Language acquisition, perception and production

Lecture 3 – Language and thought

Plan for today

- What is language for?

- Sapir-whorf hypothesis
  - Snow
  - Color perception
  - Sex, syntax and semantics

Language and thought

- **What is language for?**
  - Communication
  - Plays a role in other cognitive processes

- **What is relationship between language and thought?**

Language and thought

- **Many animals can solve problems without language**
  - Language is not essential for thought

- **Thinking is also trivially influenced by language**
  - This class is changing how you think

- **Does language impact your general cognition?**

Sapir-Whorf

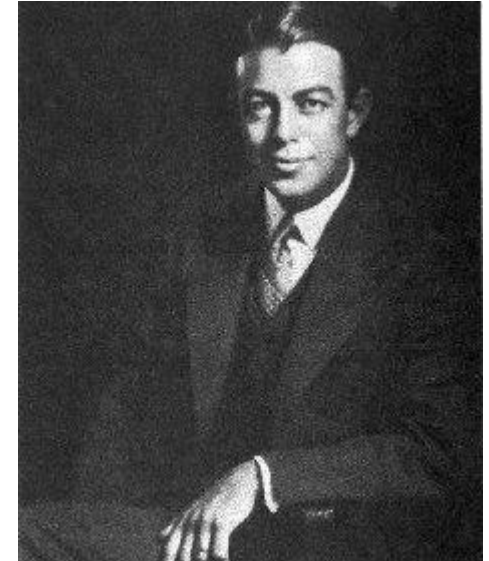- Language determines how you think?

Language and thought

- **Language determines how you think**
  - Strong version: determines what you perceive
    - *Linguistic determinism*

  - Weaker version: determines how you classify things
    - *Linguistic relativism*

Sapir-Whorf Hypothesis

- **Strong version:**

Language *determines* thought

- **Speakers of different languages perceive the world differently!**

Benjamin Whorf
(1897-1941)

- **Early "evidence" – Eskimos have many more words for snow than English speakers.**

Snowy evidence

Snowy evidence

- What are the facts (Pinker, 1997)?

- Reported number of words for snow in Inuit: 4, 7, 50, 100s

- English: Snow, sleet, flurry, frost, slush, glacier, hail, ice...

Snowy evidence

- Unlikely that Eskimos PERCEIVE the world differently

- Likely that having different words for snow will lead you to CLASSIFY the world differently
  - Learning to ski helps you identify different types of snow
  - You might choose to ski on one but not the other type

Pinker's arguments

- Agruments against linguistic determinism

  - Language is ambiguous

    - *I saw the witches flying to America*

Pinker's arguments

- Agruments against linguistic determinism

  - Language has co-reference

    I met a tall black-haired <u>guy</u> yesterday.

    The <u>man</u> was really smart.

    But <u>he</u> needs to go to a hairdresser.

Pinker's arguments

- Strong version of Sapir-Whorf hypothesis is unlikely.

- Linguistic relativism is more likely

Sapir-Worf – Color Perception

- Is color perception universal, or determined by language?

- Three studies have addressed this issue:

Color Perception

Berlin & Kay (1969)

