

Competitive processes in production

Shota Momma (Negishi)
Brain Dillon

University of Massachusetts, Amherst
Department of Linguistics

3/15/2021

Prep for Lab #2b

Learning to use R studio

<http://web.cs.ucla.edu/~gulzar/rstudio/basic-tutorial.html>

Cleaning the data

<https://www.pcibex.net/wiki/r-script/>

Structural flexibility in English

Passive

The boy chased the dog.

The dog was chased by the boy.

Dative

The girl gave the boy the book.

The girl gave the book to the boy.

Coordination

The dog and the cat were running.

The cat and the dog were running.

Flexibility in Japanese

Similar meanings can be expressed using structures with different word order:

Scrambling:

男の子が 犬を 追いかけた。

Otokonoko-ga inu-wo oikaketa.

Boy-NOM dog-ACC chased.

“The boy chased the dog.”

犬を 男の子が 追いかけた。

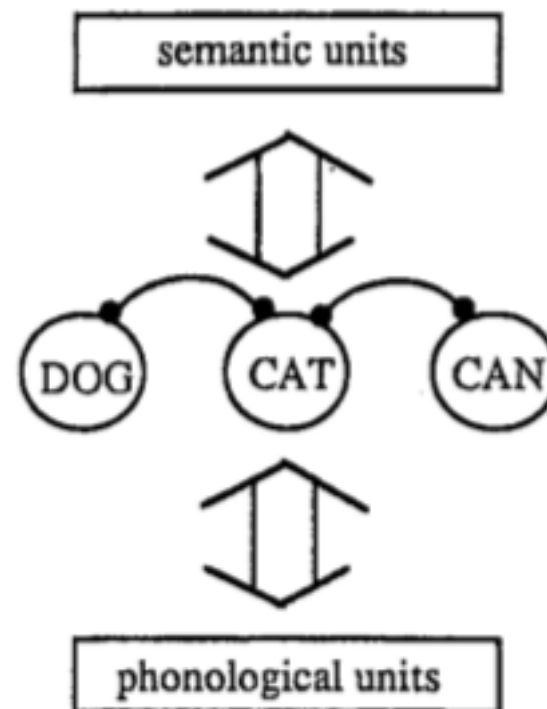
Inu-wo otokonoko-ga oikaketa.

dog-ACC Boy-NOM chased.

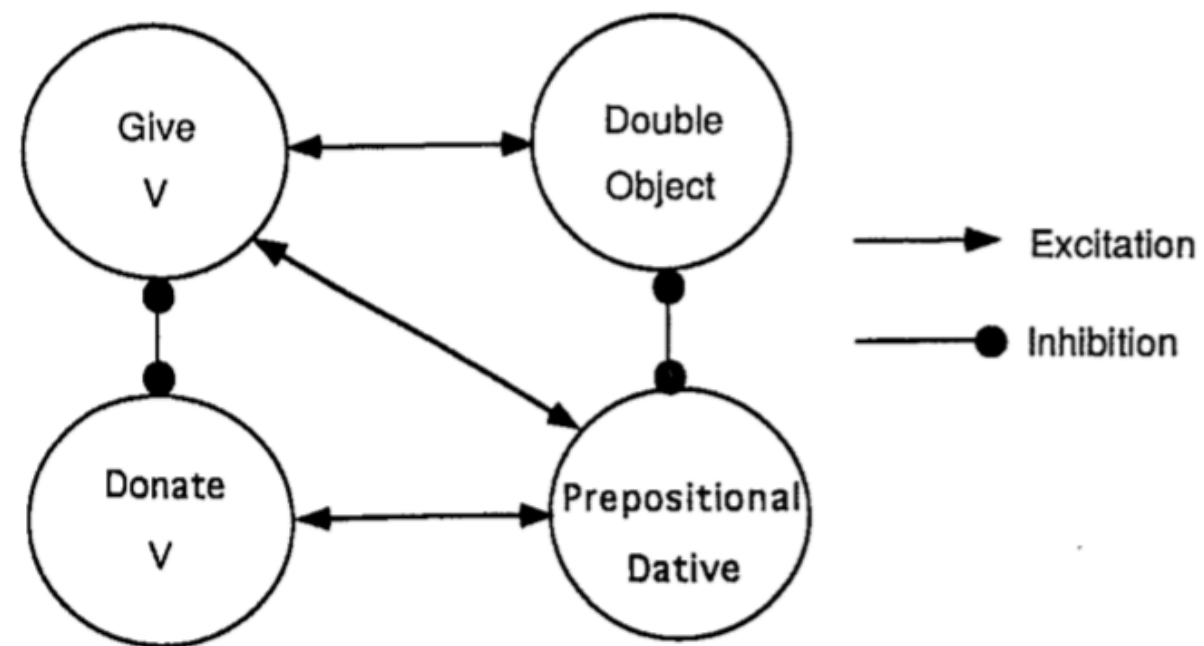
“The boy chased the dog.”

Competition in production

Lexical



Structural



“Puzzle” task

Create a sentence from words presented to you.
You can add missing words (e.g., the) as necessary, but you cannot omit words presented.



