

Selective attention to audiovisual communicative cues in infants with Down syndrome: An eye-tracking study

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5th Annual Meeting of the Mind-Brain College, Lisbon, November 12-13, 2019

Introduction

Audiovisual speech =



- Crucial role in adults' speech perception and in infants' language development^{1,2,3}
- Children with Down-syndrome impaired in audiovisual speech processing & face tuning^{4,5,6}

The role of visual speech in infants with Down syndrome is largely unknown

Main Goals

- Examine attention to **audiovisual communicative cues** (the face and the gestures) in **European-Portuguese-learning infants with Down syndrome** and compare with **typically developing European-Portuguese-learning infants**
- Typically developing European-Portuguese-learning infants attend more to **the face** than to the waving gesture, and more to **the eyes** than to the mouth^{7,8}
- **European-Portuguese-learning infants with Down Syndrome?**

Methods

Subjects

Typically developing infants (TD):

- N=25 (15 boys); 5-6 months (M= 5;25)

Down-Syndrome infants (DS):

- N=7 (3 boys); 5-7 months (M= 6;0)

Matched in chronological age with TD

Stimuli

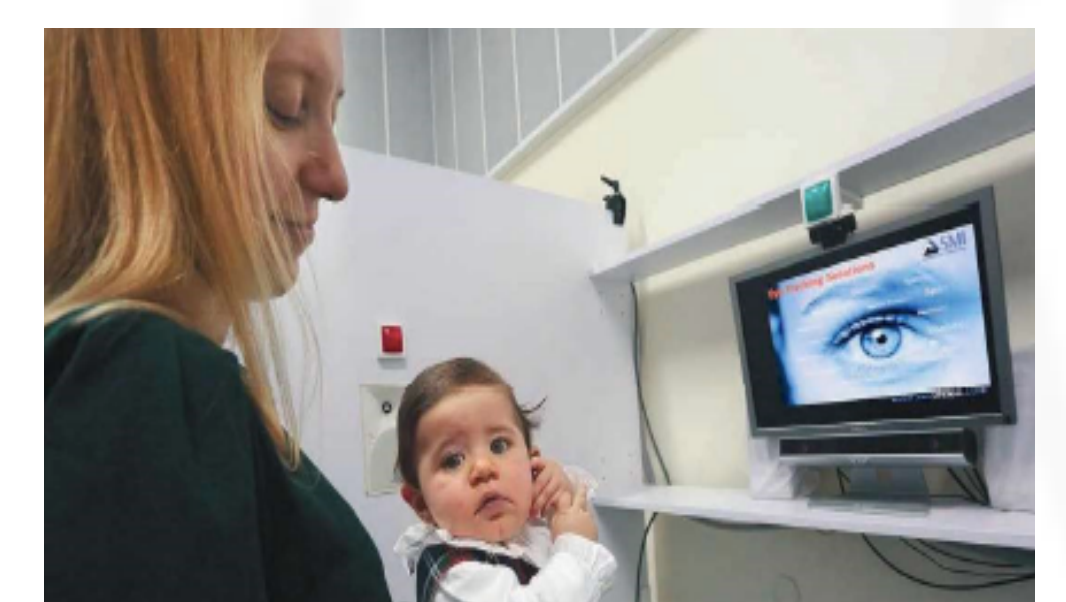


4-second long dynamic audiovisual video of a cartoon character talking and waving

Muito bem! Vamos continuar o nosso jogo!

- The video was the last event of each experimental block of a speech perception study (Butler et al., submitted)
- 4 exemplars of the video: 4 different encouraging messages
- Dynamic areas of interest (AOIs):
(a) **linguistic**: face, eyes, mouth
(b) **extralinguistic**: arm,
(c) **non-linguistic**: background

