What is the Sapir-Whorf hypothesis?

Paul Kay & Willett Kempton (1984)

Based on

a powerpoint presentation by

NT Rusiyanadi

Outline

- Introduction
- Sapir-Whorf hypothesis
- Study done by Kay & Kempton
- Conclusions with regards to the Sapir-Whorf hypothesis
- New evidence and general conclusions

Introduction

- In linguistics, the **Sapir-Whorf Hypothesis** states that there are certain thoughts of an individual in one language that cannot be understood by those who live in another language.

- The hypothesis states that the way people think is strongly affected by their native languages.

- It is a controversial theory championed by linguist Edward Sapir and his student Benjamin Whorf.

Short history

- First discussed by Sapir in 1929, the hypothesis became popular in the 1950s following posthumous publication of Whorf's writings on the subject.

- After vigorous attack from followers of Noam Chomsky in the following decades, the hypothesis is now believed by most linguists only in the weak sense that language can have *some small effect* on thought.

Edward Sapir (1884-1939)

- pronunciation: suh PEER
- American anthropologist-linguist; a leader in American structural linguistics
- Author of *Language: An Introduction to the Study of Speech*
- Born in Lauenberg, Germany.
- Pupil of Franz Boas, teacher of Benjamin Whorf

Benjamin Lee Whorf (1897-1941)

- He graduated from the MIT in 1918 with a degree in Chemical Engineering and shortly afterwards began work as a fire prevention engineer (inspector).

- Although he met, and later studied with Edward Sapir, he never took up linguistics as a profession.

- Whorf's primary area of interest in linguistics was the study of native American languages. He became quite well known for his work on the Hopi language.

- He was considered to be a captivating speaker and did much to popularize his linguistic ideas through popular lectures and articles written to be accessible to lay readers.

Sapir-Whorf hypothesis I

- Linguistic relativity:
  - Structural differences between languages are paralleled by nonlinguistic cognitive differences (the structure of the language itself effects cognition)
  - The number and the type of the basic colour words of a language determine how a subject sees the rain bow

Sapir-Whorf hypothesis II

- Linguistic determinism = extreme "Weltanschau-ung" version of the hypothesis:
  - The structure of a language can strongly influence or determine someone's **World View**
  - A **World View** describes a (hopefully) consistent and integral sense of existence and provides a theoretical framework for generating, sustaining and applying knowledge
  - The *Inuit* can think more intelligently about snow because their language contains more sophisticated and subtle words distinguishing various forms of it, etc.

Sapir-Whorf hypothesis III

- Arbitrariness
  - The semantic systems of different languages vary without constraint.
  - This hypothesis must be tacitly assumed, because otherwise the claim that Linguistic Relativity makes is rather undramatic.
  - For each decomposition of the spectrum of the rain bow a natural system of colour words is possible

Tests of the Sapir-Whorf hypothesis

- Two experiments:
  - Experiment 1: Tests whether **linguistic relativity** exists
  - Experiment 2: Tests whether 'name strategy' can be used as the explanation for the underlying cognitive mechanism in experiment 1

Experiment 1

- Distinctions in color terminology
    - English: distinction between 'blue' and 'green'
    - Tarahumara: *siy?name* is blue and/or green
- Subjective distance between colors
    - Discrimination distance ("real" scale of psychological distance)
    - Blue-green lexical category boundary (that wavelength at which an equal mixture of green and blue is perceived - based on English speakers)