I gave

Children

to

toys

+

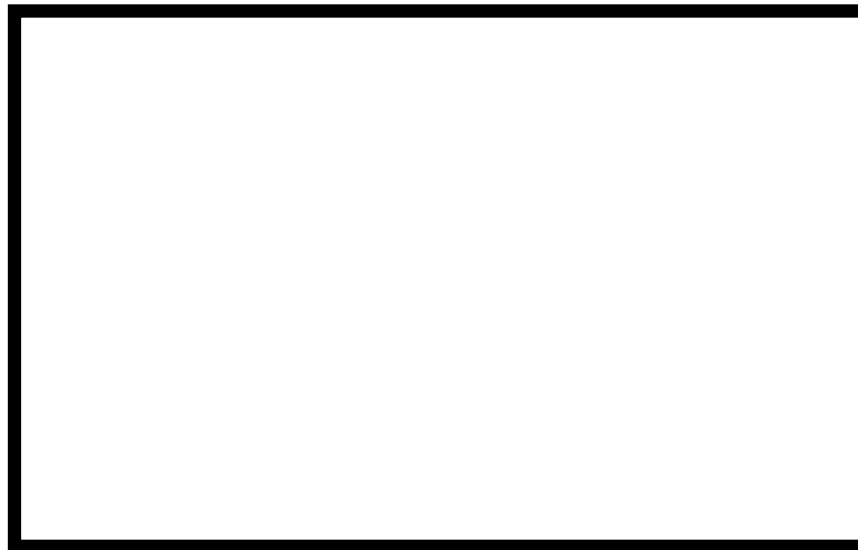
I mailed

senator

complaint

+

I explained



student

lesson

+

I delivered

to

lawyer

evidence

+

I baked

mother

for

bread

+

I read

to

script

actor

Flexibility benefit

I gave / the toys / to / the children [alternator, constraining]
I donated / the toys / to / the children [non-alternator, constraining]
I gave / the toys / the children [alternator, unconstraining]
I donated / the toys / the children [non-alternator, unconstraining]

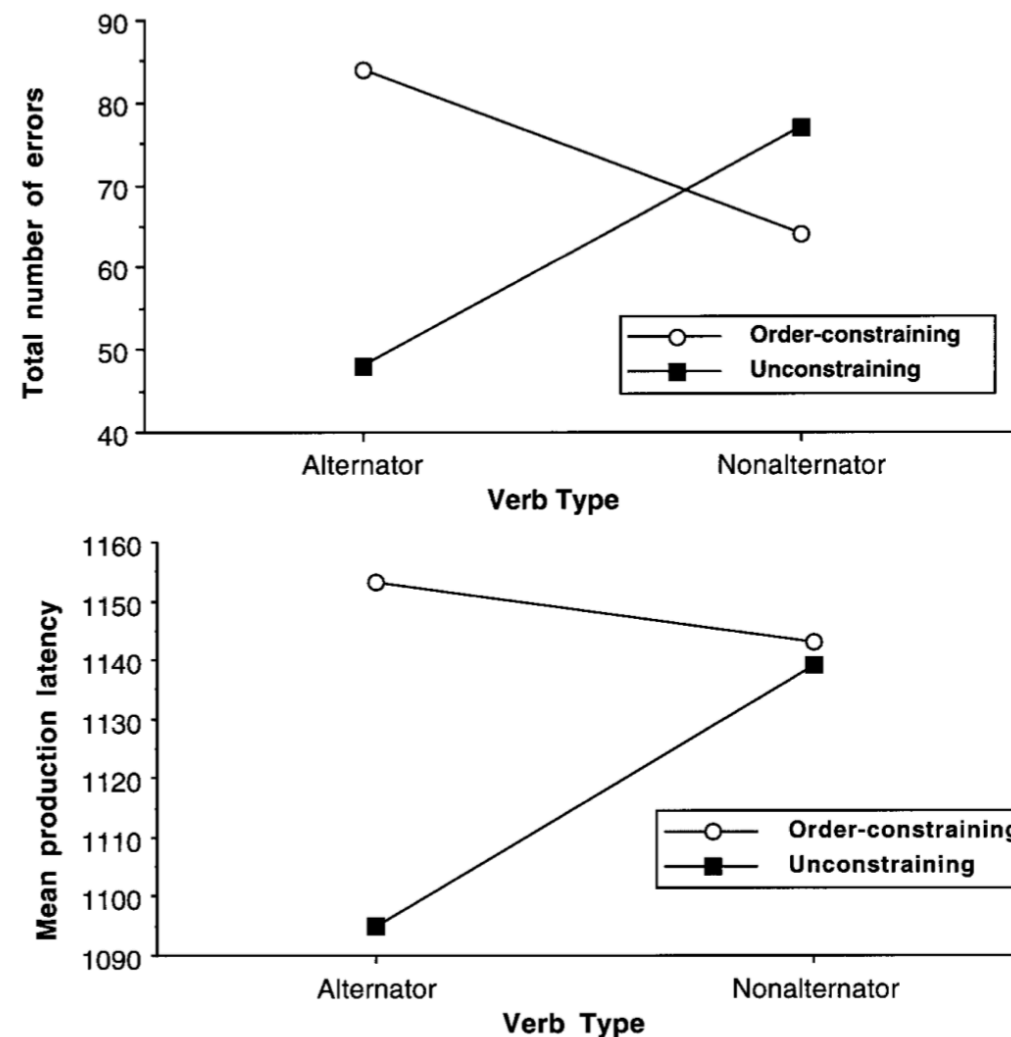


FIG. 5. Measured number of errors (top panel) and mean production latencies (bottom panel) as a function of verb type and preposition constraint in Experiment 1.

