The size of "it"

Syntactic reactivation effects and accessibility of conceptual event representations during anaphora processing

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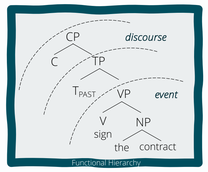
Overview & Background

Claim: Syntactic domains (VP, TP, CP) in the linguistic functional hierarchy correspond to semantic domains (events, temporal anchoring, discourse).[1-2] These domains may be modular.[3]

1 Syntax-Concept Correspondence Theory: Linguistic domains correspond to conceptual ones (atemporal events, events in time, discourse relations).[3] We argue that the processing of these domains puts the mental system into distinct states, and that shifting between them incurs a cost.

Test: Anaphor resolution. Antecedent of the pronoun "it" varies in size and complexity:

- Event domain: noun phrase (NP), verb phrase (VP)
- Discourse domain: complementizer phrase (CP)



Novel task: Maze + Sentence-Picture Verification (SPV)

- Maze: online syntactic processing task to test a shift from VP to CP
- SPV: end-of-sentence conceptual probe task to test a shift from CP to VP

2 Information Density Theory: Additionally, there may be complexity effects at the anaphor due to activation of the antecedent's conceptual *and* syntactic structure,[4-5] or only conceptual structure.[6-7]

Hypotheses & Predictions

1 **Maze + SPV:** Syntactic domains (VP, CP) correspond to conceptual ones (events, discourse). Shifting between them in processing incurs a cost.

Only a shift from NP/VP to CP (Maze) and from CP to NP/VP (Maze+SPV) is expected

PREDICTED PATTERN (RT_S)

NP = VP < CP

2 **Maze only:** As syntactic/conceptual complexity of the antecedent increases, anaphor processing costs increase.

Graded complexity effects while processing the anaphor are expected

PREDICTED PATTERN (RT_S)

NP < VP < CP

Methods

Sentence conditions.

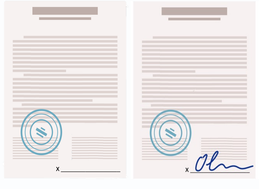
SENTENCE 1
Oliver signed the contract.

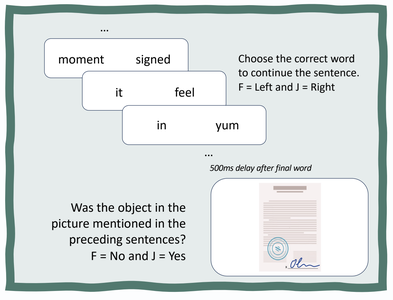
SENTENCE 2		ANTECEDENT TYPE	# EVENTS
(a) He signed **it** in the office.	= [NP THE CONTRACT]	OBJECT	1 EVENT
(b) He left **it** in the office.	= [NP THE CONTRACT]	OBJECT	2 EVENTS
(c) He did **it** in the office.	= [VP SIGN THE CONTRACT]	EVENT	1 EVENT
(d) He announced **it** in the office.	= [CP THAT HE SIGNED THE CONTRACT]	EVENT	2 EVENTS

Procedure. Novel G-Maze[8-9] + Sentence-Picture Verification task administered online via PC Ibex

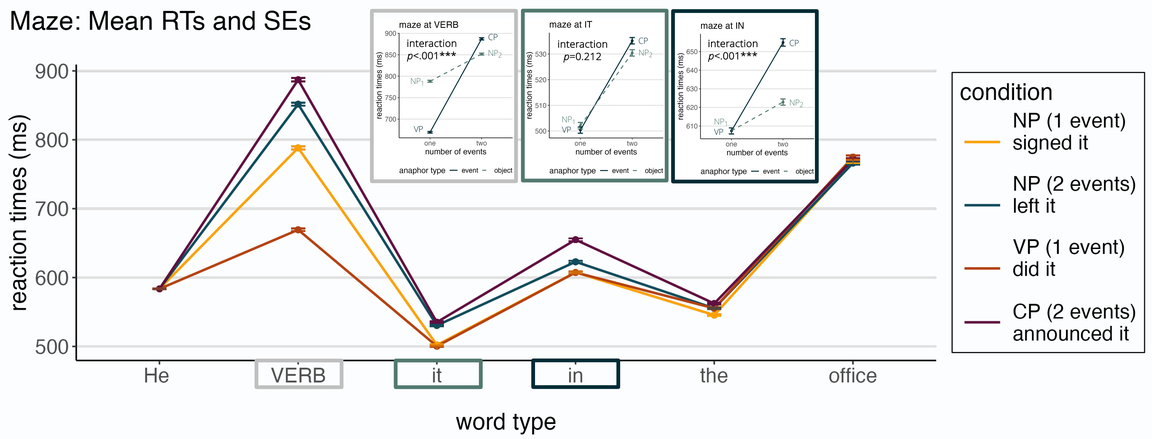
Picture conditions. Event-initial and event-end state images.[10] End states were rated as more typical.

Participants. Self-reported monolingual native English-speaking UConn undergrads (N=387)





Results



Grammatical Maze

*RT~num. events*antecedent+(num. events*antecedent|participant)+(1|item)+(num. events*antecedent|surprisal)*

✓ Main effect of NUMBER OF EVENTS
Two-event discourses take longer to process than single-event discourses (ps<.001)

✓ NUMBER OF EVENTS X ANTECEDENT TYPE
CP anaphors elicit slower responses at the verb and the word following the anaphor (ps<.001)

Sentence-Picture Verification (SPV)

*RT~num. events*antecedent*picture cond.+(num. events*antecedent*picture cond.|participant) + (1|image)*

✓ NUMBER OF EVENTS X ANTECEDENT TYPE (p=.004)
Access to event features is slower after comprehending a CP anaphor than a VP or NP anaphor

✗ No effect of PICTURE
No difference in accessibility of initial versus end states

Discussion

1 The observed pattern, NP = VP < CP, supports the Syntax-Concept Correspondence.

When the processor is at the event level, there is a cost to shift to the discourse level. Likewise, there is a cost to shift from the discourse level to the event level. This suggests a correspondence between syntactic and conceptual domains.

- *Alternative explanation*: Slowdown in CP condition could be due to nominalization.
- *Up next*: Investigate mental shifts between VP and TP with ellipsis/sluicing.

2 We observe complexity effects in the Maze task, but our results leave unclear whether syntactic structure is reactivated at the anaphor alongside conceptual structure.

	PREDICATES	IMAGES
EXAMPLE STIMULI IN THIS STUDY	confirm/raise/salute the flag	
	report/replace/show the street sign	
	broadcast/open/survey the drawbridge	

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