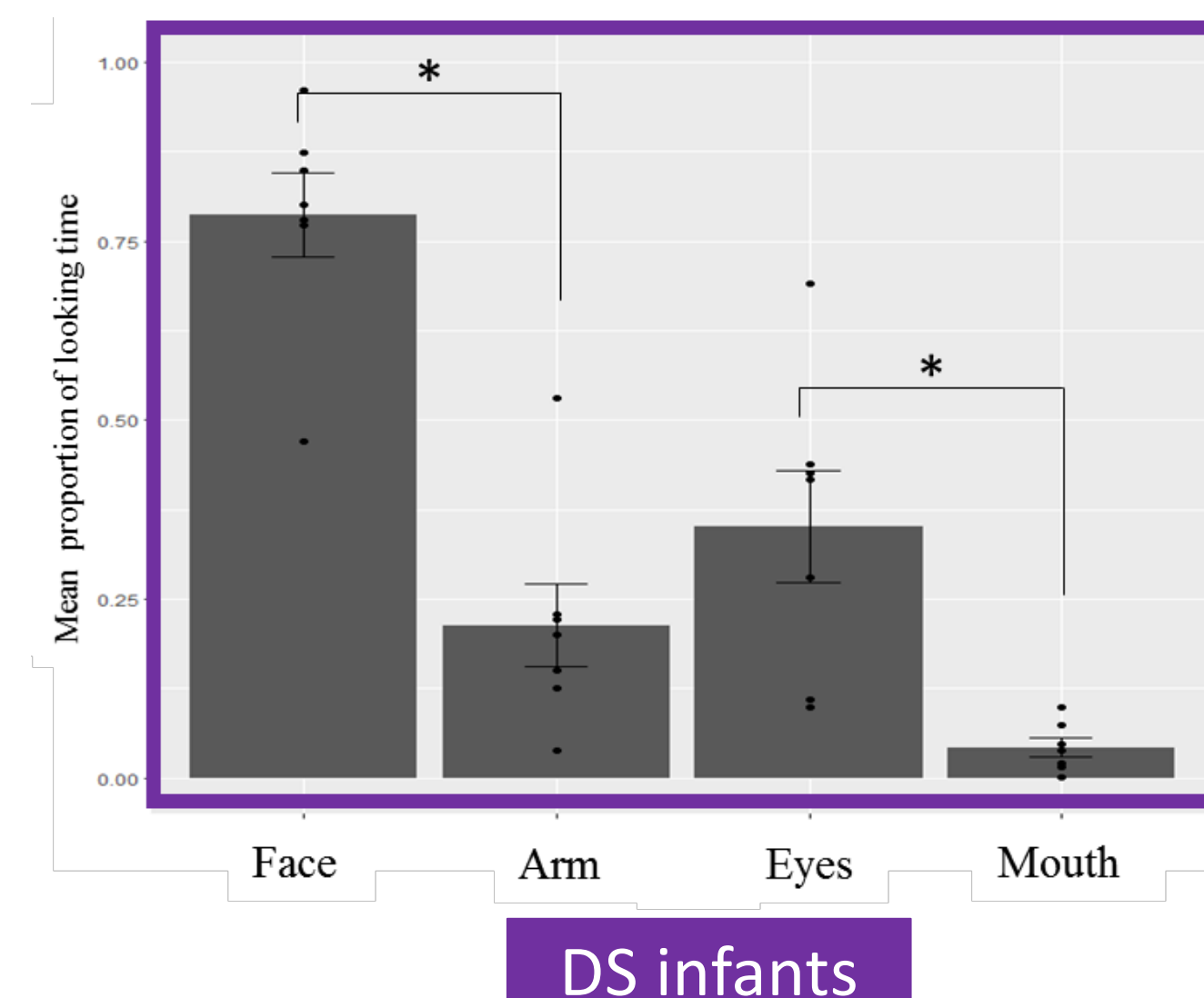