Flexibility benefit

I gave / it / the children [alternator, constraining]

I donated / it / the children [non-alternator, constraining]

I gave / him / the toys / [alternator, unconstraining]

I donated / him / the toys [non-alternator, unconstraining]

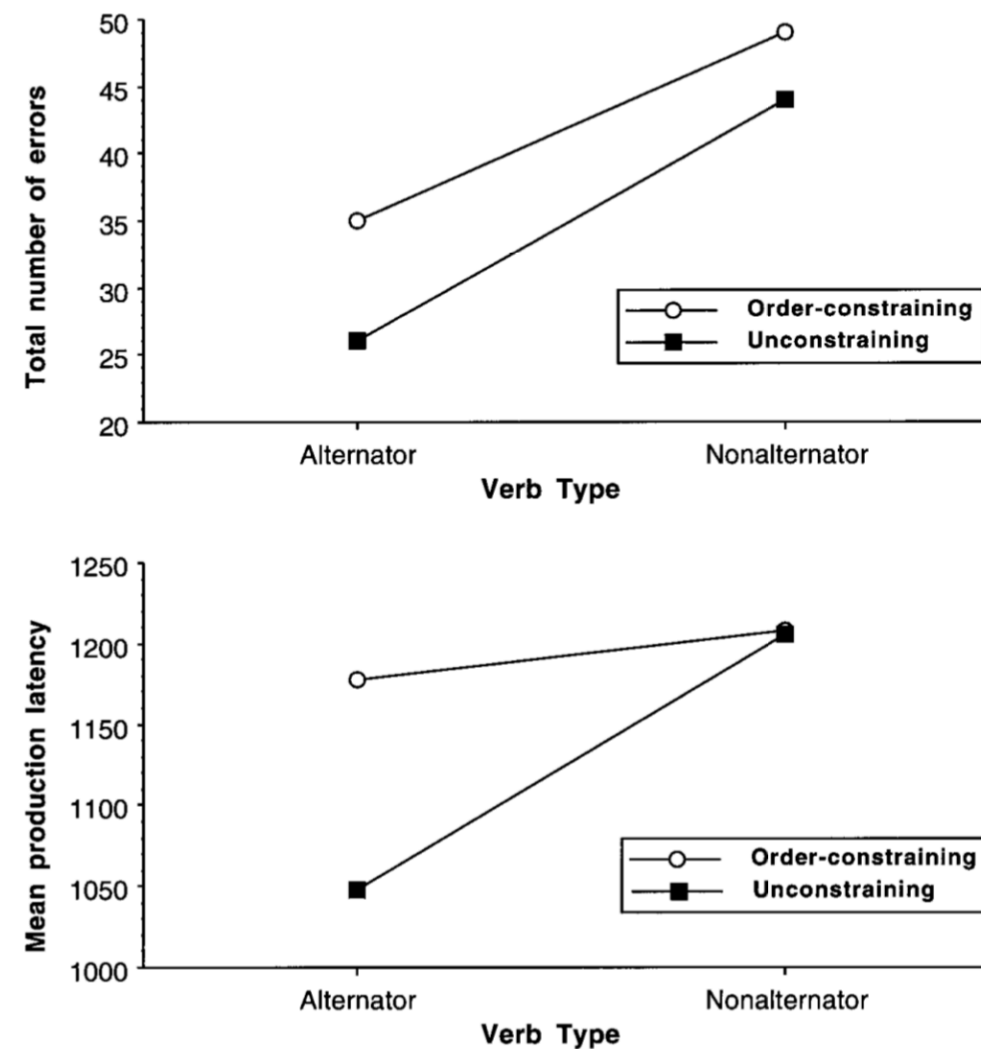
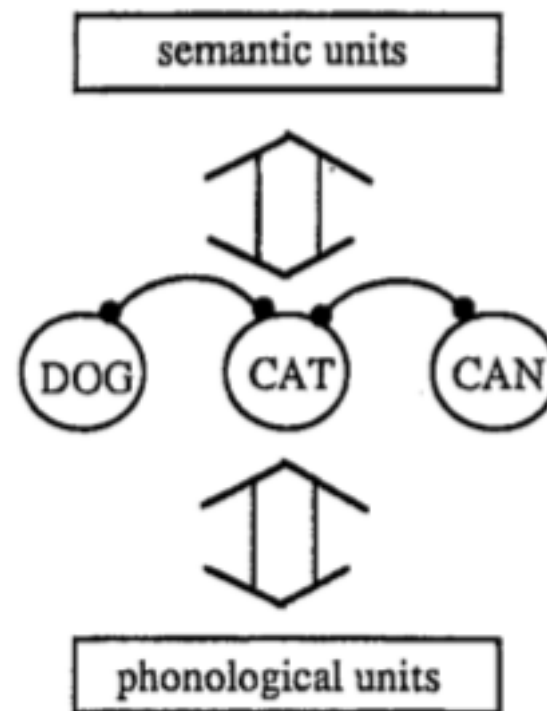


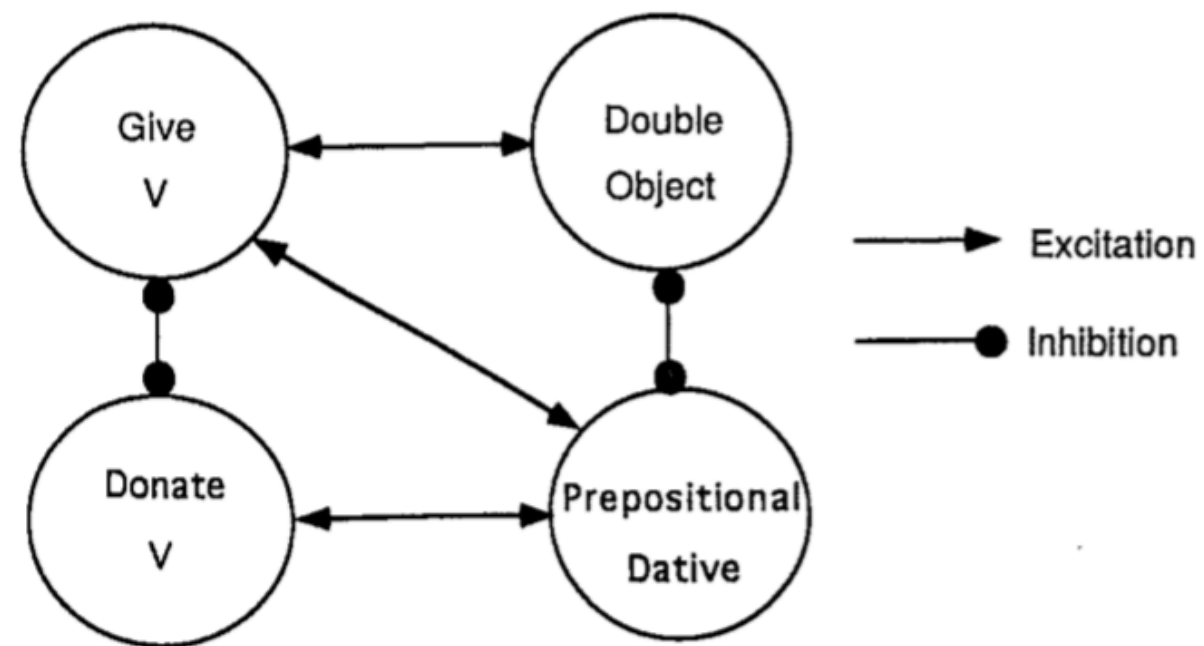
FIG. 7. Measured number of errors (top panel) and mean production latencies (bottom panel) as a function of verb type and pronoun in Experiment 2.