Color distinction in English and Tarahumara

Chip B   *Chip C*   *Chip D*
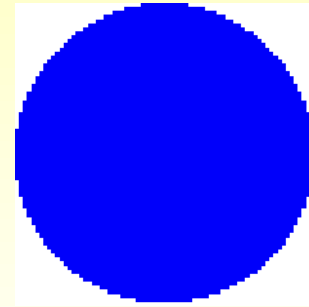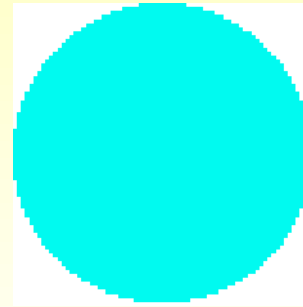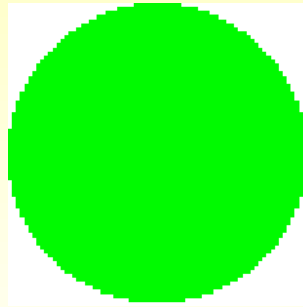
English   *green*   *blue*
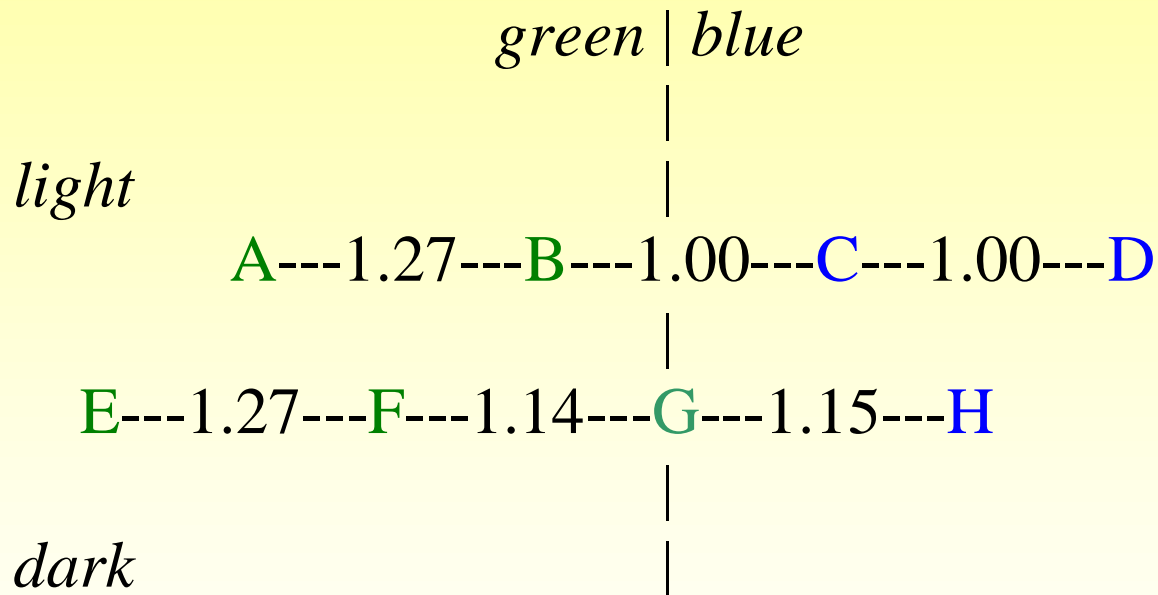**Tarahumara**   *siy?name*

Stimuli and method

- Eight color chips
  - in different shades of green and blue (at two different levels of brightness)

- Triad technique
  - Three chips at a time are shown
  - which of the 3 chips is most different from the other 2?
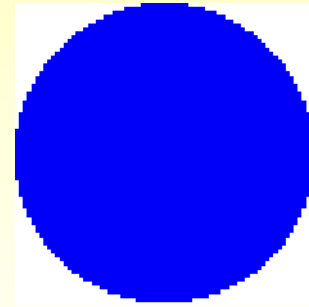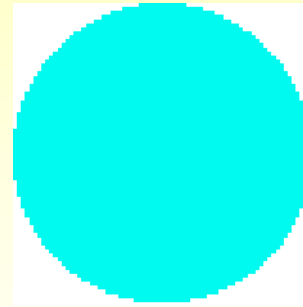 - 56 triads

Stimuli

green | blue
|

light |
|

A---1.27---B---1.00---C---1.00---D
|

E---1.27---F---1.14---G---1.15---H
|

dark |

G = Lexical Category Boundary (blue-green)

Color distinction in English and Tarahumara

	Chip B	*Chip C*	*Chip D*
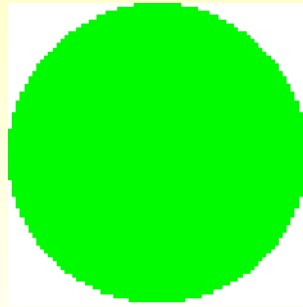
| **English**	*green*		*blue*
Tarahumara		*siy?name*	

Question

- Does the lexical difference result in a distinct judgment of the distances between colors?

- Which one of the chips A,B,C is the odd one for
  (a) Speakers of English?
  (b) Speakers of Tarahumara?