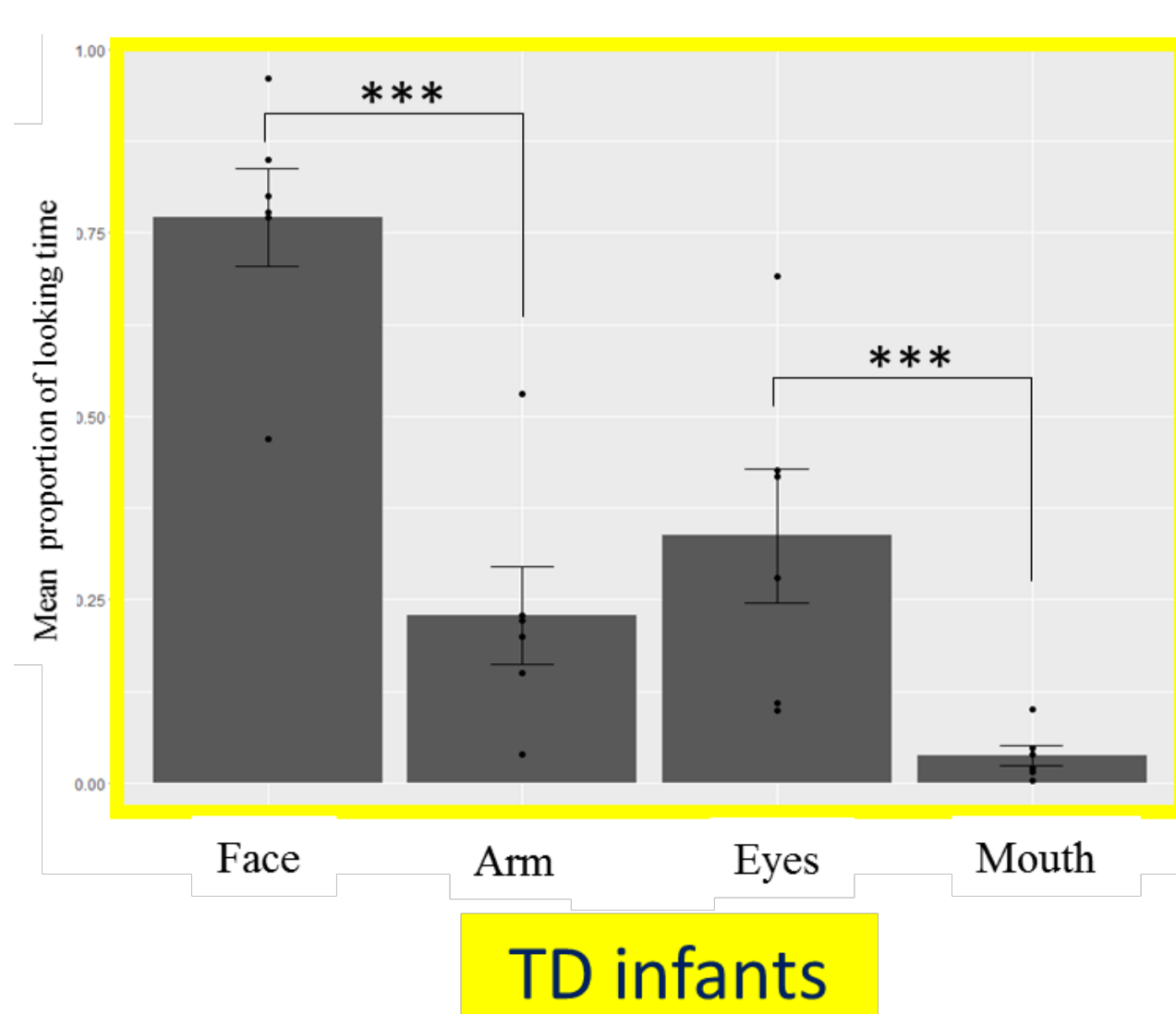
Technique