Competition in production

Lexical



Structural



Flexibility benefit

Competitive model

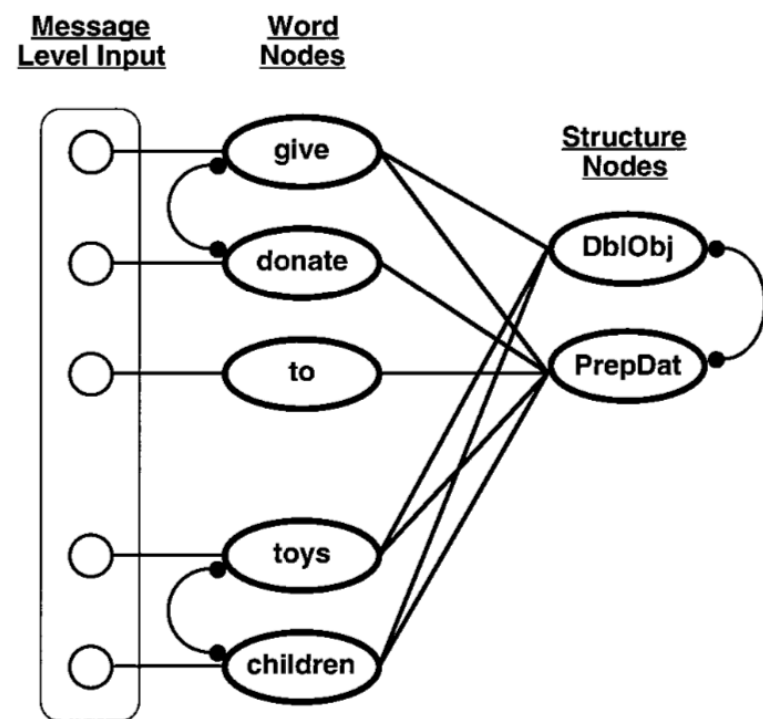


FIG. 1. Interactive activation architecture to competitively choose between alternator verb syntactic structures. (DblObj = Double Object; PrepDat = Prepositional Dative.)

Two structural frames compete for selection

Incremental model

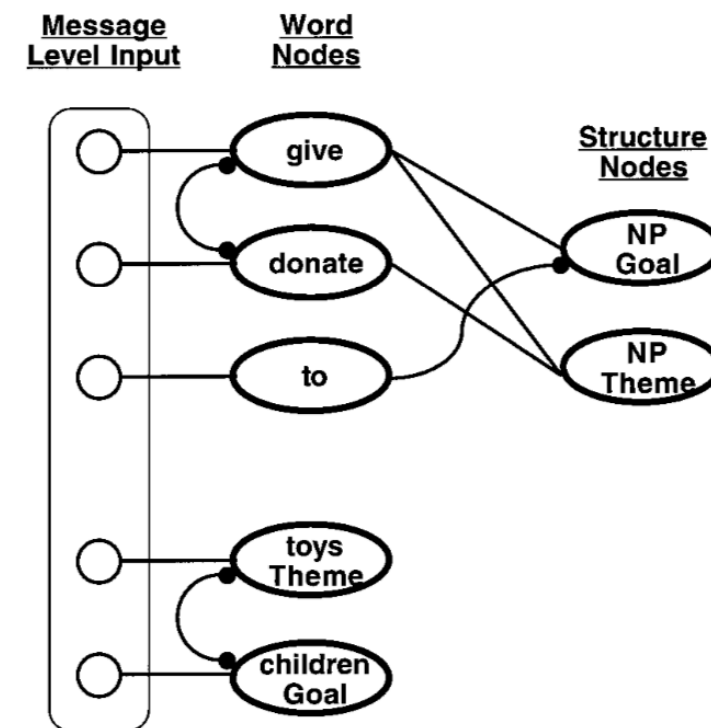


FIG. 3. Interactive activation architecture to choose between alternator verb syntactic structure within an incremental approach.