Languages differ predictably in their color terms
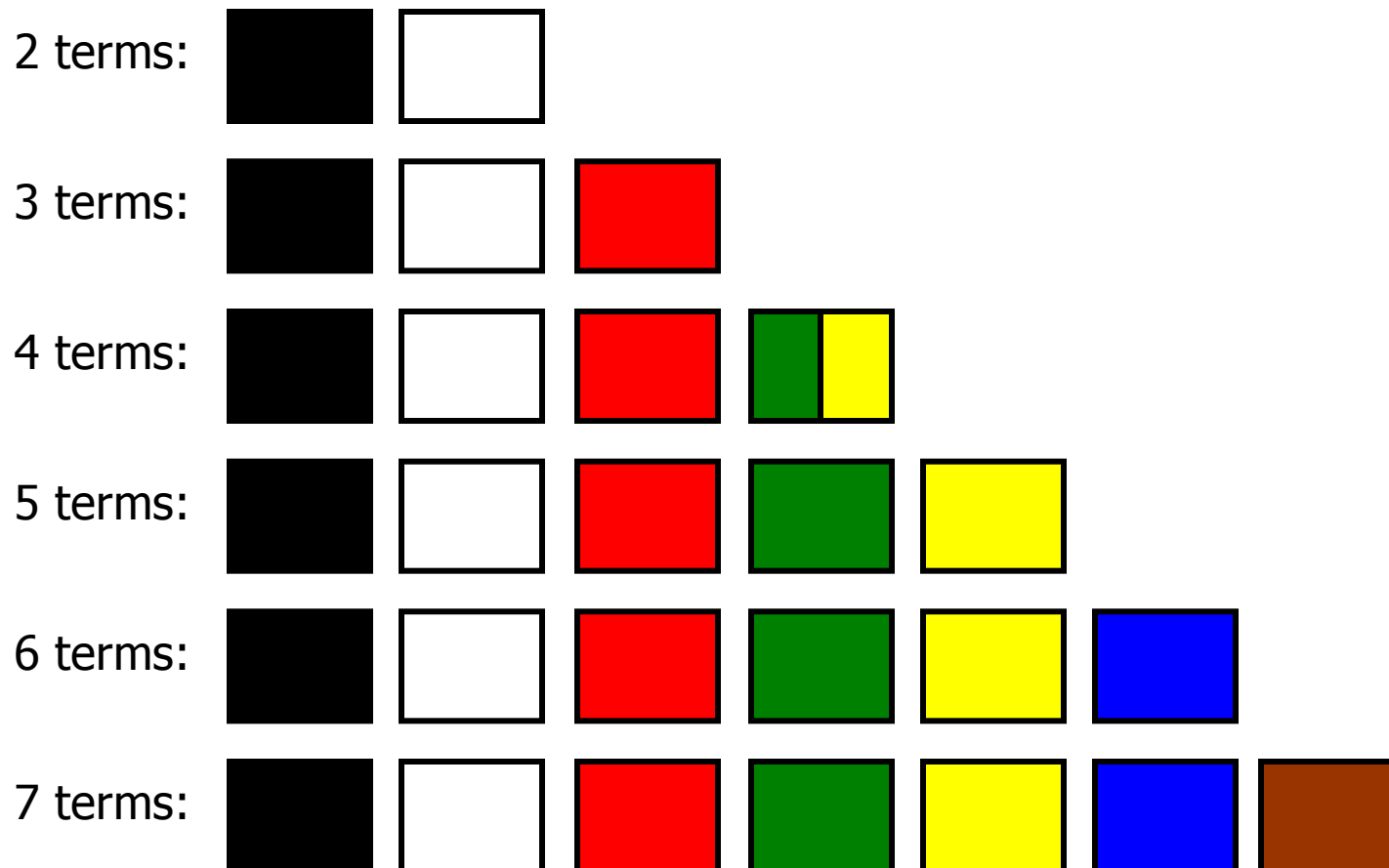
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Color Perception

- **If you only have two words for colors, how will you remember color?**
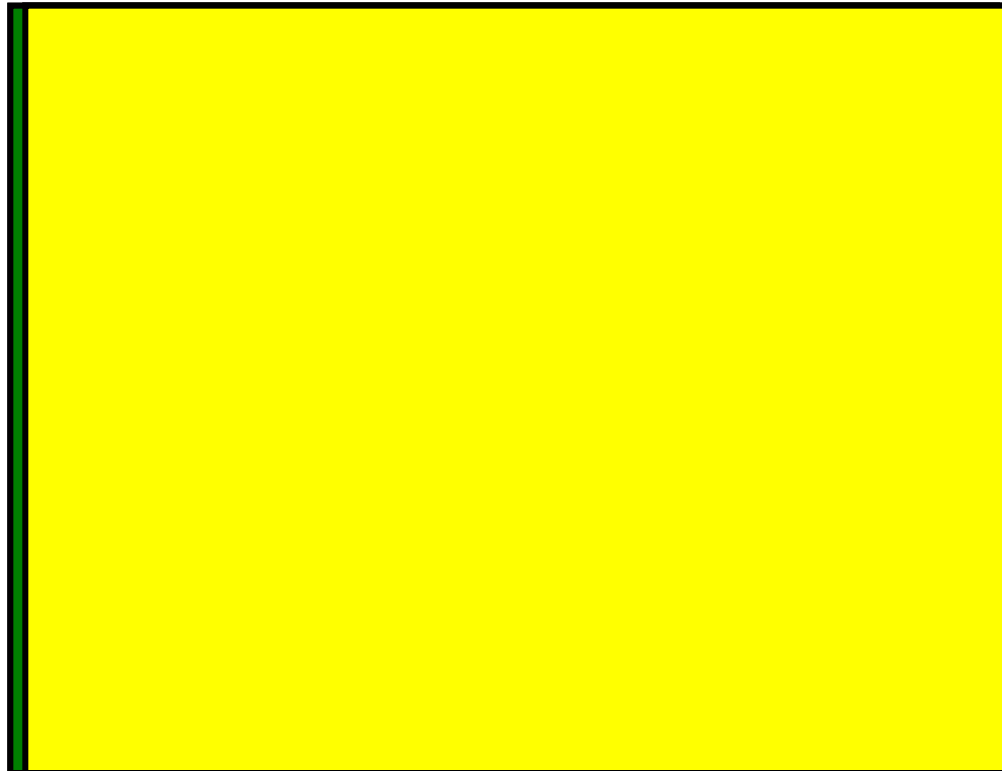
Color Memory

