Myth?

Language = thought

Two competing tropes

- Language is arbitrary
- Language ‘guides’ or ‘determines’ thought

Some aphorisms

The sign is arbitrary (Ferdinand de Saussure)

A rose by any other name would smell as sweet (Shakespeare)

A commonplace observation

Federico Fellini (1920-1993)

> A different language is a different vision of life

A commonplace observation

Wilhelm von Humboldt (1767-1835):

> different languages … in fact constitute different views of life.
>
> ('On the national character of languages', 1822, reprinted in *Essays on language*, 1997, T. Harden and D. Farrrelly eds., Peter Lang, p. 52)

> The differences between [languages] are not those of sounds and signs but ultimately of interpretations of the world.
>
> ('On the comparative study of language and its relation to the different periods of language development' 1820, reprinted in *Essays on language*, 1997, T. Harden and D. Farrrelly eds., Peter Lang, p. 18)

A commonplace observation

Ludwig Wittgenstein (1889-1951):

The limits of my language mean the limits of my world

A commonplace observation

Edward Sapir (1884-1939; professor here at Chicago until 1931):

Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression in their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language… The fact of the matter is that the 'real world' is to a large extent unconsciously built up on the language habits of the group …. We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation.

(Sapir, 1958 [1929], p. 69)

A commonplace observation

Benjamin Lee Whorf (1897-1941):

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.

(Whorf, 1940, pp. 213–14)

Linguistic relativity: Questions

1. Which aspects of language might influence which aspects of thought in some systematic way?

2. What form does that influence take?

3. How strong is that influence?

Two forms of linguistic relativity

1. Lexical relativity
2. Grammatical relativity

1. Which aspects of language might influence which aspects of thought/cognition in some systematic way?

words, grammar/forms →
perception, concept formation/ categorization/ classification, memory, reasoning

2. What form does that influence take?
constrain? modify? ease? simplify? speed?

3. How strong is that influence?
absolute? partial? habit?

Two forms of linguistic relativity

1. Lexical relativity

   A. If a language lacks a word for a concept or object, its speakers can't conceive of that concept or object

   B. More words mean more concepts (and hence different/better thinking)

Lexical relativity

Italian (Greek, German, Zulu, Quechua, etc.) lacks a word corresponding to English *privacy*

Russian has no word for

freedom (Ronald Reagan)
compromise
guilt
fair
fun
engagement ring
stench-blossom

English lacks…
words corresponding to
German *grob*
Schadenfreude
Treppenwitz

has only
a single word (*love*) for
Greek *eros*
agape
filia

Lexical relativity

Are *Treppenwitze* 'uniquely important' in the German culture, or a pervasive and necessary element of German social life? (Or *l'esprit de l'escalier* in French?)

Lexical relativity

Jean-Jacques Rousseau (1712-1778)

> It is said that the Arabs have more than a thousand different words for *camel* and more than a hundred for *sword*.
>
> Essai sur l'origine des langues (trans. in *On the origin of language*, J.H. Moran and A. Gode trans., University of Chicago Press 1966, p. 15 fn 1)

Johann Gottfried Herder (1744-1803)

> If the Arabs have so many words for stone, camel, sword, snake (things amongst which they live), the language of Ceylon, in accordance with the inclination of its people, is rich in flatteries, titles, and verbal décor.
>
> Abhandlung über den Ursprung der Sprache (trans. in *On the origin of language*, J.H. Moran and A. Gode trans., University of Chicago Press 1966, p. 154)

The great Eskimo vocabulary hoax*

…so would our class 'snow' [seem too large] to an Eskimo. We have the same word for falling snow, snow on the ground, snow packed hard like ice, slushy snow, wind-driven flying snow—whatever the situation may be. To an Eskimo, this all-inclusive word would be almost unthinkable; he would say that falling snow, slushy snow, and so on, are sensuously and operationally different, different things to contend with; he uses different words for them and for other kinds of snow.

B.L. Whorf, 'Science and linguistics' (1940), reprinted in *Language, thought, and reality,* MIT Press, 1956, p. 216

* Title of the book by G.K. Pullum, 1991, University of Chicago Press.

The great Eskimo vocabulary hoax

qanik ‘snow in the air’
aput ‘snow on the ground’

(C.W. Schultz-Lorentzen, 1927. Dictionary of the West Greenlandic Eskimo language, Meddelser om Grønland 69, Reitzels, Copenhagen, cited in Pullum 1991:167.)