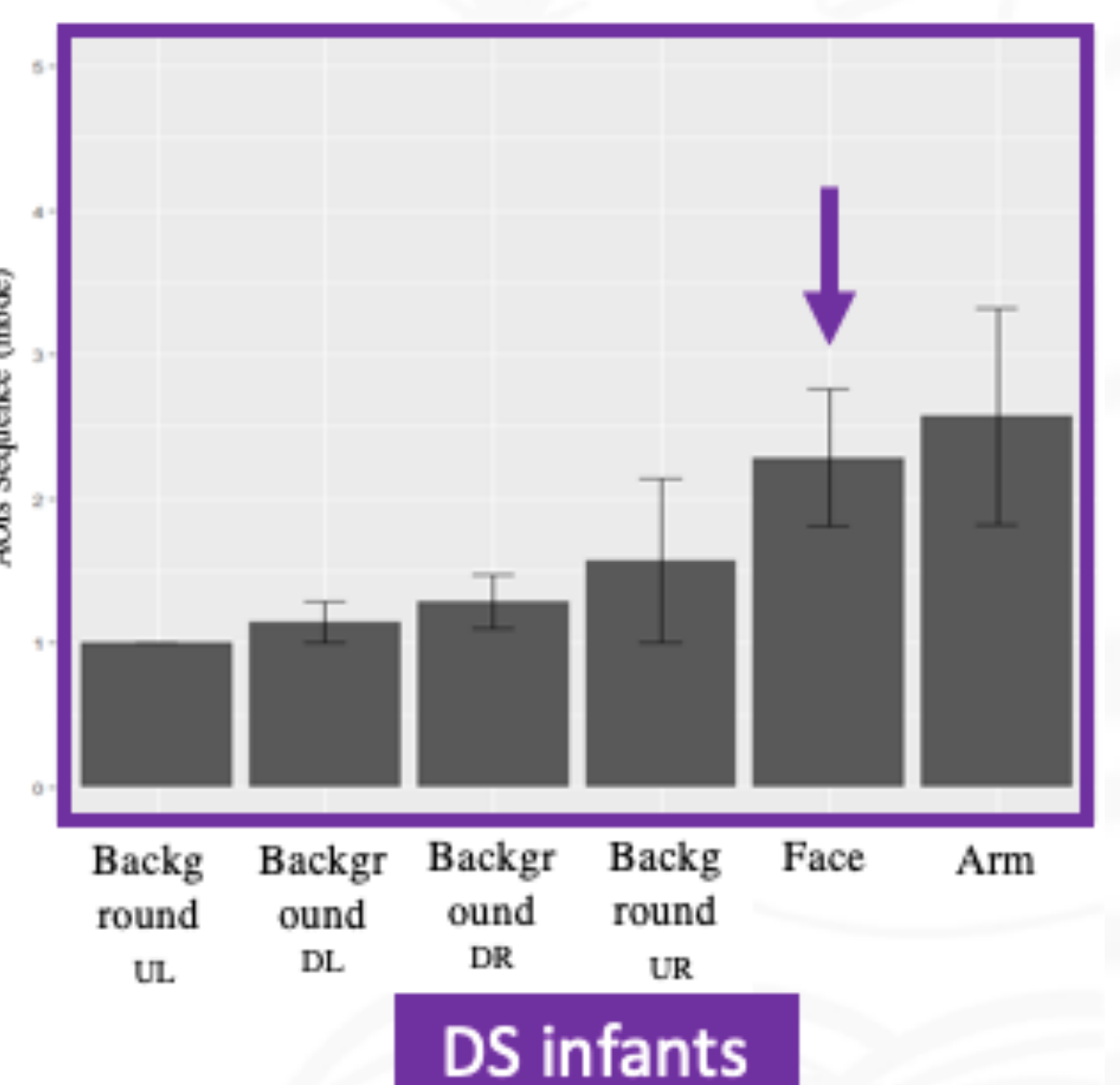
