Sentence Processing II

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(1) No head injury is too trival to ignore

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(1) No head injury is too trival to ignore

- (2) INTERPRETATION 1: **No** head injury should be ignored no matter how trivial
- (3) INTERPRETATION 2: **All** head injuries should be ignored no matter how trivial

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(4)) N	lo c	lonut	is	too	fattening	; to	eat
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- (5) INTERPRETATION 1: **No** donut should be eaten no matter how fattening
- (6) INTERPRETATION 2: **All** donuts should be eaten no matter how fattening

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Discourse I - properties of

So "No head injury is too trivial to ignore" actually means "All head injuries should be ignored no matter how trivial".

Lexical semantics + world knowledge \Rightarrow Wrong interpretation.

"Goodenough" theory of language comprehension (Fernanda Ferrara)

We process language in a relatively shallow way, doing just enough processing to extract a contextually-relevant meaning, but no more.

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(7) The cat chased the mouse

(8) The mouse was chased by the cat

Which is more complex and why?

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(9)

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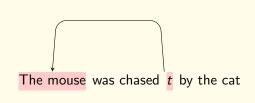
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Difficulty with passives

- 1. Semantically non-canonical word order: the patient comes before the agent
- They are derived via syntactic movement (movement of NP cat from after the verb chased)

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'Canonical' = 'typical' / 'standard'
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We can refer to **syntactic** and **semantic** canonicity.

In **syntactically canonical** sentences, the subject comes before the object.

(10) The teenager SUBJ likes parties OBJ

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In semantically canonical sentences, there is an alignment between the Subject and the Agent argument (and Object and Patient)

- (11)The man AG ate the donut PAT
- (12)The dog AG chased the cat PAT

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In some cases the subject may not be an Agent, but it will definitely have more agency than the object

(13) The boy $_{AG}/_{EXP}$ smelt $_{VB}$ the rose $_{TH}$

So Subject maps to the most agentive argument, while Object maps onto the least agentive argument.

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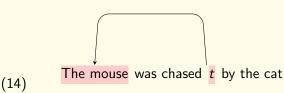
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Examples of non-canonical sentences



Syntactically canonical - subject comes before verb

Semantically non-canonical - subject maps to least agentive argument

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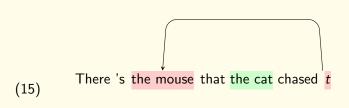
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Syntactically non-canonical - object comes before subject Semantically canonical - subject maps to agent argument

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For three place predicates, which is the canonical word order?

- 1. John gave her a book (DITRANSITIVE)
- 2. John gave a book [to her] (PREPOSITIONAL DATIVE)

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For three place predicates, which is the canonical word order?

- 1. John gave her a book (DITRANSITIVE)
- 2. John gave a book [to her] (PREPOSITIONAL DATIVE)
- 3. John read a book [in the park]
- 4. John wore a blue blazer [for the party]

Prepositional dative assumed to be canonical as its basic structure (V + Od + Prepositional Phrase) is far more frequent

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1. English is SVO (40%)

- 2. Japanese is SOV (35%)
- 3. Classical Arabic is VSO (15%)
- 4. Fijian is VOS (10%)
- 5. Xavante is OSV (<1%)
- 6. Hixkarayana is OVS (<1%)

Strong tendency for S > O (75% of world's languages) and weaker tendency for V > O (65%)

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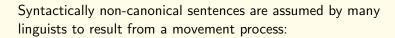
Some languages allow words to come in almost any order, e.g. Latin & Finnish.

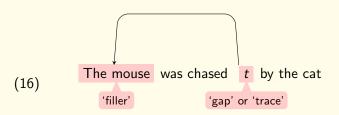
However, even these have a preferred word order, e.g. it has been argued that the basic Latin word order is OSV.

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Are the following sentences syntactically canonical? For non-canonical sentences specify the filler and the gap?

- 1. It was the boy that the girl pushed
- 2. The boy apparently pushed the girl into the puddle
- 3. The boy that the girl pushed was upset
- 4. The boy was pushed by the girl
- 5. The boy that pushed the girl was naughty
- 6. It was **the boy** that pushed **the girl**

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(2) The boy apparently pushed the girl into the puddle

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(4) The boy was pushed t by the girl

- (5) The boy that pushed the girl was naughty
- (6) It was **the boy** that pushed **the girl**

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Difficulty affected by movement.

Difficulty is greater when movement is longer.

Effect of difficulty is even greater in language-impaired individuals.

Canonicity

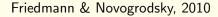
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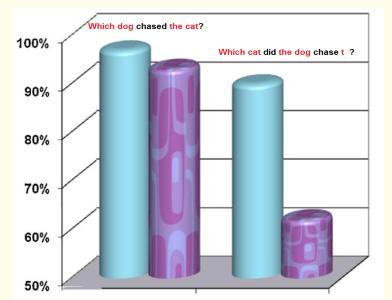
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- (17) The boy [that pushed the girl] was naughty
- (18) The boy pushed the girl [_ that was naughty]

Position of embedding

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Multiple centre-embedding is a nightmare!
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- (19) The girl [that the boy [that the teacher scolded]] pushed] hurt her knee
- (20) There's **the boy** [that the teacher scolded _] [_ that pushed **the girl**] [that _ fell and hurt her knee].

