

Rapid Online Effects of Verb Argument Structure on Pronoun Resolution

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Introduction

Nonreflexive pronoun reference is underdetermined by syntax and semantics and must be fixed by context.

Pronouns often refer to the subject/first-mentioned entity of the previous sentence (Corbett & Chang, 1983; Gernsbacher & Hargreaves, 1988; Arnold et al., 2000).

But not always (Garvey & Caramazza, 1974):

- (1) Sally *frightens* Mary because she's from Cambridge.
- (2) Sally *fears* Mary because she's from Cambridge.

In some cases, this may be due to argument structure (Brown & Fish, 1984).

- Pronoun refers to stimulus of previous matrix verb.
- Stimulus-subject (SS) verbs: frighten, surprise, please, etc.
- Stimulus-object (SO) verbs: fear, love, like, etc.

Experiment 1

Question: does the above analysis generalize?

Task

Sally fears Mary because she is a dax.
Who is the dax?: Sally Mary

Stimuli

12 SS ("frighten") & 12 SO ("fear") verbs per subject
220 SS verbs & 44 SO verbs total (Levin, 1993)

Results (N=573)

	Subject-Biased Verbs	Object-Biased Verbs
SS ("frighten")	182	38
SO ("fear")	0	44

Discussion

Question: Does argument structure rapidly constrain pronoun resolution?

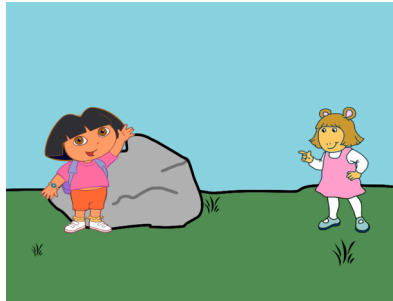
- Conflicting literature (Koorneef & Van Berkum, 2006; Stewart, Pickering & Sanford, 2000).
- SS & SO verbs not reported separately (But see McDonald & MacWhinney, 1995).
 - Pronoun reference measured indirectly.

Experiment 2

Visual world paradigm (Tanenhaus et al., 1995).

Task

- Listen to stories while viewing scenes containing the mentioned characters
- Eye movements recorded (Tobii system)
- Both active and passive sentences used to control for order of mention.



Active Condition (N=28)

Dora likes D.W. very much, because she is such a nice girl.
Can you point to her?

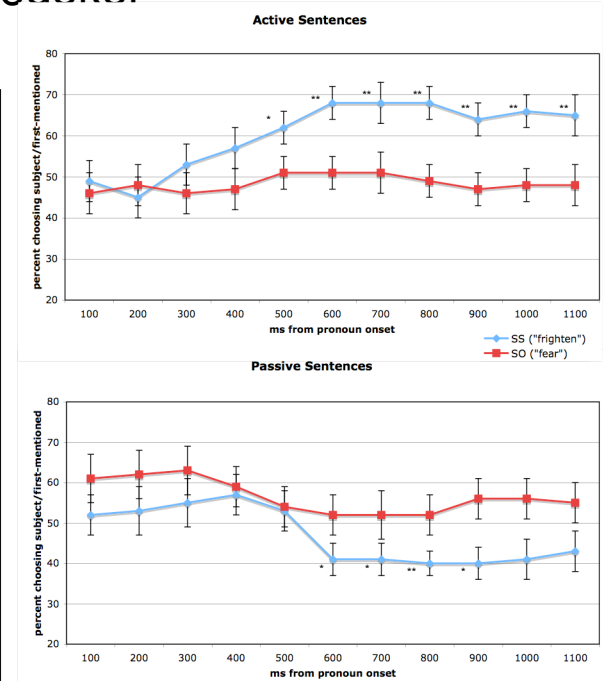
Passive Condition (N=28)

D.W. is liked by Dora very much, because she is such a nice girl.
Can you point to her?

Off-line Results

Active	Passive
SS 79% (4%)**	27% (6%)**
SO 38% (5%)*	76% (5%)**

Percent choosing grammatical subject, with standard errors.



Discussion

Potential Account 1:

- Discourse structure or salience focus pronoun on STIMULUS.
- Argument structure rapidly recovered for SS but not SO verbs.
 - Recent evidence that SO verbs are difficult to learn.

Potential Account 2:

- Discourse structure of salience focus pronoun on CAUSE.
- SS but not SO verbs have a CAUSE argument.
- SO verbal bias not due to argument structure.

References

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