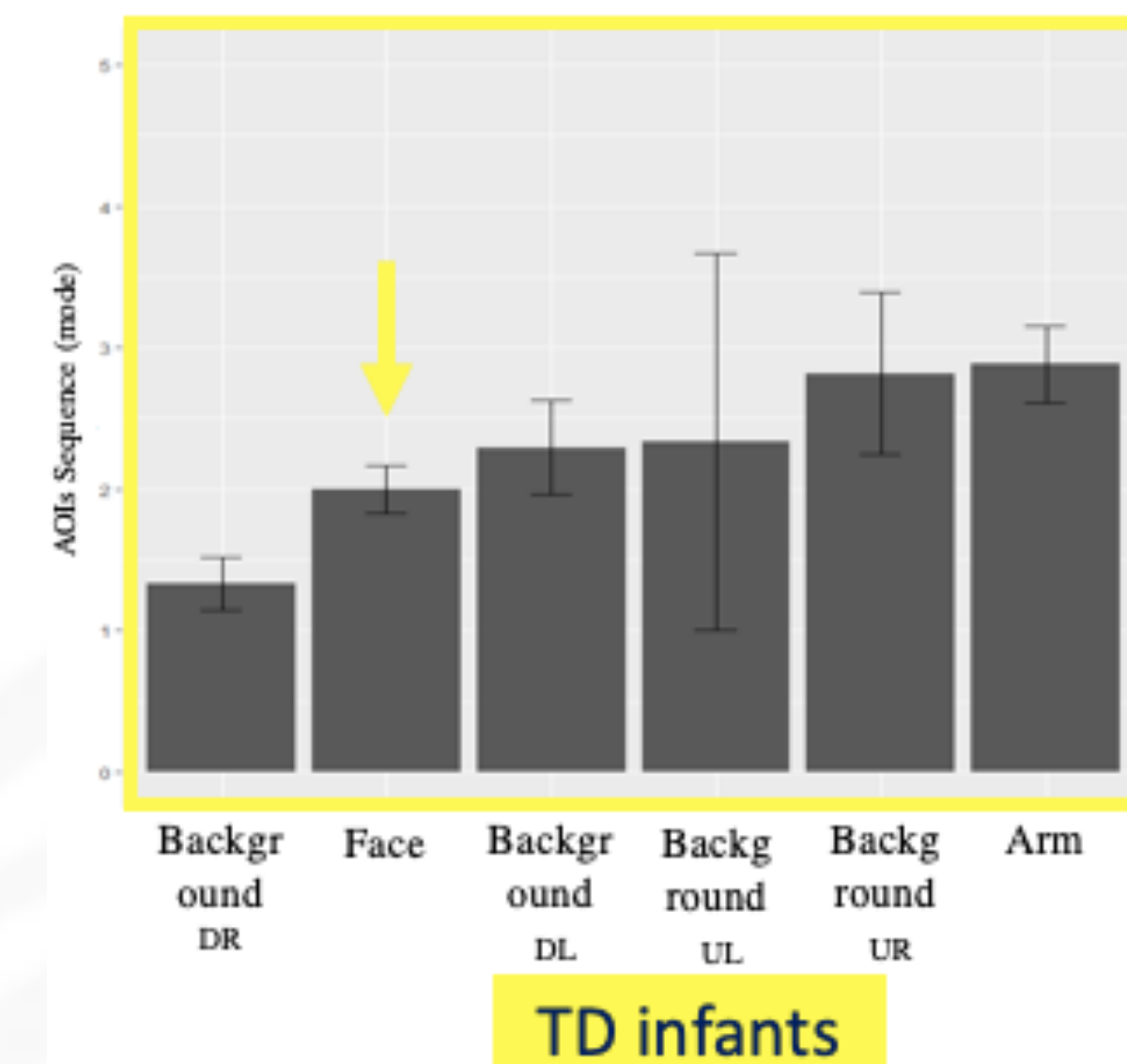
Eye-tracker (SMI RED500)

