Insights from novel measures of visual statistical learning in children

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Insights from novel measures of visual statistical learning in children

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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%

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?

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


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.