The great Eskimo vocabulary hoax

1. snow	'snow'
2. slush	'snow partially melted'
3. sleet	'wet snow falling'
4. avalanche	'much snow falling from a stationary object, typically a mountainside'
5. blizzard	'storm with much snow'
6. flurries	'little snow, falling'
7. dusting	'a very little snow, on the ground'
8. hardpack	'condensed snow on ground'
9. powder	'light snow on ground'
1. snow cornice	'an overhang of snow'

2. snowball, 3. snowbank, 4. snowdrift, 5. snowfall, 6. snowflake, 7. snowlike, 8. snowshoe, 9. snowstorm, 10. snowy

→ 9 snow-related lexemes, 10 snow-compounds or derivatives

The great Eskimo vocabulary hoax

(1) qanuk 'snowflake qanir- 'to snow'
(2) kaneq 'frost'
(3) kanevvluk 'fine snow/rain particles
(4) natquik 'drifting snow/etc'
(5) nevluk 'clinging debris/lint/snow/dirt
(6) aniu [NS] 'snow on ground'; qanikcaq 'snow on ground'
(7) muruaneq 'soft deep snow'
(8) qetrar- [NSU] 'for snow to crust'
(9) nutaryuk 'fresh snow' [HBC]
(10) qanisqineq 'snow floating on water'
(11) qengaruk 'snow bank' [Y, HBC]
(12) utvak 'snow carved in block'
(13) navcaq [NSU] 'snow cornice, snow (formation) about to collapse'
(14) pirta 'blizzard, snowstorm'
(15) cellallir-, cellarrlir- 'to snow heavily'

All from A.Woodbury 1991 ‘Counting Eskimo words for snow’

Lexical relativity

- English number words:
  - 10^0 (1) = one
  - 10^1 (10) = ten
  - 10^2 (100) = hundred
  - 10^3 (1,000) = thousand
  - 10^6 (1,000,000) = million
  - 10^9 (1,000,000,000) = billion

- Chinese number words:
  - 10^0 (1) = yi^1 (一)
  - 10^1 (10) = shi^2 (十)
  - 10^2 (100) = bai^3 (百)
  - 10^3 (1,000) = qian^1 (千)
  - 10^4 (10,000) = wan^4 (萬)
  - 10^8 (100,000,000) = yi^4 (億)

Lexical relativity

- No study has found that Chinese speakers are better at estimating or comparing numerosities in the 10^4 and 10^8 range over 10^6 and 10^9 (or vice versa for English speakers)

(V. Venkatraman et al. 2006, 'Effect of language switching on arithmetic: A bilingual fMRI study', JCogNeurosci 18.1:64-74)

Lexical relativity

- Color terms (Berlin and Kay 1969; Heider and Oliver 1972)
- All languages have some color terms
- Universal implicational scale:

black(dark)					purple
	< red <	green	< blue <	brown <	pink
white(light)		yellow			orange
					gray
Dani	Tvi	Ibibo (G)	Tamil	Malayalam	English
		Ibo (Y)	Nupe	Nez Perce	
		Tzeltzal (GY)			

- No difference in short-term recall, recognition, similarity judgments (using color chips)

But words matter, no?

- Offensive speech, gender-neutral, etc.

  Every chairman should wield his power wisely. If he doesn't, his colleagues will replace him.

