



UvA-DARE (Digital Academic Repository)

Insights from novel measures of visual statistical learning in children

van Witteloostuijn, M.T.G.; Lammertink, I.L.; Boersma, P.P.G.; Wijnen, Frank; Rispens, J.E.

Publication date
2017

[Link to publication](#)

Citation for published version (APA):

van Witteloostuijn, M. T. G., Lammertink, I. L., Boersma, P. P. G., Wijnen, F., & Rispens, J. E. (2017). *Insights from novel measures of visual statistical learning in children*.

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.

Insights from novel measures of visual statistical learning in children

Merel van Witteloostuijn¹, Imme Lammertink¹, Paul Boersma¹, Frank Wijnen² & Judith Rispens¹
 University of Amsterdam¹, Utrecht University²



Interdisciplinary Approaches to Statistical Learning, Bilbao, 28-30 June 2017



UNIVERSITEIT VAN AMSTERDAM

BACKGROUND

Statistical learning is usually tested through:

- Exposure to continuous stream of stimuli
- Offline test-phase: 2-AFC

Importance of online measure: provides information about the learning trajectory during exposure.

Several researchers have shown that online measures provide reliable results with adult participants [1, 2, 3].

Present study: we assessed children's VSL abilities using

- an online reaction time (RT) measure [3]
- two distinct offline question types

RESEARCH QUESTIONS

1. Are children able to extract statistical regularities from visual input?
2. Can we improve the methodology to measure statistical learning in children?