DO/PD structure “emerges” from the incremental production

Flexibility benefit

Competitive model

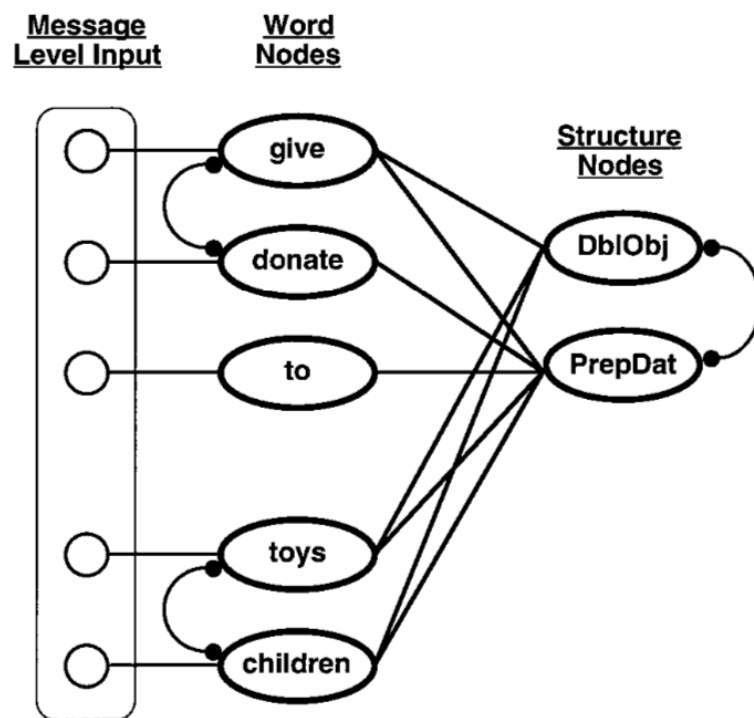


FIG. 1. Interactive activation architecture to competitively choose between alternator verb syntactic structures. (DblObj = Double Object; PrepDat = Prepositional Dative.)

Two structural frames compete for selection

Incremental model

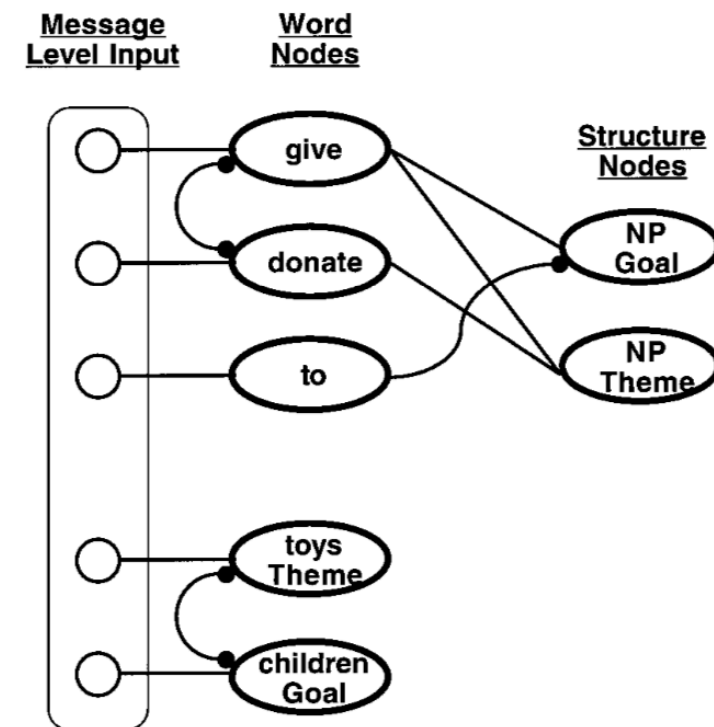


FIG. 3. Interactive activation architecture to choose between alternator verb syntactic structure within an incremental approach.

DO/PD structure “emerges” from the incremental production

Flexibility cost

English

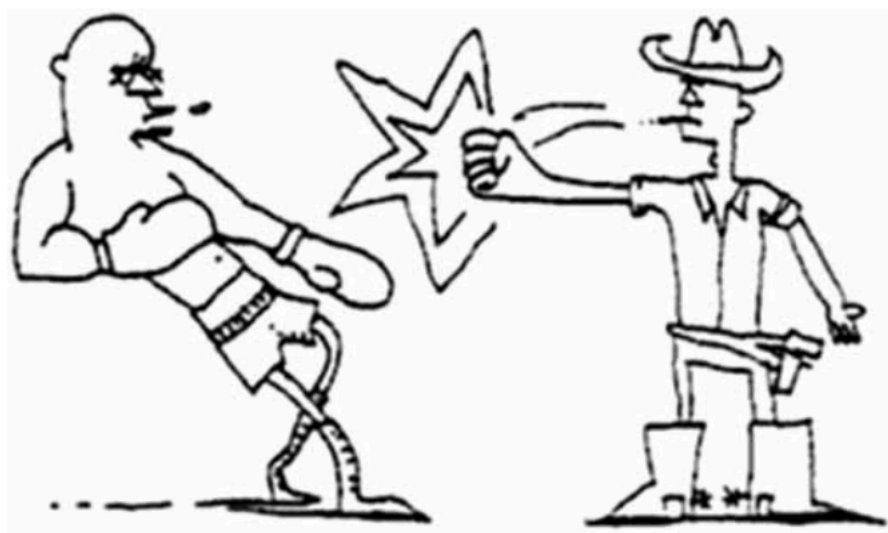
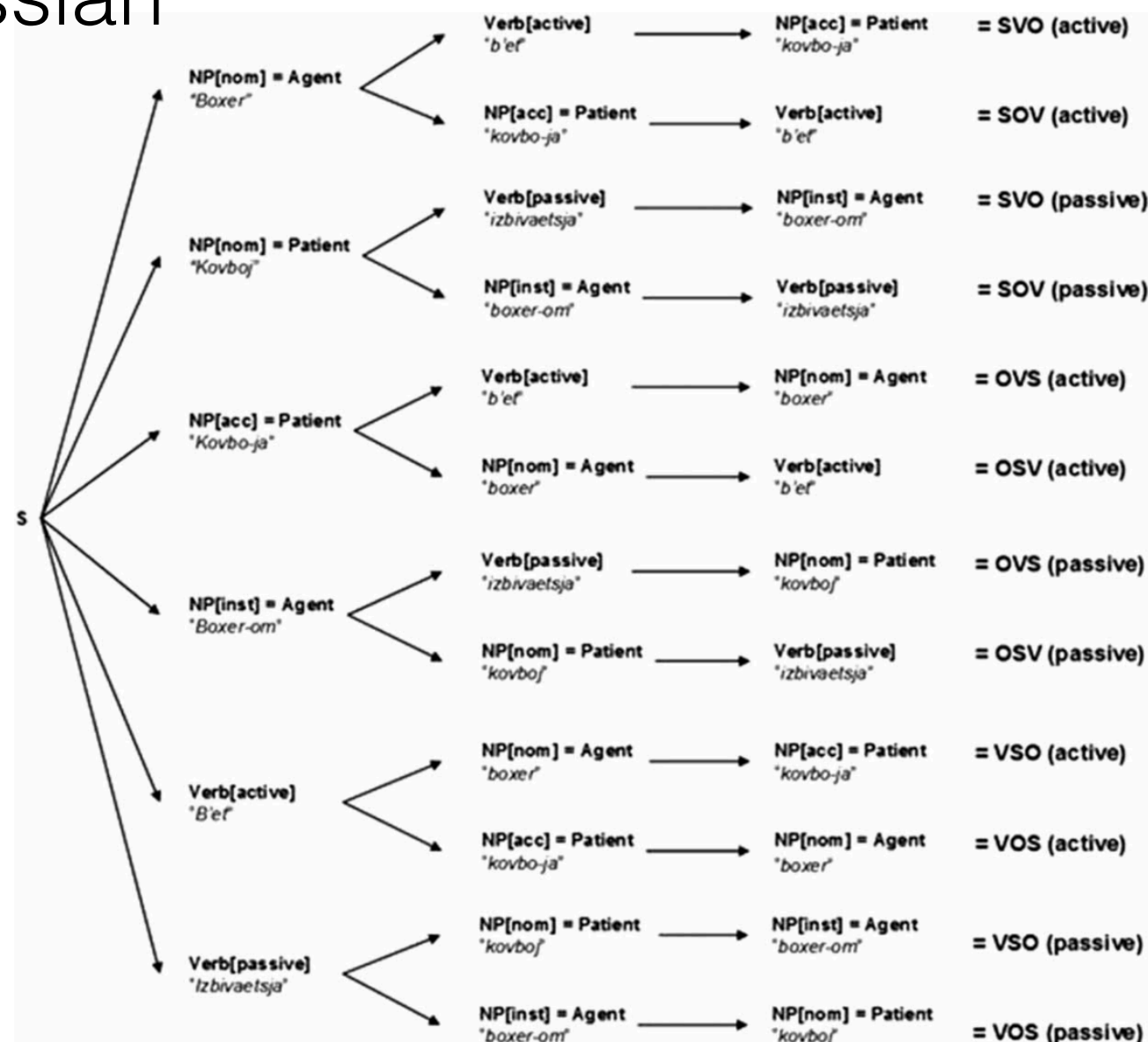