- Orwell's Newspeak

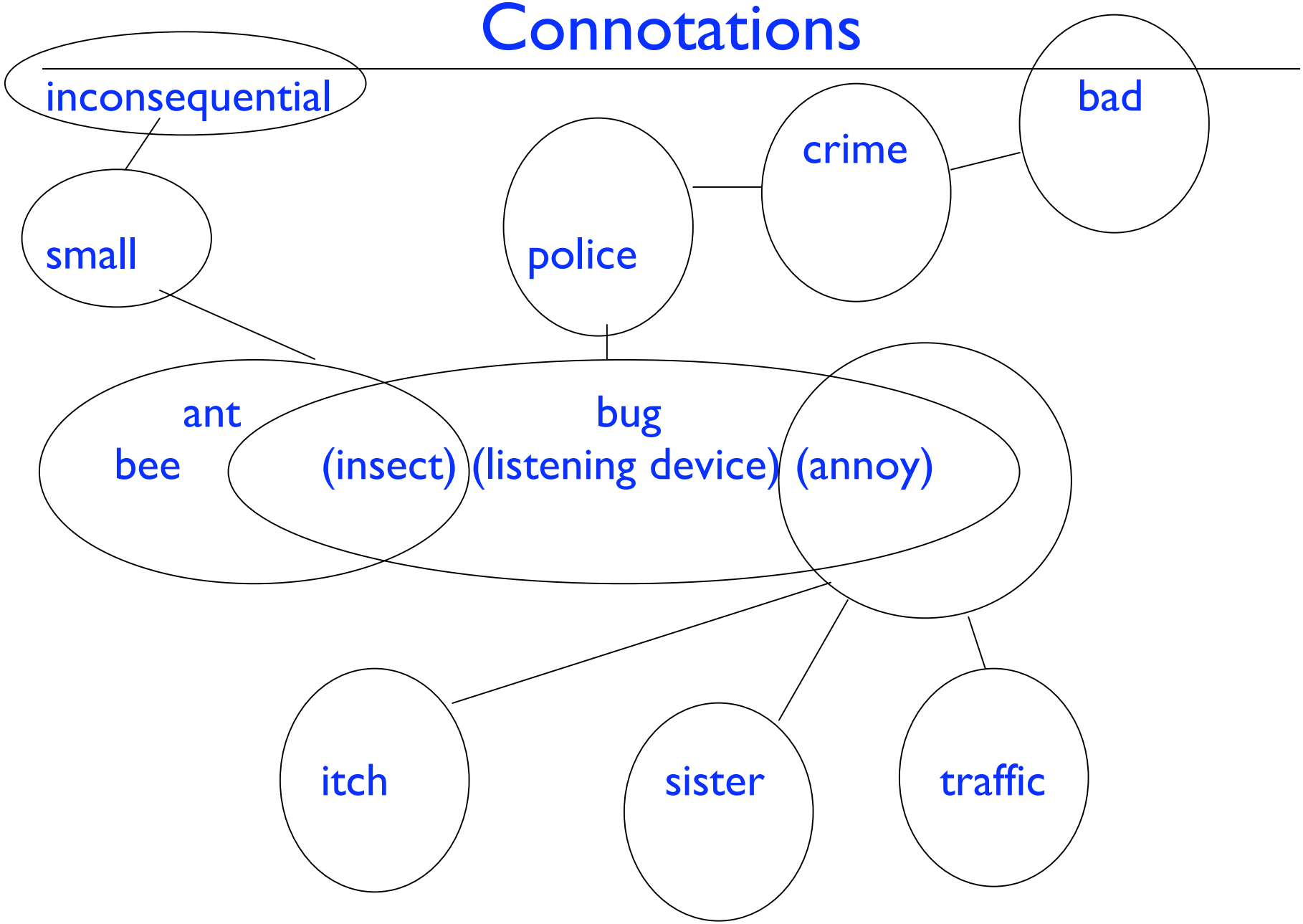
- 'Framing the debate'

Connotations

A	B
pro-choice	pro-life
estate tax, inheritance tax	death tax
global warming	global climate change
evolution	descent with modification
creationism	intelligent design
wall	separation barrier, fence
a deeply spiritual person	religious fanatic

freedom fighter, revolutionary, gunman, terrorist, guerrilla, militant
radical, fanatic, extremist, fascist
empire of evil, axis powers, axis of evil ('Commie Nazis')
tree-hugger, liberal, gun-nut

Connotations



Example

Grammatical relativity

- The grammar of one's language shapes one's habitual thought

A. If the grammar of a language requires its user to frequently or consistently mark some feature, its speakers will be more sensitive to that feature

B. Different distinctions lead to different thinking

Russian

- Russian has no articles (definite: *the*; indefinite: *a(n)*)

- Все смешалось в доме Облонских.
  vse smeshalos' v dome oblonskix
  everything mixed.up in house Oblonsky's
  'Everything was confused in the Oblonsky's house.'

- Жена узнала, что муж был в связи с бывшею в их доме француженкою-гувернанткой
  wife discovered that husband was in affair with former in their house Frenchgirl-governess

  'The wife had discovered that the husband was carrying on an intrigue with a French girl, who had been a governess in their family'

Turkish gender

Adam/kadIn/çoçuk/kedi/karpuz/ev geldi. Onu gördüm.
man/woman/child/cat/watermelon/house arrived. him/her/it saw.I

'A/The man/woman/child/cat/watermelon/house arrived. I saw him/her/it.'

