MA thesis

Kenta Izumoto
MA 2 year

Introduction
What is garden-path sentence?

Here is a classic example of garden-path sentence

e.g)
(1) The horse raced past the barn fell. (Bever, 1970)

 When you read "*The horse*", you will think that this is a subject of a sentence. And then, the words "*raced past the barn*" come after the NP, "*The horse*". Now, presumably, you have the NP and VP, and it is thought that these two make a subject-verb relationship. When you reach a verb, "*fell*", however, you will be surprised to see this coming because you expect that a subject of this sentence is "*The horse*" and the verb is "*raced*". It turns out that a main verb of the subject is "*fell*", not "*raced*", forcing readers to reanalyze the relationship.

Previous studies

Frazier et al. (1987)

Minimal attachment principle:

Attach each new items into the current phrase marker postulating only as many syntactic phrase nodes as is required by the grammar.

(2) Piet kuste   Marie en   haar zusje ook.

"Pete kissed Marie and her   sister too." (Total Time:1222ms)

(3) Piet kuste   Marie en   haar zusje lachte.

"Pete kissed Marie and her sister laughed." (Total Time:1596ms)

b.

S
NP VP
V NP
NP conj NP
Det N

Pete kissed Marie and her sister

c.

S
S conj S
NP VP NP
V NP Det N

Pete kissed Marie and her sister . . . laughed
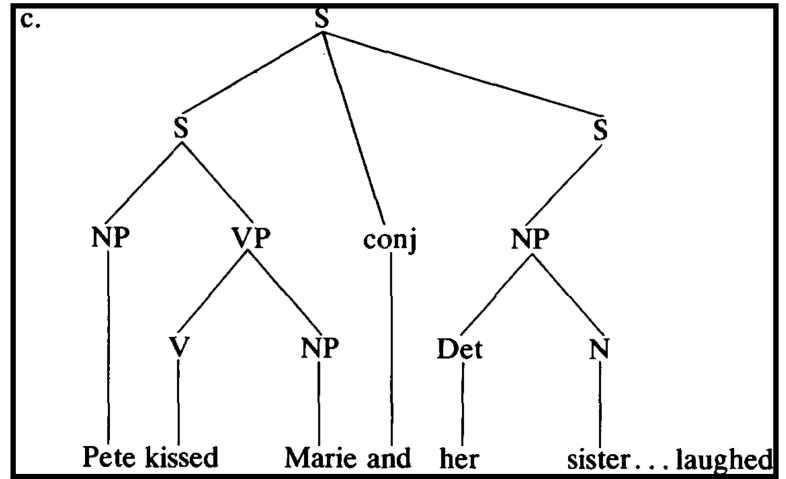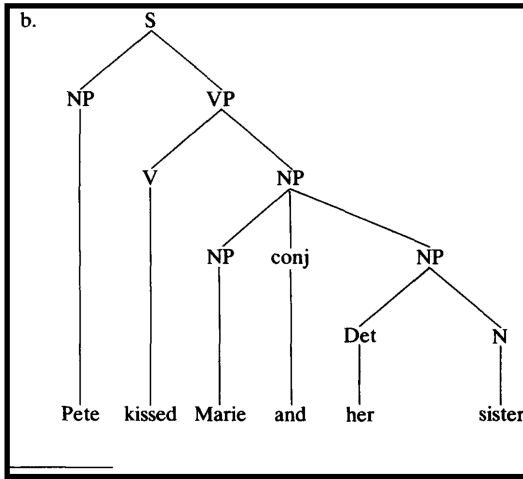
Hoeks et al. (2002)

Result: NP-coordinated structure is preferred because it is simpler to have only one topic in a sentence. NP-coordination has one topic, while S-coordination structure contains two topics. When two-topic sentences have context sentences which favor two topics, the difficulty of S-coordination reading cannot be observed.

Principle of minimal topic-structure:

 In the absence of explicit contextual or syntactic cues regarding the topic-structure of a sentence, assume the simplest topic-structure possible.

(4) The model embraced the designer and the photographer laughed.

Hoeks et al. (2006)

Result: Information on poor thematic fit was employed promptly, but Some residual processing difficulty were still able to be detected.

Thematic fit (good or poor fit)

Thematic fit type G (good) or P(poor)
Condition (ambiguous or Control)

(Both bold words are thematically fitted or not)

(5) G ・ ambiguous

The thief shot **the jeweler** and **the cop** risked his life during the ensuing fight.

(6) G・ Control

The thief shot **the jeweler**, and **the cop** risked his life during the ensuing fight.