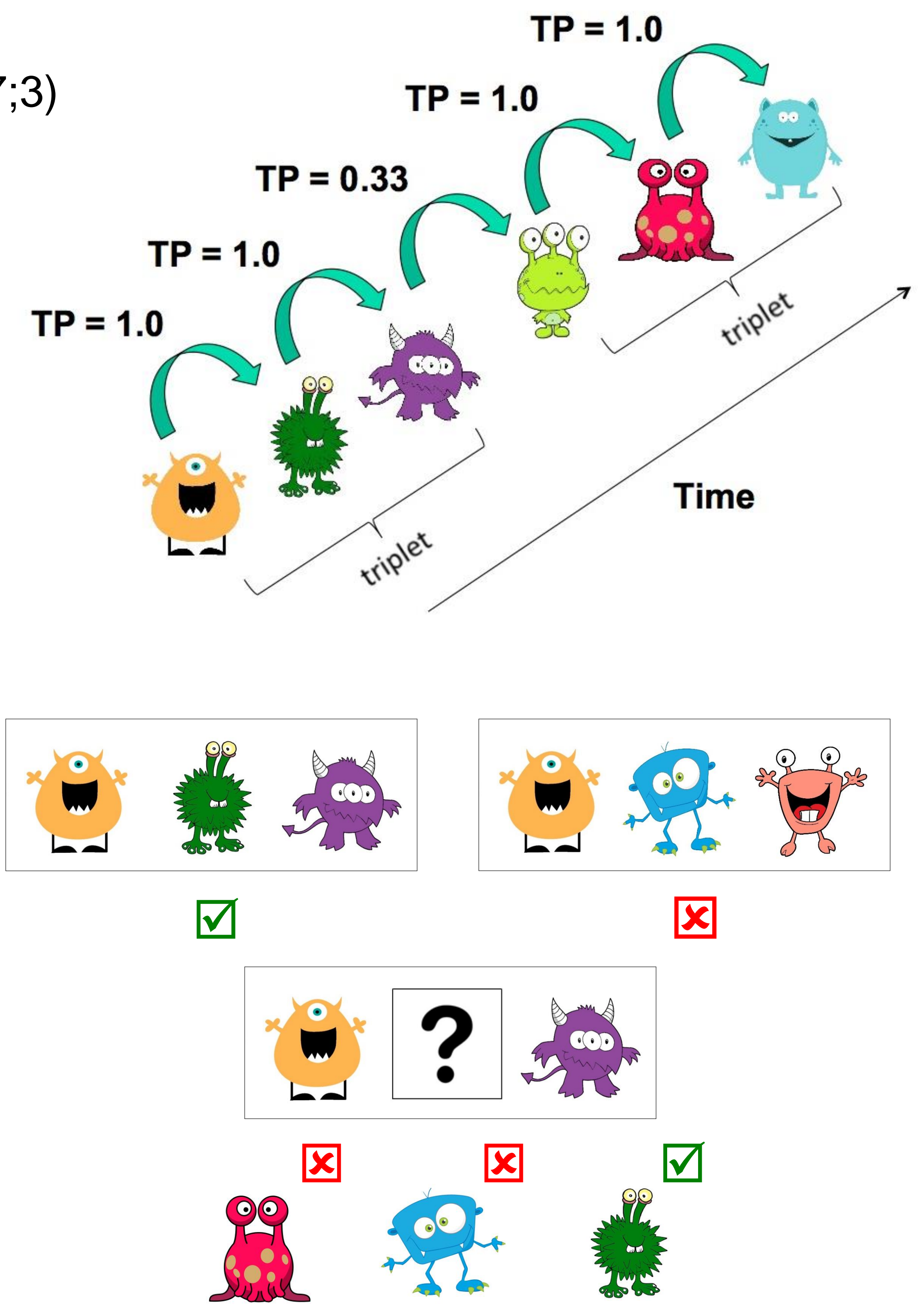
METHODS

Participants

53 Dutch children aged 5;9 – 8;7 (mean = 7;3)

Self-paced VSL task

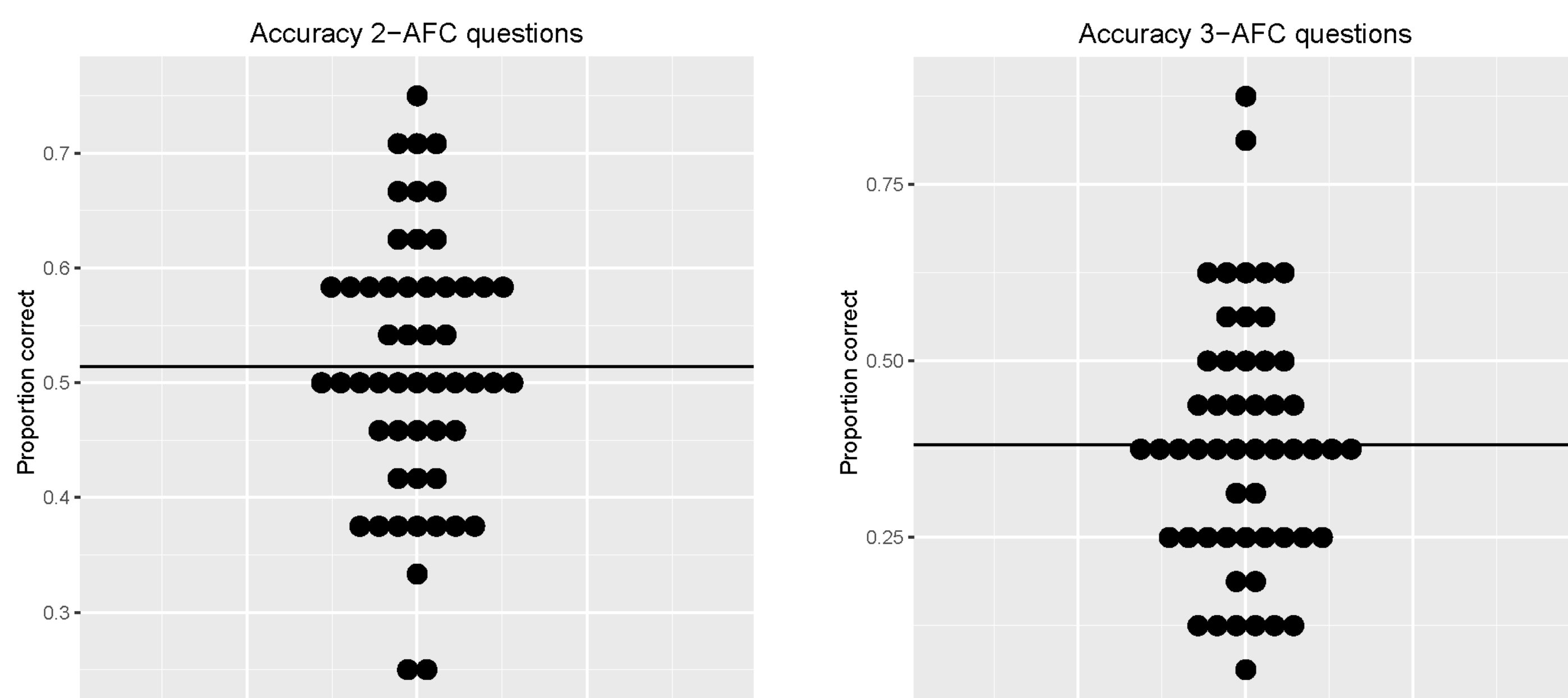
- ❖ Familiarization:
 - Continuous stream of individually presented aliens
 - Four triplets, presented 24 times divided over 4 blocks [4]
 - Online measure: RT to each alien is recorded. We expect that RT's to unpredictable aliens (alien 1) are longer than RT's to predictable aliens (aliens 2 and 3) [3]
- ❖ Offline test phase:
 1. Pattern recognition: 24 2-AFC ("Choose the familiar group")
Chance = 50%
 2. Pattern completion: 16 3-AFC ("Complete the missing alien")
Chance = 33%