Are Turkish speakers less 'aware' of the sex of individuals because their language lacks a gender system?

Spanish and German gender

	Masculine	Feminine
1. key	Schlüssel	llave
2. bridge	puente	Brücke

Task (in English): Write down the first three adjectives that come to mind to describe each object on the list.

German speakers:
1: hard, heavy, jagged, metal, useful
2: beautiful, elegant, fragile, peaceful, pretty, slender

Spanish speakers:
1: golden, intricate, little, lovely, shiny, tiny
2: big, dangerous, long, strong, sturdy, towering

(Boroditsky et al. 2003)

Chinese

- 'on the evidence of the grammatical structure of the ancient language, Chinese thought lacks abstract entities such as ideas and concepts'

  Review in *Philosophy East and West* 35.2:203-212 (1985) by Bao Zhi-Ming, summarizing and criticizing Chad Hansen (1983) *Language and logic in ancient China*, UMichigan Press)

- Chinese nouns are "mass nouns" (a continuous, not split, system)
- 'count' (+discrete): cat, cup, chair, hat

  one cat, two cats
- 'mass' (-discrete): mud, dirt, sugar, water, furniture, clothing

  ??one mud, ??furnitures, one piece of furniture, one cup of sugar/dust/asphalt

  'itemizer' 'classifier'

Yucatec Maya

- Classifier system; plurals only optionally marked
- Task: Shown triad of objects, with central pivot object:

A pivot B

  - Asked: Is the pivot more like A or like B?

  - Results: Children (Yucatec and English-speaking) age 7 judge similarity by shape overwhelmingly.
  - This changes by adulthood for Yucatec, but not English, speakers.

(Lucy and Gaskins 2003)

Linguistic relativity and cognitive development

General questions:

- Does language influence non-linguistic cognition?
- If so, do different languages influence it in different ways?

Two ways of thinking about this:

1. No. Language and thought are completely dissociated.
2. Yes, language influences cognition.

Linguistic relativity and cognitive development

If yes, two ways of interpreting:

1. Language influences perceptions of categories.

2. Language influences how children discover (possibly pre-existing concepts)—it helps them figure out which concept (among the pre-existing set), is the one that the adult intends.

Thinking for speaking (Slobin)

☞ Language influences thought when one is thinking with the intent to use language, and this influence is not trivial.

Pinker (*Learnability and Cognition* 1989: 360)
"Whorf was surely wrong when he said that one's language determines how one conceptualizes reality in general. But he was probably correct in a much weaker sense: one's language does determine how one must conceptualize reality when one must talk about it."

This allows for interaction between:

Thinking for speaking (Slobin)

Universality (of conceptual structure) and language specificity in semantic development.

- This was shown to be the case in a number of studies

(Choi and Bowerman 1991, 2003, Gentner and Goldin-Meadow 2003, etc)

Universality and variation: Spatial categorization

Core observations for testing:

1. Languages show variation in some dimension.
2. There has to be some “objective” way to measure discrimination for the studied function.

Development of spatial notions

Bowerman and Choi, Choi and Bauwerman (1989, 1991, 2003 et sequel). Facts:

- Universally, children's first spatial words are applied to the same kinds of events: putting things in and out of containers, separating things, piling up and knocking down.
- Early acquired spatial words revolve around relationships of containment (in, out), accessibility (open, close), contiguity and support (on, off), verticality (up, down), posture (sit, stand).
- Proximity, projective relations (in front of) come later.

Cognitive development sets the pace for spatial semantic development

Idea: as new spatial concepts mature, children look for linguistic forms to express them.

☞And language-specific properties have an impact on this!

Spatial categorization in English

Core relations in English in terms of:

- containment (IN)
- contact with an exterior (ON)

See fig. 13.1

Spatial categorization in Korean

Different semantic partitioning of the same space in Korean:

Core relations in Korean in terms of:

- interlocking, tight fit (crosscuts *put in* and *put on*)
- loose fit (put loosely *in or around)*

See fig. 13.2

Hypothesis

If children initially associate spatial words with a universal set of basic concepts of space, these differences shouldn't matter.

However:

☞ Language related differences are in place already at 17-20 months of age! (Choi and Bowerman 1991 spontaneous speech data)

E.g. English children discriminated between *out* (of a container) and *off* (a surface). Korean children between ppatya (remove from tight fit) and kkenayta (remove from loose containment).