(7) P ・ambiguous

Jasper sands **the board** and **the carpenter** scrapes the paint from the doors.

(8) P ・Control

 Jasper sands **the board**, and **the carpenter** scrapes the paint from the doors.

Staub & Clifton Jr. (2006)

Result: In the presence of *either*, readers did not misanalyses S-coordination structure as an NP-coordination. In the absence of either, however, there was a misanalysis on the coordination structure.

(9a) Either Linda bought the red car or her husband leased the green one.

(9b) Linda bought the red car or her husband leased the green one.

(10a) The team took either the train or the subway to get to the home.

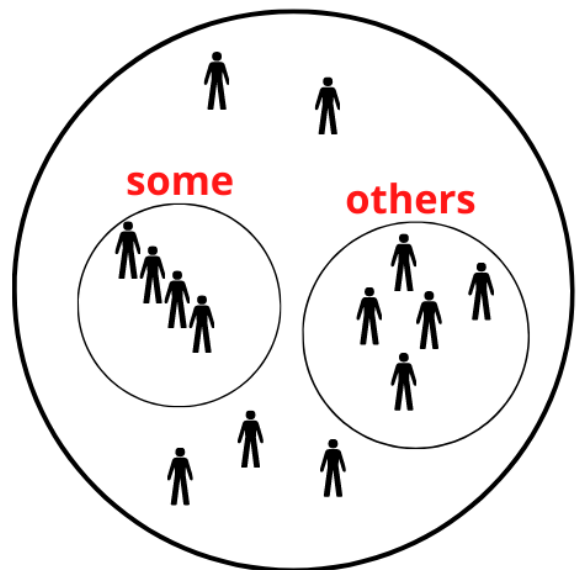(10b) The team took the train or the subway to get to the home.

Unresolved problem

There is no experiment about quantificational approach in ambiguity resolution.

Prediction: if there is an effect on a pair of " Some and others", I predict that there is faster reading time in a second verb.

Intuition about Some × others
e.g)
(11) Some people likes cake, while others not.

Experimental design

Independent variables:
    1. Initial Determiner type some vs the
    2. NP vs S bias

        In experiment 1, VP vs PP following and
        In experiment 2, Conjunction type (and × while)

Dependent variable: Reading Times (mess) in critical regions (Accuracy of Follow-up question)

Stimuli (24 (2×2×6) material sentences and 48 fillers)
Method
 Self-paced reading via Ibex farm

Participants
Native speakers of English, recruited online, Amazon Mechanical Turk(AMT)

Material item
Some × NP
(12a) Some fashion models introduced their friends and others <u>by</u> their first name.

Some × S
(12b) Some fashion models introduced their friends and others <u>kissed</u> the actresses.

The × NP
(13a) The fashion models introduced their friends and others <u>by</u> their first name.

The × S
(13b) The fashion models introduced their friends and others <u>kissed</u> the actresses.

Critical region: _____ e.g) <u>kissed</u>

Reference

・Bever, T. G. (1970). The cognitive basis for linguistic structures. *Cognition and the development of language*, *279*(362), 1-61.

・Engelhardt, P. E., & Ferreira, F. (2010). Processing coordination ambiguity. *Language and speech*, *53*(4), 494-509.

・Frazier, L. (1987). Syntactic processing: evidence from Dutch. *Natural Language & Linguistic Theory*, *5*(4), 519-559.

・Hoeks, J. C., Vonk, W., & Schriefers, H. (2002). Processing coordinated structures in context: The effect of topic-structure on ambiguity resolution. *Journal of Memory and Language*, *46*(1), 99-119.

・Hoeks, J. C., Hendriks, P., Vonk, W., Brown, C. M., & Hagoort, P. (2006). Processing the noun phrase versus sentence coordination ambiguity: Thematic information does not completely eliminate processing difficulty. *Quarterly Journal of Experimental Psychology*, *59*(9), 1581-1599.

・Peer, E., Vosgerau, J., & Acquisti, A. (2014). Reputation as a sufficient condition for data quality on Amazon Mechanical Turk. *Behavior research methods*, *46*(4), 1023-1031.

・Sprouse, J. (2011). A validation of Amazon Mechanical Turk for the collection of acceptability judgments in linguistic theory. *Behavior research methods*, *43*(1), 155-167.

・McRae, K., Spivey-Knowlton, M. J., & Tanenhaus, M. K. (1998). Modeling the influence of thematic fit (and other constraints) in on-line sentence comprehension. *Journal of Memory and Language*, *38*(3), 283-312.