- ## A strong test of the Sapir-Whorf Hypothesis

  - If you only have two words for colors, how will you remember color?

  - The way we see colors determines how we learn words for them, not vice versa
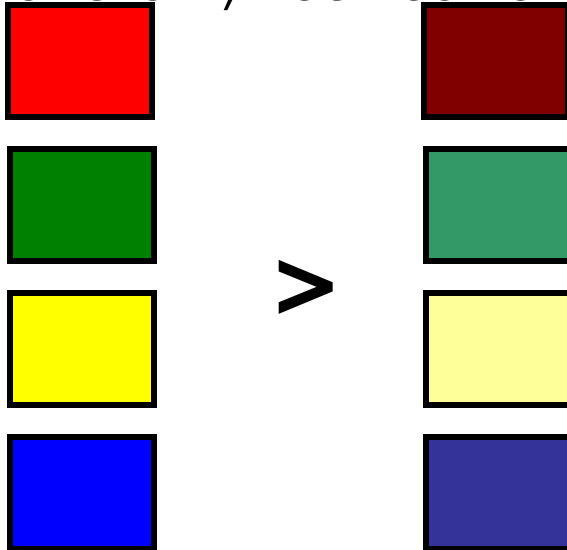
Comparing Grand Valley Dani (in Irian Jaya, Indonesia) with American English speakers

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Color Perception

- Both the Americans and the Dani had equal color perception and memory for different colors
  - Even though the Dani only had two color categories

- Color is biological; language does not shape thought?

Color perception

- Himba video

Evidence for Sapir-Whorf
Roberson et al. (2000)

- **Participants: British & Berinmo (New Guinea tribe)**
  - British have eight color categories
  - Berinmo have five color categories

