

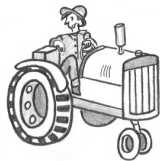
Eye movement control in the visual world paradigm

Anastasiya Lopukhina, Anna Laurinavichyute

Higher School of Economics, University of Potsdam

April 23, 2017

Visual World paradigm



Visual World paradigm

- Referential priority

Visual World paradigm

- Referential priority
- If pictures and words compliment each other, it is useful to process them together.

Challenging Visual World paradigm

Is referential priority automatic?

'Don't look at the picture' task

*Listen carefully to the story and **don't look** at the pictures, when they are referred to.*

'Don't look at the picture' task

*Listen carefully to the story and **don't look** at the pictures, when they are referred to.*

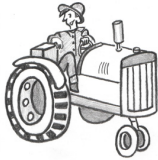
- Words trigger eye movements to the relevant picture.
- Top-down control and saccadic suppression.

Direct vs Indirect nominations

Nouns: driver, librarian, milkmaid, farm, etc.

Pronouns: he, she, her, there, who, etc.

Direct vs Indirect nominations



Predictions for the eye movement control experiment

- Referential priority is automatic → Participants won't be able to suppress saccades to the relevant pictures.

Predictions for the eye movement control experiment

- Referential priority is automatic → Participants won't be able to suppress saccades to the relevant pictures.
- Referential priority can be controlled → Participants will effectively suppress saccades.

Predictions for the eye movement control experiment

- Referential priority is automatic → Participants won't be able to suppress saccades to the relevant pictures.
- Referential priority can be controlled → Participants will effectively suppress saccades.

Nouns and pronouns will be processed differently.

Eyelink 1000+ Desktop mount eye-tracker with chin rest

Eyelink 1000+ Desktop mount eye-tracker with chin rest

Eye movement control

- 'Don't look at the picture'
- 64 stories
- 41 participant

Eyelink 1000+ Desktop mount eye-tracker with chin rest

Eye movement control

- 'Don't look at the picture'
- 64 stories
- 41 participant

Free inspection

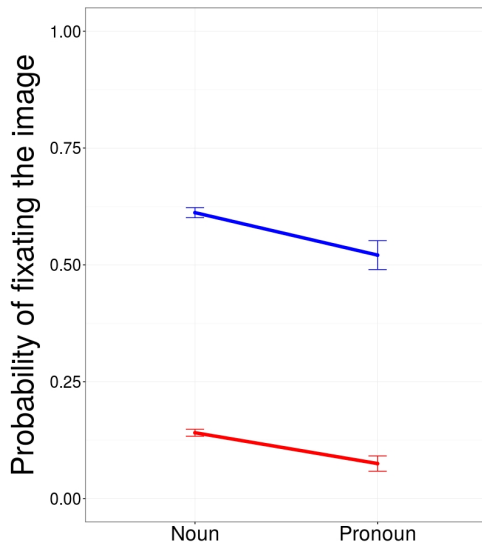
- 'Look and listen'
- same 64 stories
- 39 participants

Stimuli



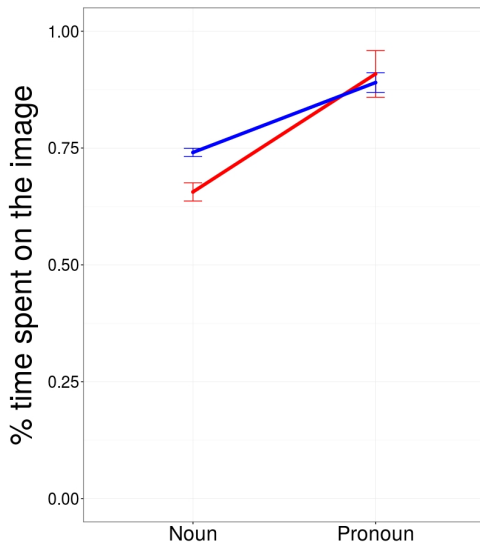
Once on a collective farm a tractor driver fell in love with a milkmaid and gave her red carnations. But she married a librarian who gave her books. Nobody knows why the milkmaid married the librarian.

Results



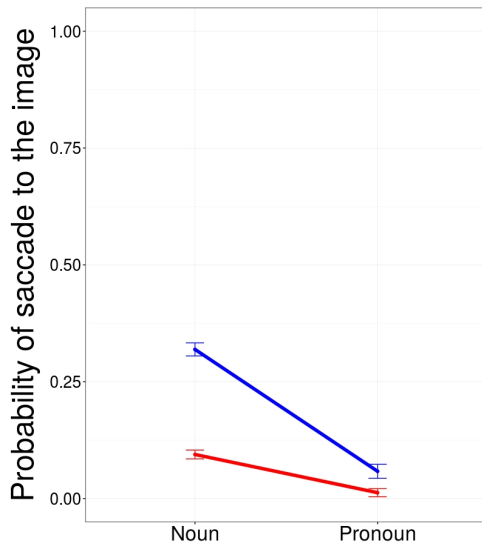
Condition — Eye-movement control — Free inspection

Results



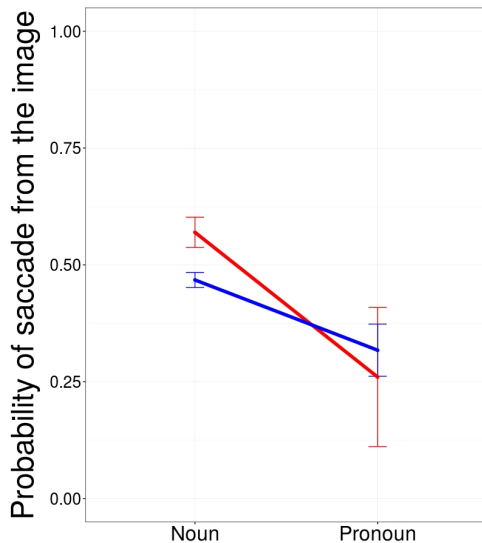
Condition — Eye-movement control — Free inspection

Results



Condition — Eye-movement control — Free inspection

Results



Condition — Eye-movement control — Free inspection

Why are nouns and pronouns processed differently?

- Pronouns are shorter.
People don't have enough time to make a saccade from the image.

Why are nouns and pronouns processed differently?

- Pronouns are shorter.
People don't have enough time to make a saccade from the image.
- Pronouns are harder.
People are busy looking for the antecedent.

- Participants are not able to fully control their eye-movements
- Different processing of direct and indirect nominations (nouns and pronouns):
 - the same time spent on the image referred to with a pronoun in both conditions
 - the same probability of an outgoing saccade from the image referred to with a pronoun in both conditions

To sum up

Link between language and visual attention is strong
Even stronger for pronouns