・Paolacci, G., Chandler, J., & Ipeirotis, P. G. (2010). Running experiments on amazon mechanical turk. *Judgment and Decision making*, *5*(5), 411-419.

・Pavlick, E., Post, M., Irvine, A., Kachaev, D., & Callison-Burch, C. (2014). The language demographics of amazon mechanical turk. *Transactions of the Association for Computational Linguistics*, *2*, 79-92.

・Pritchett, B. L. (1988). Garden path phenomena and the grammatical basis of language processing. *Language*, 539-576.

・Staub, A., & Clifton Jr, C. (2006). Syntactic prediction in language comprehension: evidence from either... or. *Journal of experimental psychology: Learning, memory, and cognition*, *32*(2), 425.

There is an useful information to use Ibex farm and AMT.
Here it is: Brian and Rodica's 2018 LSA Minicourse. (Website: https://xlingumass.github.io/ibex_guide/)
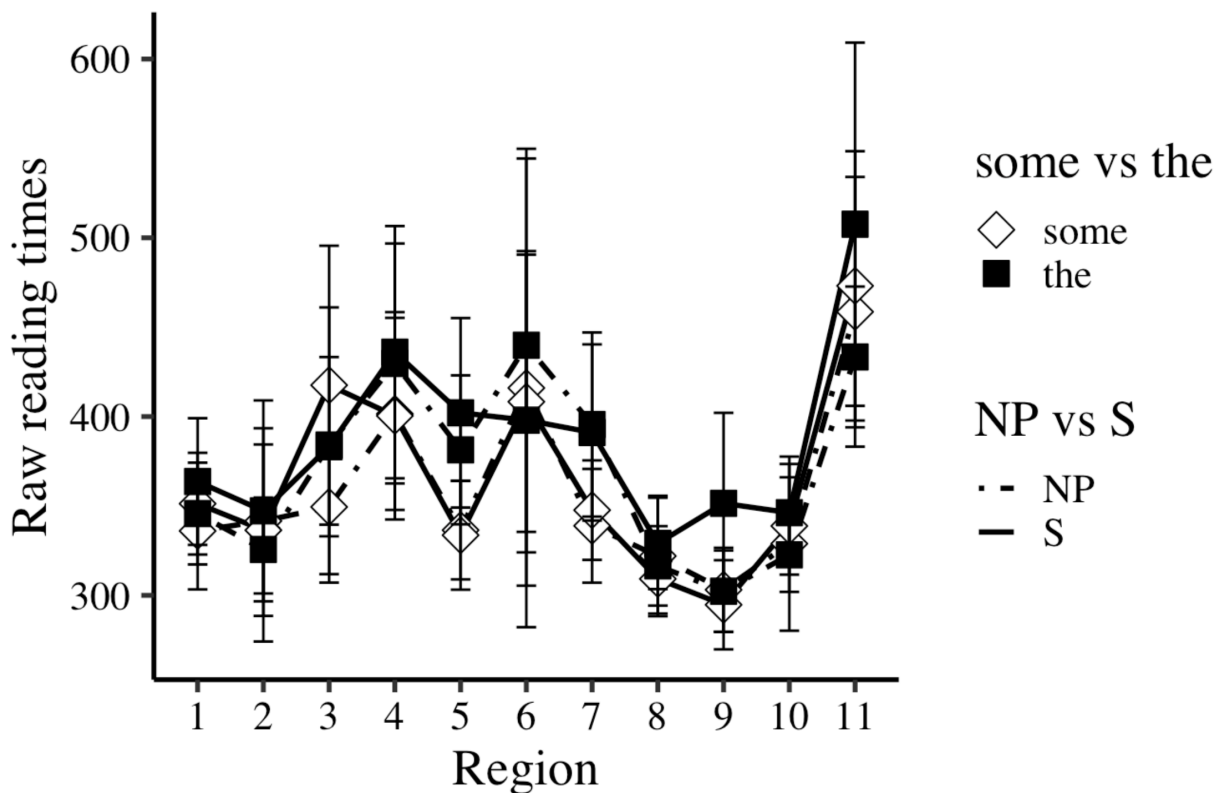

Chart 1: This result came from a pilot study.
Region 9 is a critical region in material sentences.

Some	fashion	models	introduced	their	friends	and	others	by	their	first	name.
1.	2.	3.	4	5	6	7	8	9.	10.	11	12
The	fashion	models	introduced	their	friends	and	others	kissed	the	actresses.	