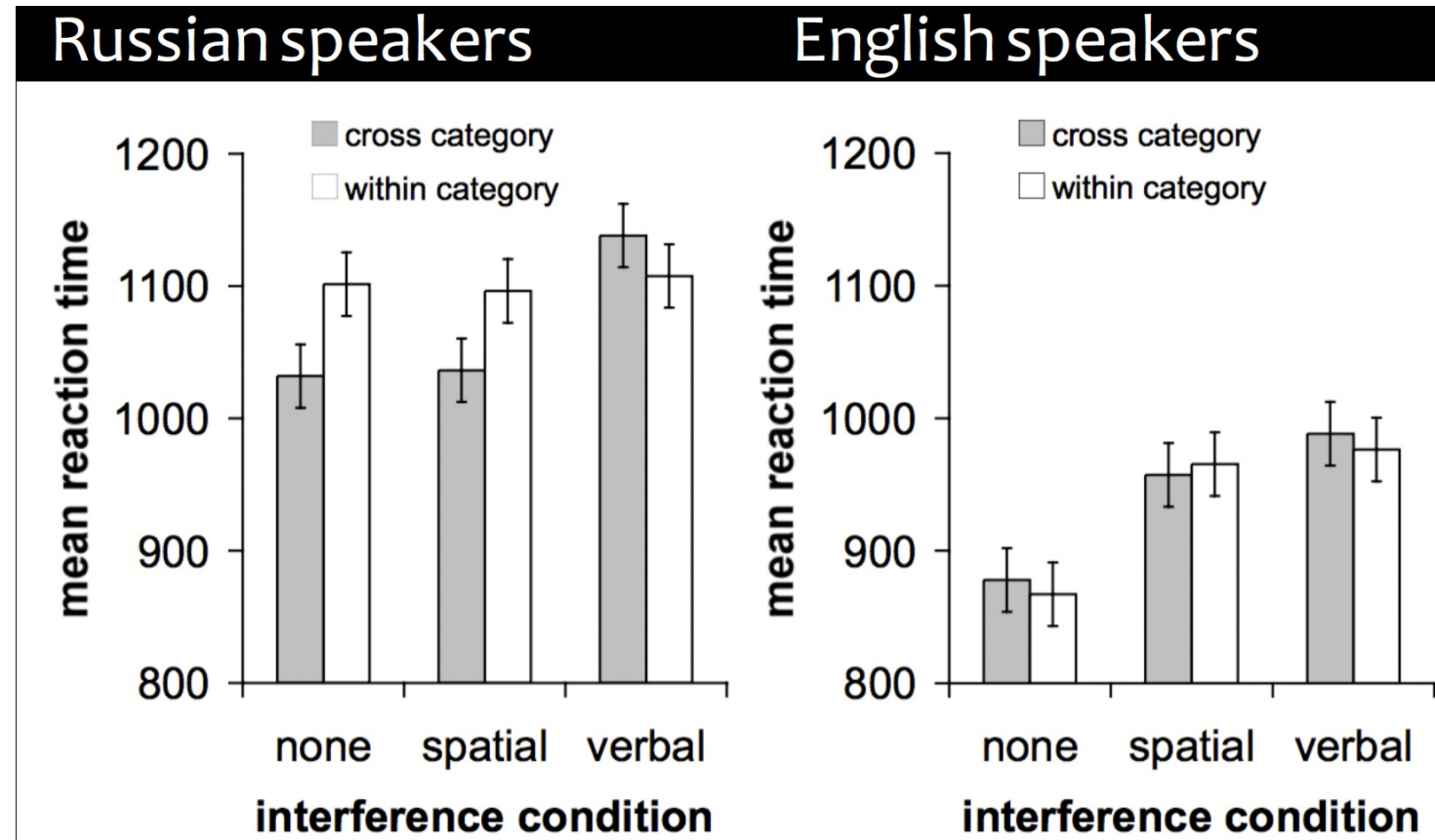
Summary of conclusions

- Categories in language affect performance on simple perceptual color tasks (linguistic color categories can affect color perception)

- The effect of language on color perception is active in non-linguistic tasks (and can be disrupted by verbal interference)
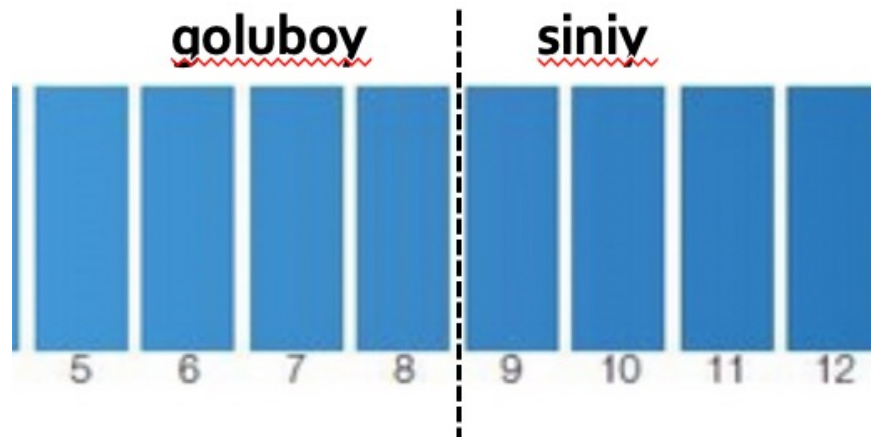
Some considerations

- Even when there isn't a word for a specific concept, that concept can often still be expressed
    - Paternal vs. maternal grandparents
- Sometimes new words are introduced to meet a particular need, these can be borrowed or invented
    - Schadenfreude -> taking pleasure in someone else's suffering
    - Google
- These 'linguistic codes' change and accumulate over long periods of time

"basic smell words" in Jahai

Odor terms	Approximate translation
cŋəs	'to smell edible, tasty' e.g., cooked food, sweets
crŋir	'to smell roasted' e.g., roasted food
harɨm	'to be fragrant' e.g., various species of flowers, perfumes, soap (Malay loan; original Malay meaning 'fragrant')
ltpɨt	'to be fragrant' e.g., various flowers, perfumes, bearcat
haʔɛ̃t	'to stink' e.g., feces, rotten meat, prawn paste
pʔus	'to be musty' e.g., old dwellings, mushrooms, stale food
cŋɛs	'to have a stinging smell' e.g., petrol, smoke, bat droppings
sʔĩŋ	'to have a smell of human urine' e.g., human urine, village ground
haɲcĩŋ	'to have a urine-like smell' e.g., urine (Malay loan; original Malay meaning 'foul odor, stench')
pʔih	'to have a blood/fish/meat-like smell' e.g., blood, raw fish, raw meat
plʔeŋ	'to have a blood/fish/meat-like smell' e.g., blood, raw fish, raw meat
plʔɛŋ	'to have a bloody smell which attracts tigers' e.g., crushed head lice, squirrel blood

Majid & Burenhult, 2014

In-class activity

Discuss: Think about the different words you have to describe tastes…

- Does the number of basic taste words limit your ability to distinguish between different tastes?
- How does this relate to the linguistic relativity debate?

Some takeaway points

- Some version of linguistic relativism appears to be at play for some forms of perceiving and reasoning, e.g.
  - Linguistic color categories can affect color perception
  - People are faster to perceive differences in color that cross a linguistic boundary & the effect seems to be mediated by language (linguistic interference knocks it out)
- So, the way your language works might indeed affect some aspects of the way you think