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How can a sentence be grammatically well-formed but almost impossible to understand?

Miller & Chomsky (1963) - separation between grammatical mechanisms and processing mechanisms.

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LEMMA

Transitive Vb
Laugh + at + PERSON / THING
Laugh + about + THING



Opposite of "cry"

LEXEME

/la:f/ laugh

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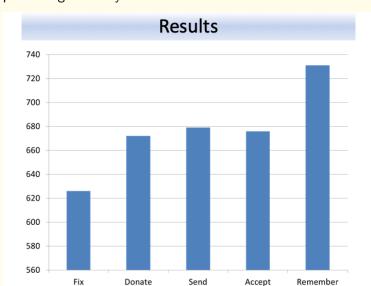
Animacy

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- 1. Mary fixed the bike
 - 2. Ali donated a book to the library
 - 3. Ali donated a book
 - 4. Angie gave Peter a book
 - 5. Angie gave a book to Peter
 - 6. Angie gave a book
 - 7. Janet said her prayers
 - 8. Janet said that she was sorry
 - Erica asked a question
- 10. Erica asked about the interview
- 11. Erica asked Mary a question
- 12. Erica asked whether Mary was tired
- 13. Erica asked Mary to be quiet

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Shapiro et al. (1987) used a lexical decision task to test processing difficulty after the verb.



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they make good agents. Agents typically occur in subject position.

The boy ate the sausage

Because animate entities (people, animals) have volition,

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Because inanimate entities (e.g. objects) do not have volition, they do not make good agents.

Non-agents typically occur in object position.

(22)The boy ate **the sausage**

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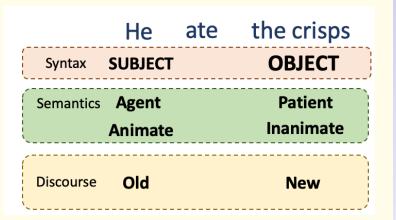
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Because of these correspondences, animacy cues can help children determine who did what to whom, e.g.

Which are easiest?

- 1. **The boy** that **the rock** squashed was large
- 2. The car that the man drove was fast
- 3. **The cow** that **the pig** chased was spotted

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Different argument slots also have particular discourse properties. The subject position often contains discourse-old information, e.g.

(23) I like John. He's a nice guy.

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(24)Have you heard about John? He won the **lottery**

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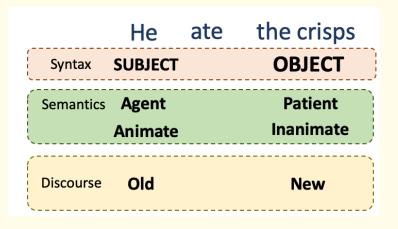
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Complex structures are a lot easier to process when subjects have typical discourse properties (i.e. they are pronominal)

- (25)There's **the dog he** chased
- Subject is pronominal = EASY
- (26)There's **the dog the boy** chased
- Subject is a full Noun Phrase = DIFFICULT

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(27) Which dog was he chasing ?

Subject is pronominal = EASY

(28) Which dog was the boy chasing _?

Subject is a full Noun Phrase = DIFFICULT

Putting animacy and discourse together

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We can manipulate difficulty be combining animacy and discourse cues

(29)There's **the hammer he** dropped

Supportive animacy and discourse cues

(30)There's **the boy** that the girl chased _

Unsupportive animacy and discourse cues

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Animacy and discourse can actually "trump" syntactic complexity, e.g.

(31)There's **the hammer he** dropped

Noncanonical structure, but supportive animacy/discourse cues

(32)There's **the girl** that _ chased **the boy**

Canonical structure, but unsupportive animacy/discourse cues

Kidd et al. (2007) found that kids were actually better at repeating (31) than (32)

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Syntactic priming

- REPEAT "The car was hit by the lorry"
- Now describe the picture below
- REPEAT "The woman gave the flowers to the boy"
- Now describe the picture below

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Syntactic priming

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- Now describe the picture below



- REPEAT "The woman gave the flowers to the boy"
- Now describe the picture below

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Syntactic priming

- REPEAT "The car was hit by the lorry"
- Now describe the picture below



- REPEAT "The woman gave the flowers to the boy"
- Now describe the picture below



Discourse I - properties of

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We have a natural tendency to recycle the structure of preceding utterances. This is demonstrated by structure

1. The participant hears a structure

priming studies.

2. The participant describes a picture which can either be produced with the preceding structure or a different structure

Participants use preceding structures at above-chance level.

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Syntactic priming is a much studied phenomenon.

Consequence of an implicit structural learning mechanism (Peter et al. 2015).

Structural priming is widely employed in intervention (Leonard, 2011).

However, language-impaired children may be less susceptible to structural priming (Kidd, 2012)

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Complete the following sentences

- 1. It's a game of two _ _ _ _ _ _
- 2. Her presentation was all over _ _ _ _
- 3. What's a nice girl like you _ _ _ _ _ _ _
- 4. Who'd a _ _ _ _ ?

How many possibilities were there? What kind of factors influenced your completions?

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