Results

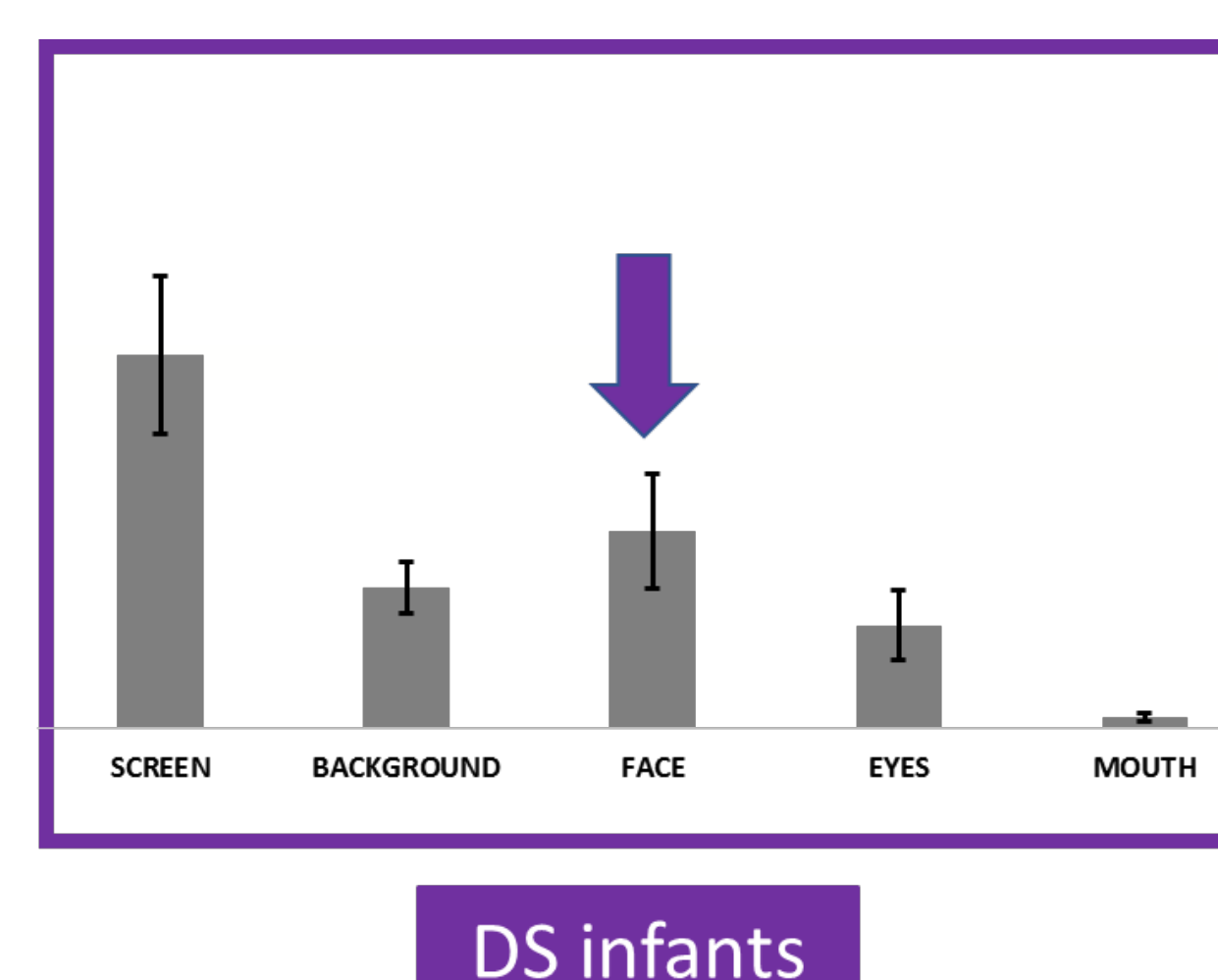
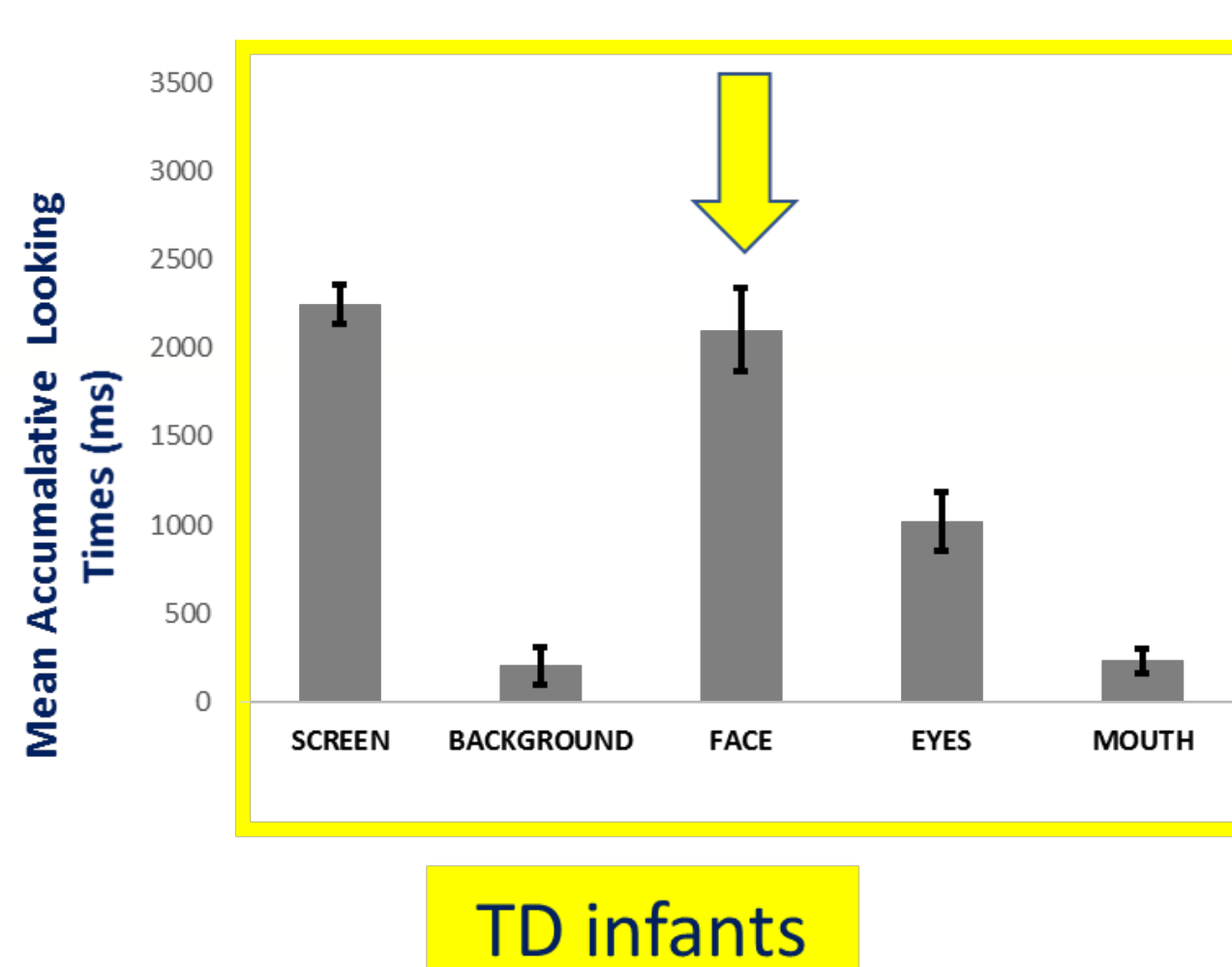
Selective attention/the looking pattern → Similar across the groups



