Using eye-tracking to measure cross-situational word learning online in Dutch adults

Broedelet, I.R.L.; Rispens, J.E.; Boersma, P.P.G.

Publication date
2019

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: https://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
CROSS-SITUATIONAL WORD LEARNING

o ‘Gavagai problem’: how can a language learner know to what exactly a new word refers? [Quine, 1960]

o Research suggests statistical learning plays a role in tracking the co-occurrences between words and referents. [Yu & Smith, 2007; Smith & Yu, 2008; Suanda et al., 2014]

RESEARCH QUESTIONS

o Are adults able to learn 8 word-referent pairs in a cross-situational word learning task with ambiguous learning trials?

o Can we measure learning online using eye-tracking?

METHOD

Participants

o 21 native speakers of Dutch, between 18 and 35 years old (mean age = 25.5).

Learning phase (approx. 3 minutes)

o 28 learning trials with novel objects (Schemers et al., 2010) and Dutch-like non-words;

○ 8 word-referent pairs;

○ Each pair occurred 7 times.

* accompanied by another word-referent pair.

Eye-tracking (online measure)

Eye movements were measured during the learning phase to investigate whether participants, while listening to a certain word, looked more at the correct referent as opposed to the distractor picture.

Test phase (offline measure)

o 8 four-alternative forced-choice test items.

RESULTS

Data was made suitable for analysis using the eyetrackingR [Boersma & Ferguson, 2018] package. Then, the data was analyzed using linear mixed effect models in R (R Core Team, 2019) with the lme4 package. [Bates et al., 2015]. Participant and Item were included in the models as random factors.

Eye-tracking (online measure)

The proportion of looking at the correct referent as opposed to the distractor picture significantly increased as exposure to the learning trials increased (t = 3.754, p = .001).

Test phase (offline measure)

Participants scored 83% correct on average (significantly higher than chance level (25%), p < .001).

DISCUSSION AND FUTURE RESEARCH

o Adults can learn word-referent mappings in a cross-situational word learning task with ambiguous learning trials.

o Eye-tracking data reveal online learning on this task.

○ Statistical learning might play a role in word learning.

o This paradigm will be used to compare typically developing (TD) children to children with developmental language disorder (DLD). Children with DLD seem to have difficulty with statistical learning [Yu & Smith, 2007]. Do children with DLD have difficulty with statistical word-referent learning (offline / online) compared to TD children?

CONTACT

Iris.Broedelet@uva.nl

REFERENCES

[Boersma & Ferguson, 2018] Blythe et al., 2010; Suanda et al., 2014; Yu & Smith, 2008.