Figure 1. Sample picture showing a "transitive event".

Russian



Flexibility cost

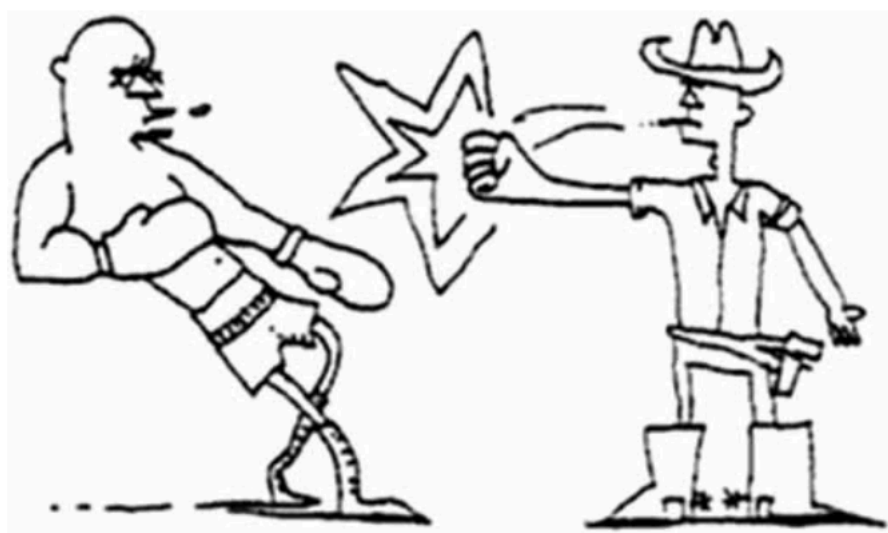


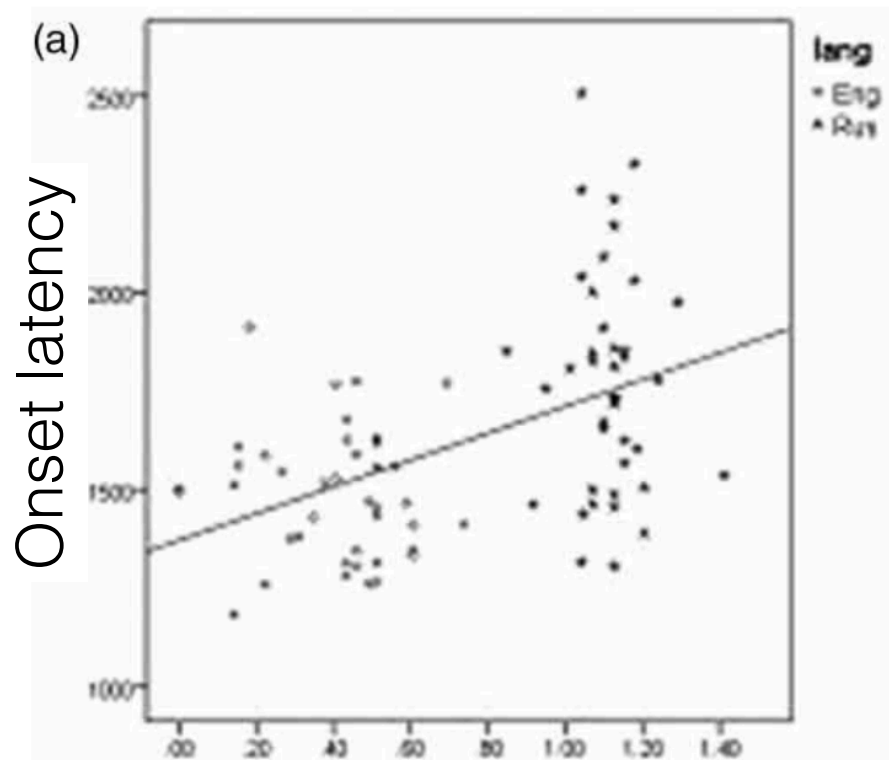
Figure 1. Sample picture showing a “transitive event”.