Hypothesis

- These results were replicated later in elicited production tests
- The children grouped and distinguished the actions significantly more like adult speakers of their own language than like same-age children of the other language.
- Same effect is shown in Papafragou, Massey, and Gleitman 2002 for motion and path verbs

Vertical support

Korean lacks all purpose UP and DOWN words, but uses a variety of verbs :

anta	carry in arms
empta	hold/carry in back
ancta	assume a sitting posture
ollita	cause to ascend
naylita	cause to descend

Same thing in the Mayan languages Tzeltal and Tzotzil.

Vertical support

Do learners of Korean recognize a primitive up and down relation across these events?

Probably not! E.g. they do not extend ollita for ‘pick up’, or ‘help stand up’, as English learners do.

Does this mean that they cannot abstract directionality?

The revealing power of errors

Overextensions: *open* in English 16-21 month-olds is also used for:

separating two frisbees, taking the stem off an apple, a piece out of a jigsaw puzzle, a handle off a riding toy, turning on a light, or a water faucet

☞Korean children do not overextend!

Again, this is correlated with the fact that in Korean there is no lexical category “open”

Motion and manner in Greek and English

Papafragou, Massey and Gleitman (2002)

Empirical observation: Manner languages (e.g. English, German, Russian, Swedish, Chinese) versus Path languages (e.g. Modern Greek, Spanish, Japanese, Turkish, Hindi)

In ML: manner of motion is encoded in the verb (e.g. walk, run), while path information appears in nonverbal elements such as prepositional phrases (across the street).

In PL: the verb usually encodes the direction of motion (e.g. cross, ascend), while the manner information is (optionally) encoded in gerunds or prepositional

Motion and manner in Greek and English

(1) English
The man walked across the street.

(2) Greek
O andras die-shise to dromo (me ta podia/perpatontas)
'the man crossed the street (on foot/walking)'

Berman and Slobin (1994: 662):
"…children's attention is heavily channeled in the direction of those semantic distinctions that are grammatically marked in the language"

- Spanish or Greek children might especially notice paths upon encountering motion scenes;
- by contrast, the absence of clear and consistent linguistic marking of path might delay formation or deployment of the relevant conceptual distinctions in manner languages.

Motion and manner in Greek and English

Further:

- The fact that path-verb speakers often omit mention of manner might be interpreted to suggest they don't as regularly attend to manner properties of observed motion scenarios.

Four hypotheses to be tested

Hypothesis 1: Greek and English speakers express path and manner differently in tasks that require them to describe a depicted motion scene. This means that Greek speakers speak Greek and English speakers speak English.

Four hypotheses to be tested

Hypothesis 2: Memory and/or categorization performance for motion depictions will vary for speakers of the two languages.

This is the linguistic-relativity prediction: differences between manner and path languages in the frequency and salience with which path vs. manner are encoded should result in systematic differences in how people in each language group attend to and process path vs. manner information in nonlinguistic cognitive tasks.

Four hypotheses to be tested

Hypothesis 3: Because the language patterns are learned, we expect to see Manner–Path expressions to diverge more strongly in adults than in young children, within a language community.

(A. Papafragou et al. / Cognition 84 (2002))
The idea here is that younger speakers may utter only a few, quite general, verbal items (perhaps come and go) with typological differences becoming manifest only as the stock of lexical items increases.

Four hypotheses to be tested

Hypothesis 4: Because the language patterns and their prototypical contexts of use are learned, nonlinguistic consequences (memory and categorization performance) will diverge progressively over age.

Habituation effect! (recall earlier discussion of Lucy)

☞The study disproved Hypotheses 2 and 4

Participants

Children

- 22 Greek-speaking 8-year-olds (range 7;2–9;2 years; mean 8;4)
- 14 English-speaking 8-year-olds (range 7;5–10;0 years; mean 8;11).

Adults

- 21 Greek-speaking adults between 18;1 and 50;8 (mean 29;7)
- 20 English-speaking adults between 19;2 and 34;6 years of age (mean 24;0).

Stimuli

Fig. 4. Example stimuli for Experiment 2. (4.1) Sample item (man running up the stairs). (4.2) Path variant (man running down a hallway). (4.3) Manner variant (man walking up the stairs).