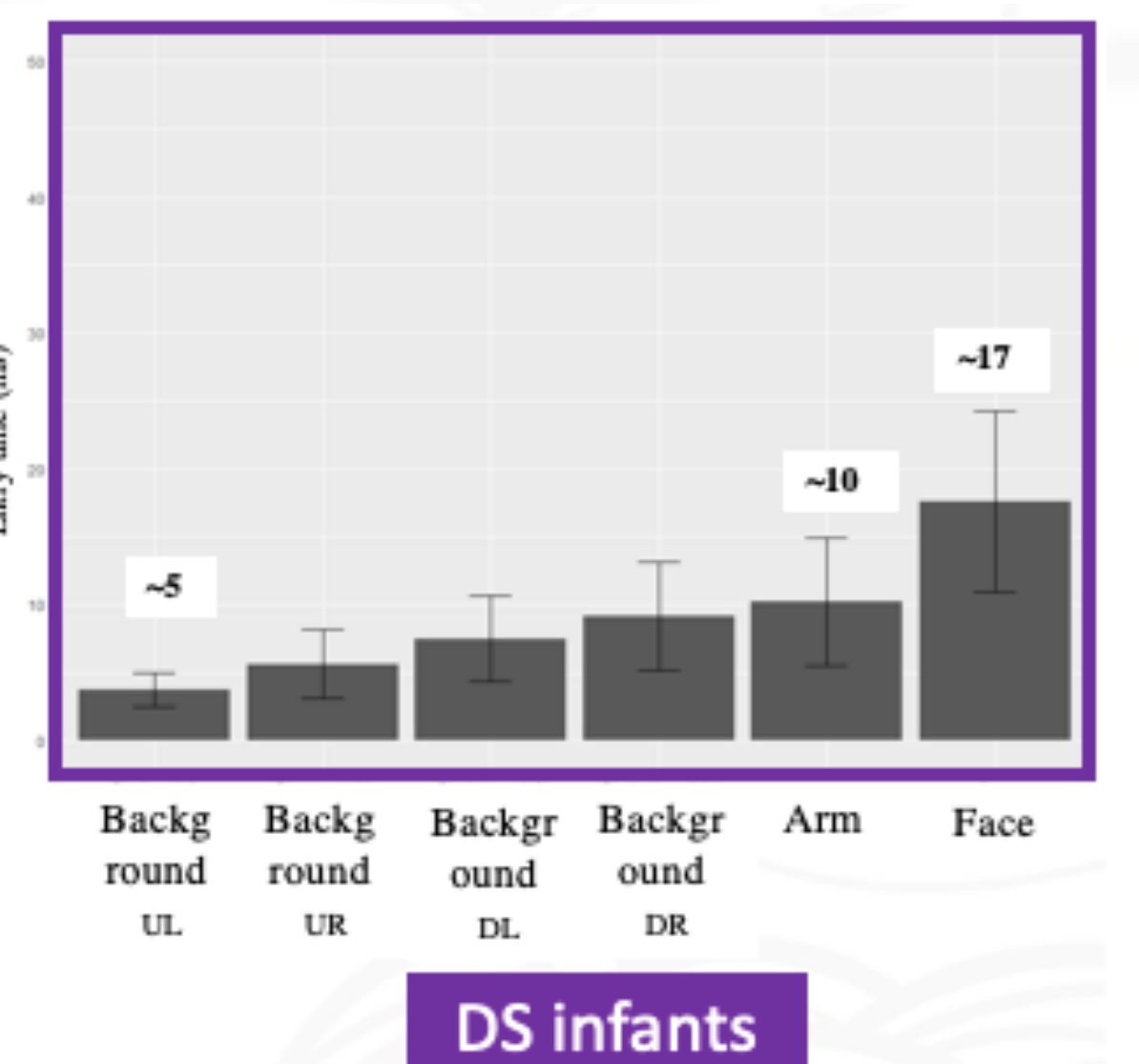
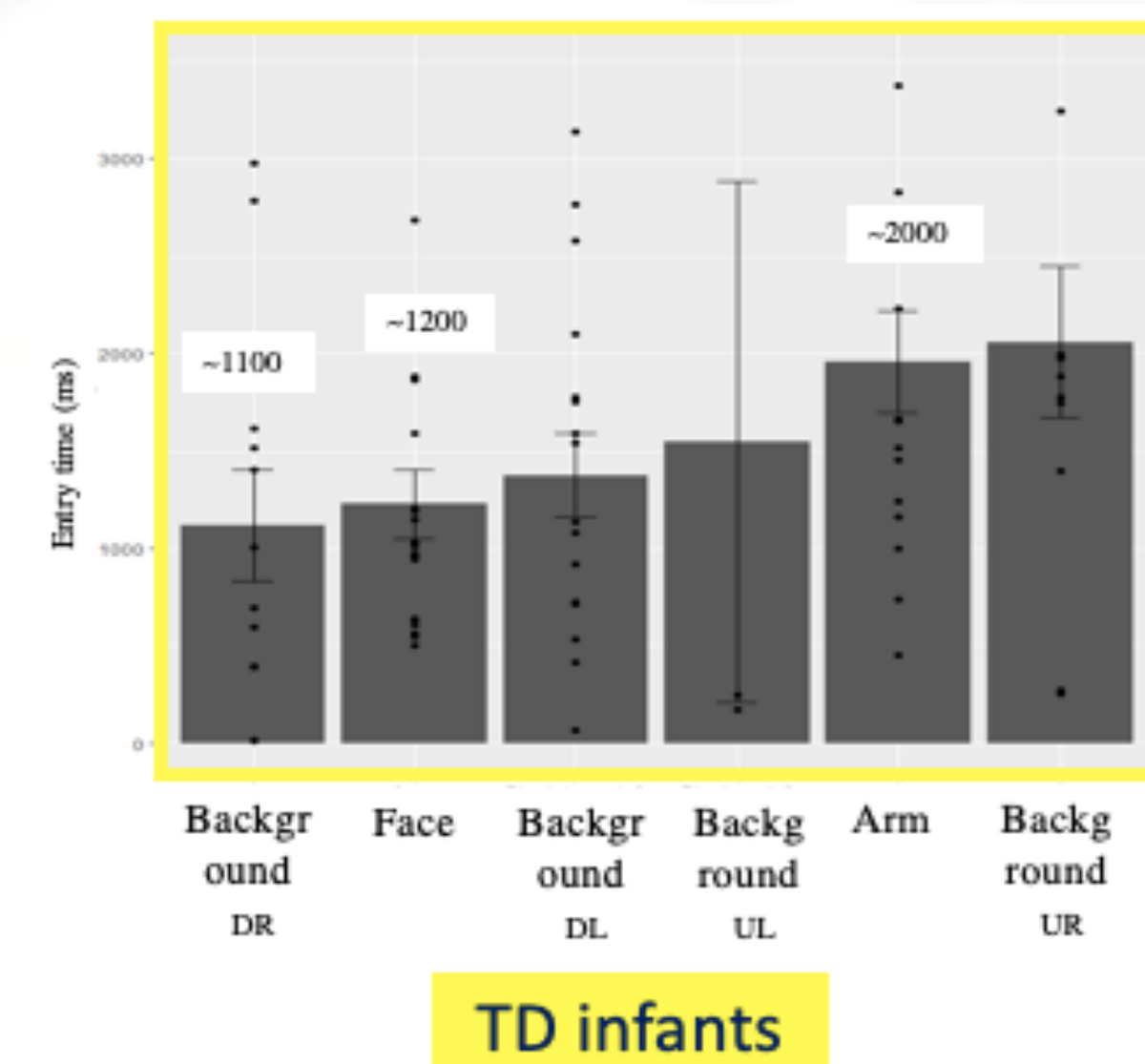
The scanning path → TD orient to the face faster than to the other AOIs



Attention to the face → Decreased in the DS group



Sustained attention → Decreased in the DS group



Main Findings: Preliminary results

- **Selective attention:** Down syndrome = Typically developing infants
 - More to the face than to other areas
 - More to the eyes than to the mouth
- **Attention to the social cues:** Down syndrome < Typically developing infants
 - Decreased attention to the face in DS infants
- **Sustained attention:** Down syndrome < Typically developing infants
 - Largely decreased in DS infants

Selected References

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