Results of experiment 1

- **B, C, D**: The distance between B and C was exaggerated by the English speakers, but not (so much) by the Tarahumara speakers

- Chip B is the odd one according to the English speakers; Chip D is the odd one according to the Tarahumara speakers

Estimated triads distances

green | *blue*
|
|

B---1.0 ---**C**---1.00---**D**
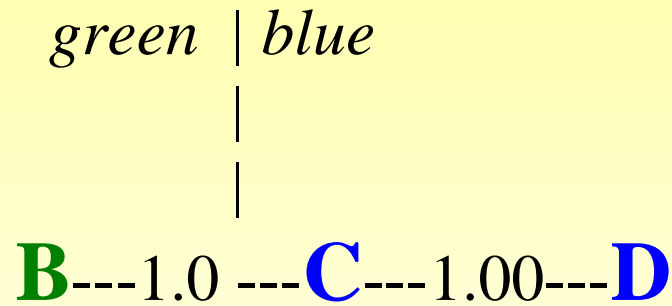
	green	blue
Tarahumara	1.3	1.00
English	2.27	1.00

Conclusions of experiment 1

- Kay & Kempton concluded that a Whorfian effect is shown by this experiment:

  - English speakers tended to exaggerate the discrimination of colors close to the lexical category boundary, while Tarahumara didn't.

- What cognitive mechanism may have caused this difference?

Name Strategy

- Kay & Kempton hypothesized that the English speakers used a 'name strategy', by discriminating between colors according to their lexical category.

  - E.g., if chips C and D are called 'blue' and chip B is called 'green', then chip B must be the odd member in this triad

Experiment 2

- To test whether this hypothesis is true, Kay & Kempton conducted a second experiment in which they eliminated the 'name strategy'.

- If the Whorfian hypothesis isn't found in this experiment, it supports the use of the 'name strategy' in experiment.

Experiment 2

- Experiment 2 is quite similar to the first one
- Differences with experiment 1:
  - Subject was never shown more than 2 colors at once in a triad, but one chip was always shown
  - Subject was asked if the greenness between the first two chips was larger than the blueness between the last two chips. This way it was prevented that he made his own distinctions based on lexical discriminations
  - 21 English and no Tarahumara subjects participated

Results of experiment 2

- There was no Worfian effect shown in this experiment. The subjects made distinctions based on the distance between colors and not on the lexical category. The subjects showed the same results as the Tarahumara did in the first experiment

Stimuli BCD

green | blue
|
|
B---1.00---**C**---1.00---**D**

English   14   7 (no signif. difference)

Stimuli ABC

green | blue
|
|
A---1.27---**B**---1.00---**C**

English   17   4

General conclusions

- Experiment 1 seems to show a Whorfian effect; English speakers show a tendency to discriminate colors based on the lexical category boundary, while Tarahumara speakers didn't show this effect.

- Kay & Kempton hypothesized that a 'name strategy' was the cognitive mechanism that was used by the English speakers. To test this possibility they conducted another experiment.

- In experiment 2 the 'name strategy' was ruled out. No Whorfian effect was found.

New evidence

- In a brain-damaged patient suffering from a naming disorder, the loss of labels radically impaired his ability to categorise colors (Roberson, Davidoff & Braisby, 1999)

- A new perceptual color category boundary can actually be induced through laboratory training (Özgen and Davies 2002)

- Categorial perception seems to be language-dependent (Roberson, Davies I. & Davidoff 2000)

Final Conclusion

- The extreme ("Weltanschauung") version of this idea, that all thought is constrained by language, has been disproved
- The opposite extreme – that language does not influence thought at all – is also widely considered to be false

References

- Paul Kay und Willett Kempton (1984): What is the Sapir-Whorf-hypothesis? American Anthropologist 86, 65-79.

- Emre Özgen and Ian R. L. Davies (2002): Acquisition of categorical color perception: A perceptual learning approach to the linguistic relativity hypothesis. *J. of Experimental Psychology: General*, 131, 477–493.

- D. Roberson, I. Davies & J. Davidoff (2000): Colour categories are not universal: Replications and new evidence in favour of linguistic relativity. *J. of Experimental Psychology: General,* 129, 369-398.

- D. Roberson, J. Davidoff & N. Braisby (1999) Similarity and categorisation: Neuropsychological evidence for a dissociation in explicit categorisation tasks. *Cognition* 71, 1-42.