Table 1. Percentages of different syntactic structures used to describe the target pictures in Experiment 1

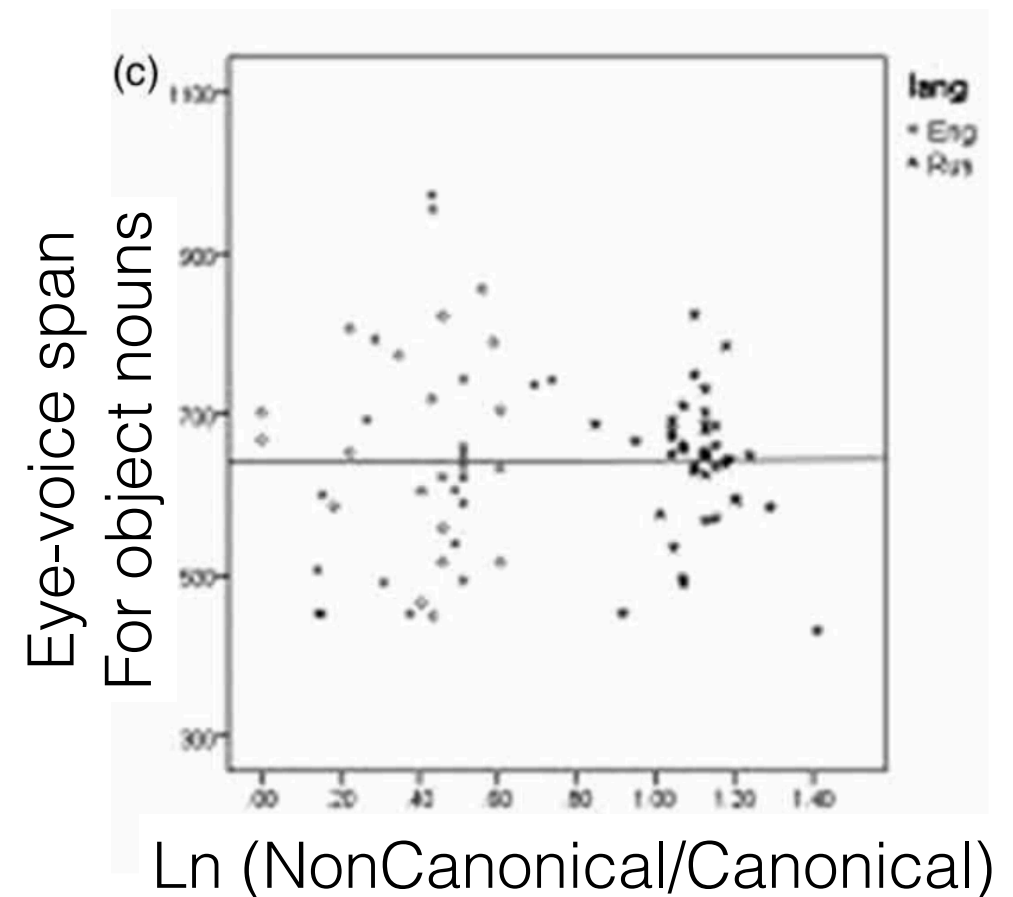
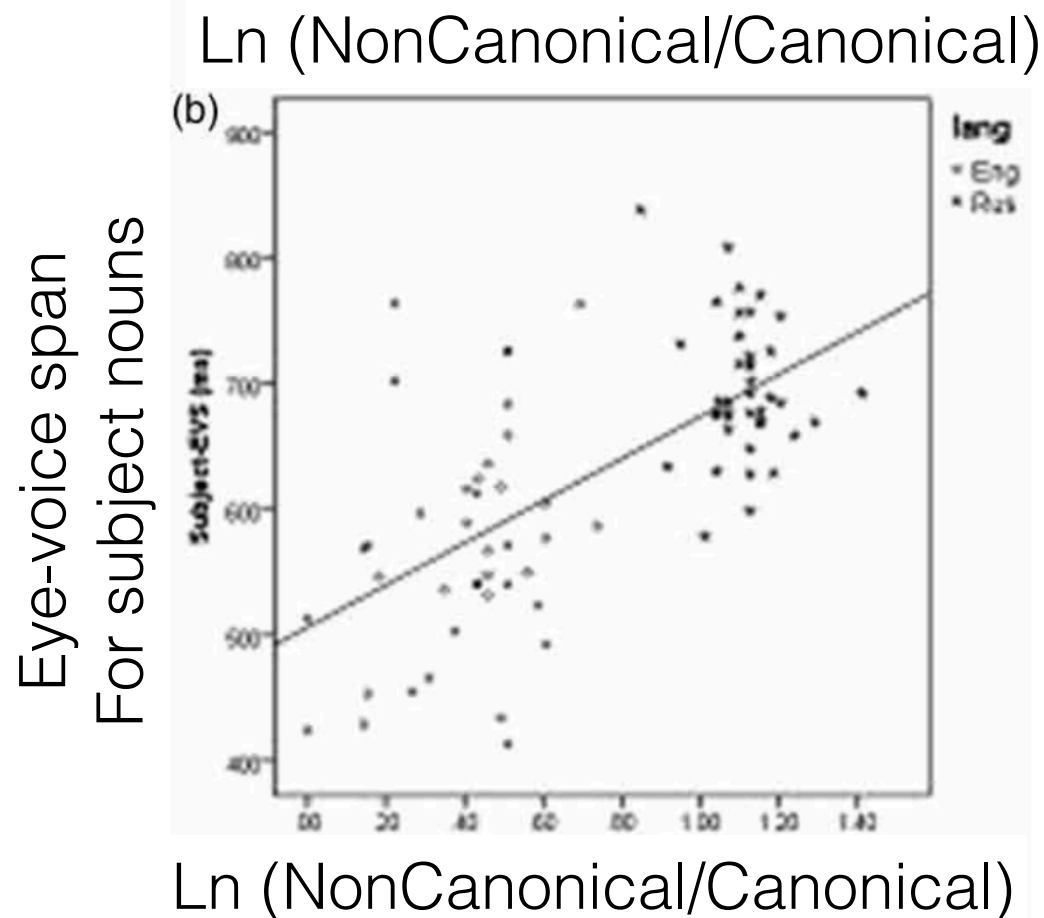
Language			
English		Russian	
SVO (AV)	40	SVO (AV)	25
PV	35	OVS (AV)	22
CP (PV)	8	VOS (AV)	18
CA (AV)	7	VSO (AV)	17
CV (AV)	7	OSV (AV)	10
Other	3	SOV (AV)	8

