

Natural language semantics and the psychology of reasoning

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Lecture #2

Interpretation **or** reasoning?

- We have evidence that both reasoning and interpretation contribute to the phenomenon of illusory inferences from disjunction
- Ongoing work understanding the division of labor between the two
 - Illusory inferences without language: pictorially presented premises
 - Priming for/against implicatures
 - Illusory inferences with children

More language in reasoning

The disease problem (Kahneman & Tversky, 1979)

A dangerous new disease has been going around. Without the right medicine, 600 people will die from the disease. Two types of medicine are being developed to try to save these people

- 1 If you choose Medicine A, 200 people will be saved.
- 2 If you choose Medicine B, there is a $1/3$ chance that 600 people will be saved, and a $2/3$ chance that no one will be saved.

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- 1 If you choose Medicine A, 400 people will die.
- 2 If you choose Medicine B, there is a $1/3$ chance that no one will die, and a $2/3$ chance that 600 people will die.

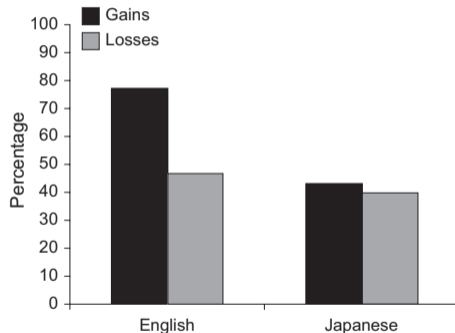
Reasoning about risks in a foreign language

- 1 Greater cognitive load
L2 reasoners should be more risk averse
- 2 Lower emotional grounding
L2 reasoners should be more rational

Study by Keysar et al. (2012)

Three groups of subjects instantiating the same L1-L2 languages (English-Japanese, Korean-English, English-French); L2 classroom acquired, not spoken at home

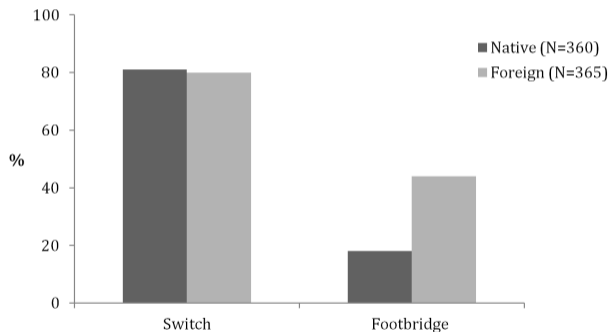
Results



- Fewer people preferred the safe option in the *gains* condition when they saw the problem in their L2
- This is unexpected under a cognitive load account of L2 reasoning: cognitive load produces *greater* risk aversion
- Explained if L2 reasoners are less emotionally engaged with the content of the problem in their L2 than in their L1

Trolley problem (Costa et al., 2014)

Percentage of Utilitarian Choices



- We see more decision making consistent with utilitarian reasoning when moral dilemmas are solved in L2
- This also naturally points to effects of emotional distancing

Open questions

- Role of interpretation: do some of these experimental scenarios rely on non-trivial interpretive (e.g. pragmatic) processes? If so, do we expect speakers to engage in those interpretive processes equally in L1 and L2?
- Replicability problems. . .
- What do we expect for deduction problems unrelated to emotions?
- Difficulties correlating performance in these problems in L2 with measures of emotional responses to lexical items (ongoing work by Schlueter et al.)

Conclusions

- Linguistic semantics and the psychology of reasoning display significant overlap in object of study — we need to reach convergence!
- The methods of linguistic analysis are of the utmost importance in our understanding of how human reasoning works — only through careful linguistic analysis can we understand what is a reasoning mistake and what is an interesting interpretive process.
- Reasoning **matters** greatly. By contributing to our understanding of reasoning, linguistics reaches a new dimension of relevance and utility, both as fundamental science and as a source of inspiration for applications.

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