Stimuli

Table 4
Stimuli for Experiment 2

Sample items	Manner changes	Path changes
1. stumble into a room	walk into a room	stumble down the stairs
2. jump into a room	walk into a room	jump off a chair
3. walk down the stairs	slide down the stairs	walk to the bookcase
4. run up the stairs	walk up the stairs	run down the hall
5. drive through a barn	walk through a barn	drive past a barn
6. sneak out of a room	walk out of a room	sneak into a room
7. jump off the stairs	fall off the stairs	jump on the couch
8. fly over the barn	fly upside down over the barn	fly around the barn

Table 5
Verbal descriptions for sample elicited in Experiment 2

Group	Mean manner verbs (out of eight sample descriptions)	Mean path verbs (out of eight sample descriptions)
Greek children	1.500	5.000
Greek adults	1.333	5.429
English children	3.714	3.643
English adults	5.950	1.550

Results

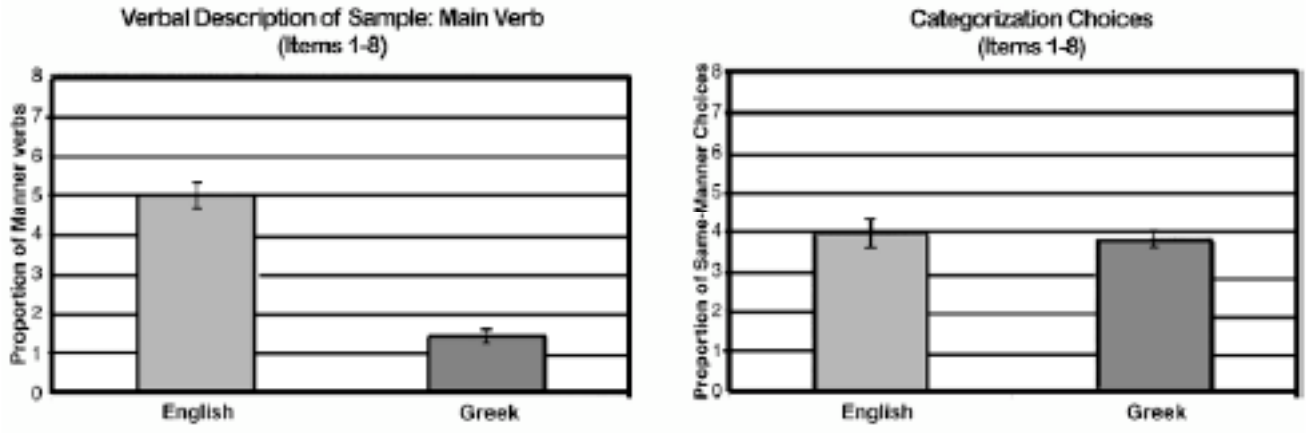


Fig. 5. Results from Experiment 2. (5.1) Linguistic task. (5.2) Non-linguistic task.

- Predictions 1 and 3 were confirmed!
- Predictions 2 and 4 (the Whorfian and habituation hypotheses) were not confirmed.

Conclusions

- The findings suggest a good measure of independence between conceptual and linguistic representation.
- The more language-like the subjects' task, the more speakers of different languages can be shown to vary in their performance.
- The more language is removed from the task situation, the more subjects exhibit their human conceptual commonalities.
- Human conceptual structure exists independent of language!

Whorf again

"There are connections but not correlations or diagnostic correspondences between cultural norms and linguistic patterns"

('The relation of habitual thought and behavior to language', 1941, reprinted in B.L.Whorf, *Language, thought, & reality*, 1956, MIT Press, p. 159)

"For the scientific understanding of very diverse languages… causes us to transcend the boundaries of local cultures, nationalities, physical peculiarities dubbed 'race,' and to find that in their linguistic systems, though these systems differ widely, yet in the order, harmony, and beauty of the systems, and in their respective subtleties and penetrating analysis of reality, all men are equal."

('Language, mind, and reality', 1942, reprinted in B.L.Whorf, *Language, thought, & reality*, 1956, MIT Press, p. 263)

Discussion

1. Think about two languages you know (English may be one of them), and describe a grammatical difference between the two (not just a lexical difference).

2. Describe some aspect of non-linguistic cognition that this grammatical difference codes or may plausibly be thought to reflect.

3. Design an experiment that would examine this aspect.

   Questions to keep in mind: What will you look at? How will you test for it? What kinds of stimuli will you use and what task exactly will subjects be asked to do?