- **Do these color categories influence how we think?**

Methods: Step 1

- ## 160 calibrated color chips
  - Think paint samples from the store

- ## Have participants place the colored chips into specific categories

British Color Classification

- 8 categories
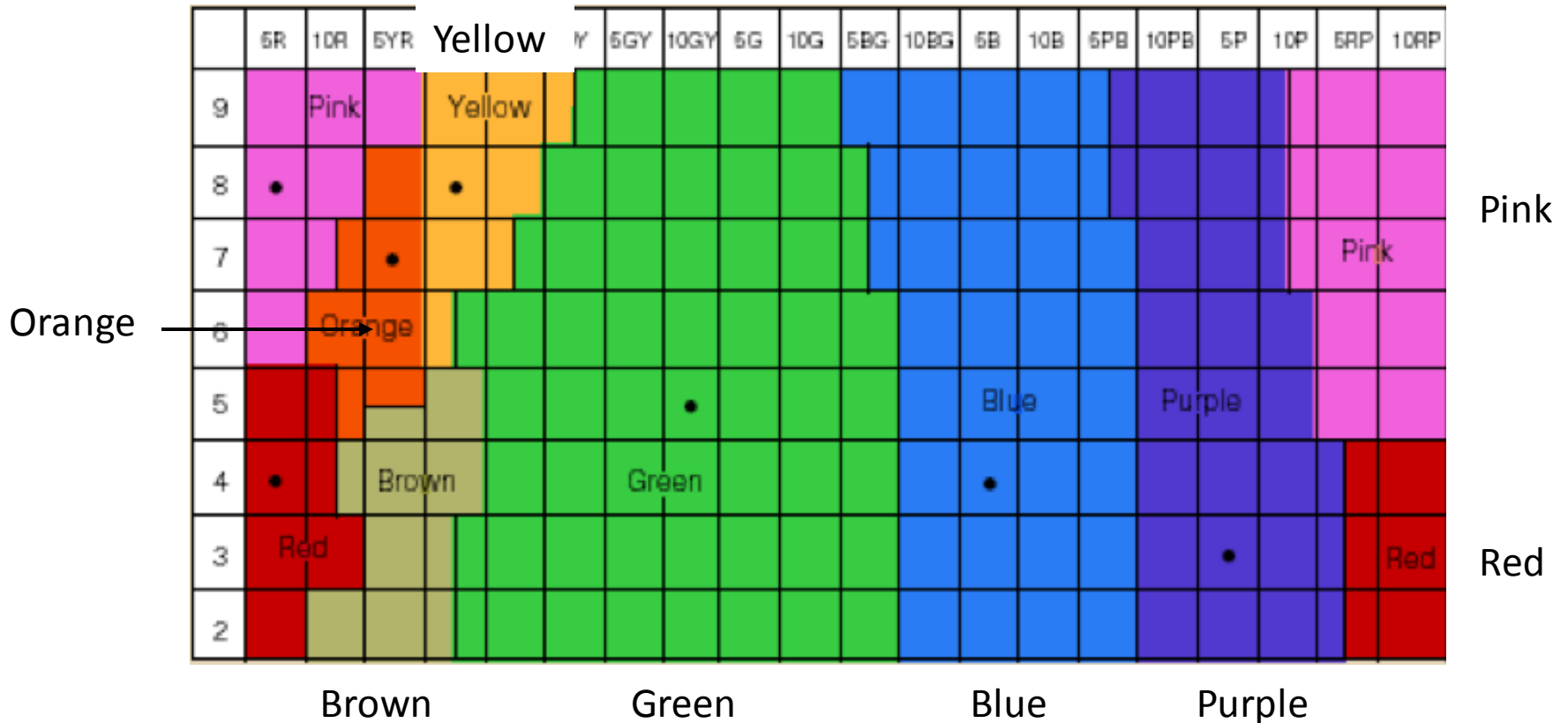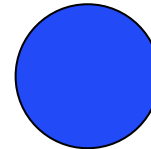
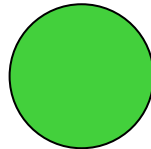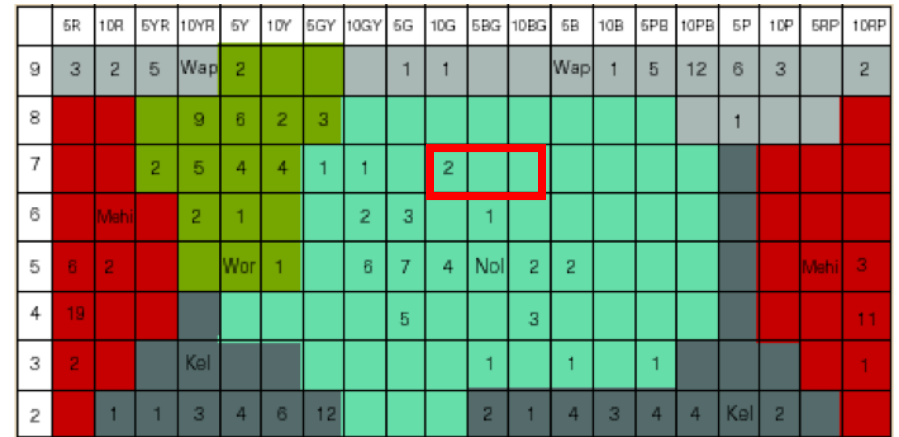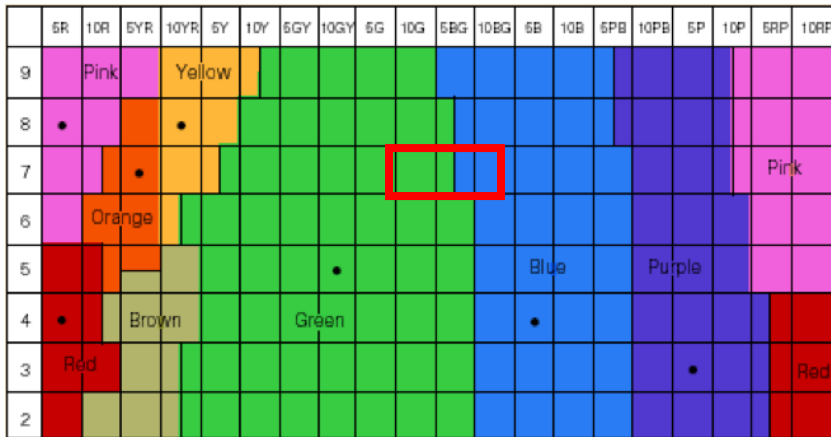# Berinmo Color Classification