RESULTS

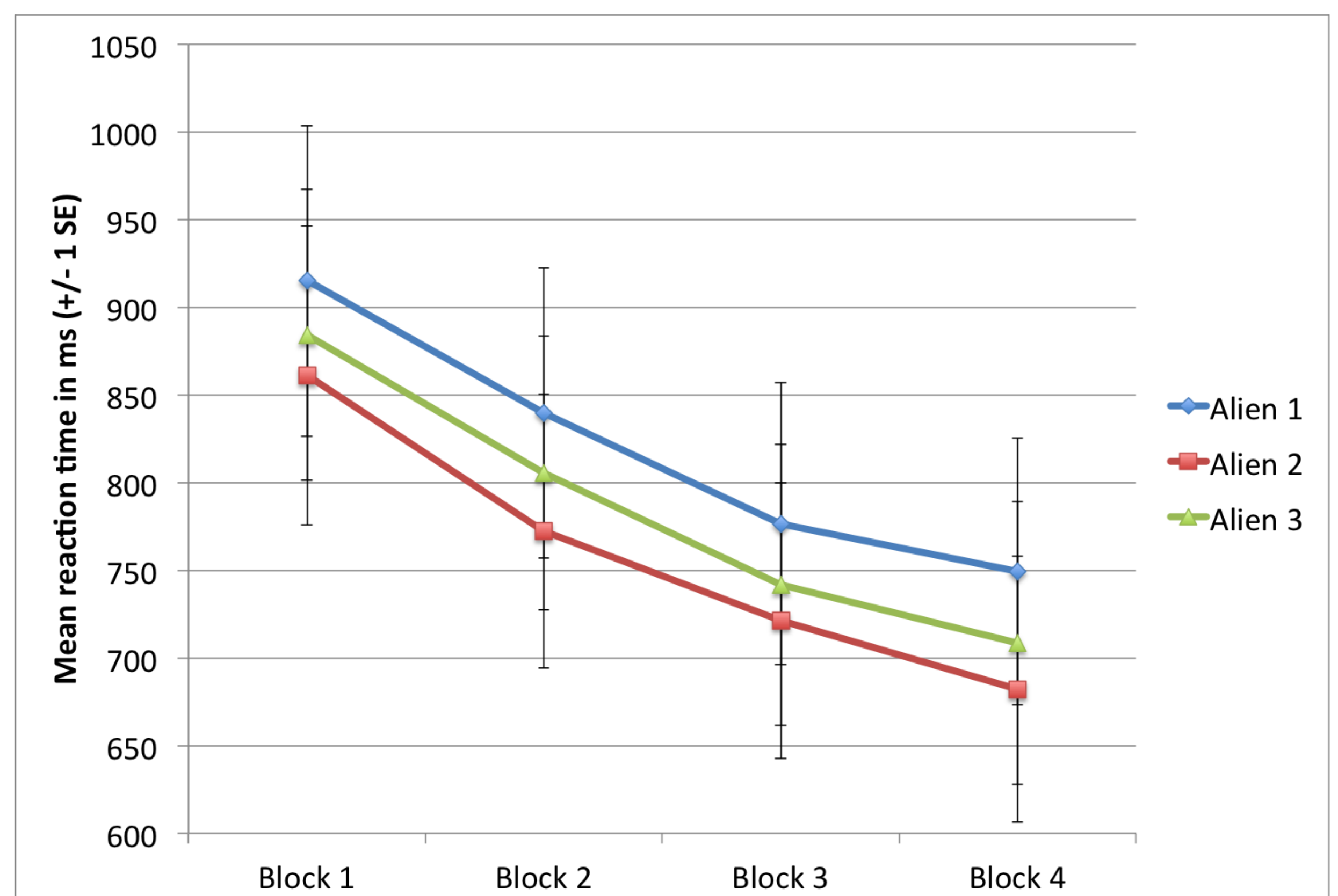
Offline test phase measures

- ❖ Comparison children's performance to chance level:
 - Not above chance on 2-AFC questions ($p = .372$)
 - Above chance on 3-AFC questions ($p = .042$)



Online RT measure

- ❖ Main effect of alien:
 - Alien 1 > Alien 2 ($p < .001$)
 - Alien 1 > Alien 3 ($p < .001$)
 - Alien 3 > Alien 2 ($p = .037$)



REFERENCES

- [1] Misyak, Christiansen, & Tomblin (2010) [2] Karuza et al. (2014) [3] Siegelman, Bogaerts, & Frost (Submitted) [4] Arciuli & Simpson (2012)

CONCLUSIONS

1. 3-AFC and online measures show that **children are able to learn the structure.**
2. Online measure provides **additional insights about the learning trajectory.**