Note: Syntactic structures in ranked order. S = subject; V = verb; O = object (hence, SVO = subject–verb–object word order); AV = active voice; PV = passive voice; CA = clefted agent; CP = clefted patient; CV = clefted verb.

Flexibility cost



Filled dots: Russian
Open dots: English



Flexibility cost vs. benefit?

Competitive model

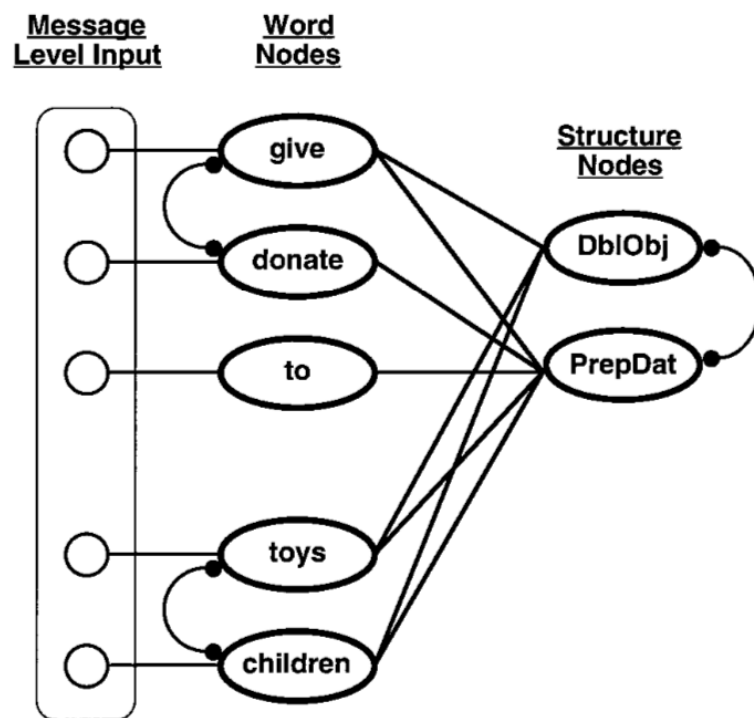


FIG. 1. Interactive activation architecture to competitively choose between alternator verb syntactic structures. (DblObj = Double Object; PrepDat = Prepositional Dative.)

Two structural frames compete for selection

Incremental model

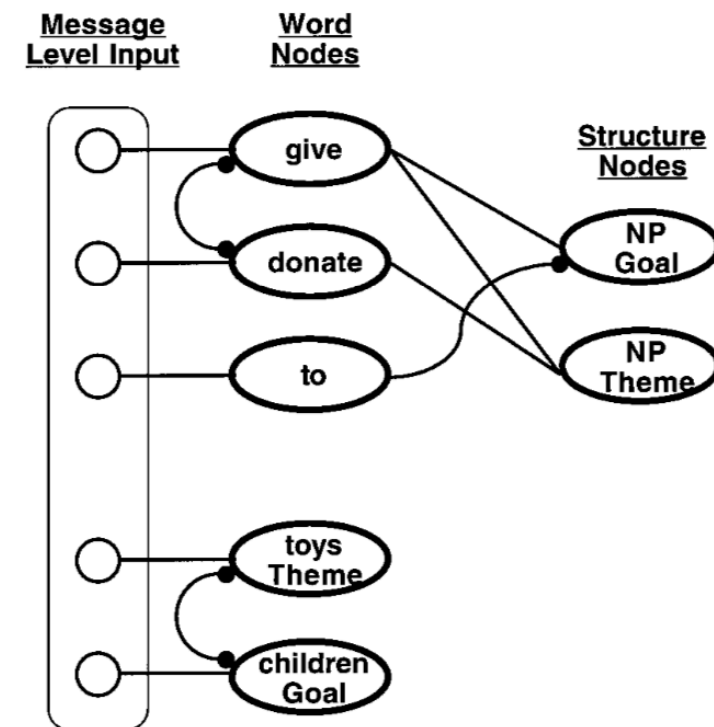


FIG. 3. Interactive activation architecture to choose between alternator verb syntactic structure within an incremental approach.

DO/PD structure “emerges” from the incremental production