- 5 categories

Methods - Step 2

- Categorical perception task
  - More difficult to discriminate stimuli from the same category

- Question: Same or different category?

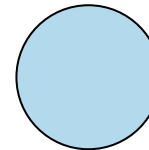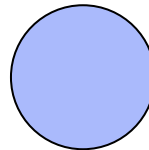# Categorial perception task

- **Give British and Berinmo:**

- **British faster than Berinmo**

Categorial perception task

- **Give British and Berinmo:**

- **Berinmo faster than British!**

What does this mean?

- There is an influence of language on how you perceive colors

- If your language does not have names for colors, you perceive them in a different way (slower)

- This is evidence for linguistic relativism

Grammatical gender

- Sex, Syntax, and Semantics

- Many languages have grammatical gender

Lera Boroditsky

- "la manzana", "el coche"

- When word has masculine or feminine gender, does that make you think about these words as more masculine or feminine?

Grammatical gender

- El Puente (Spanish) – Masculine
- Die Brücke (German) – Feminine

- Do Spanish and German speakers think about bridges in different ways?

Grammatical gender

- Spanish and German speakers presented with 24 objects

- Each object had opposite grammatical gender in other language (Masculine in Spanish, Feminine in German, and vv).

- Write down three adjectives that best describes the object.

- Study conducted in English.

Grammatical gender

- Afterwards a group of English speakers rated all adjectives on masculinity and femininity.

- Results: Masculine adjectives with masculine gender words, feminine adjectives with feminine gender words. Even for the same objects!

- Bridge, feminine in German = beautiful, elegant, fragile, peaceful, pretty and slender
- Bridge, masculine in Spanish = big, dangerous, long, strong, sturdy and towering.

Grammatical gender

- People's thinking about objects is influenced by the grammatical gender of words.

- Problems?

- What about cultural differences? Maybe bridges just *look* different in Spain than in Germany.

Grammatical gender

- Teach grammatical gender to English speakers.

- Had to learn gender marking for 12 objects (soupative or ousative)

- In each category there were 4 male or female objects (a man, a woman, etc) to signal the natural gender of the category.

- After some training, the subjects could categorize each object as masculine or feminine.

- Critically, whether object was in masculine or feminine category was counterbalanced

Grammatical gender

- Next, then again performed the adjective generation experiment, and afterwards adjectives were rated for masculinity and femininity.
- Found some results as before, when object was in masculine gender category, more masculine adjectives than in feminine category

- Violin in the feminine category = artsy, beautiful, creative, curvy, delicate, elegant, interesting, pretty and wooden.

- Violin in the masculine category = chirping, difficult, impressive, noisy, overused, piercing, shiny, slender, voluptuous, and wooden

Grammatical gender

- Thus given that the same objects were used for the same group of people, cultural differences cannot explain this.

- Thus, grammatical gender influences how we think about objects.

- Further evidence that language influences thought

Summary

- There is now considerable evidence that language influences thinking

- Language and thought are interdependent