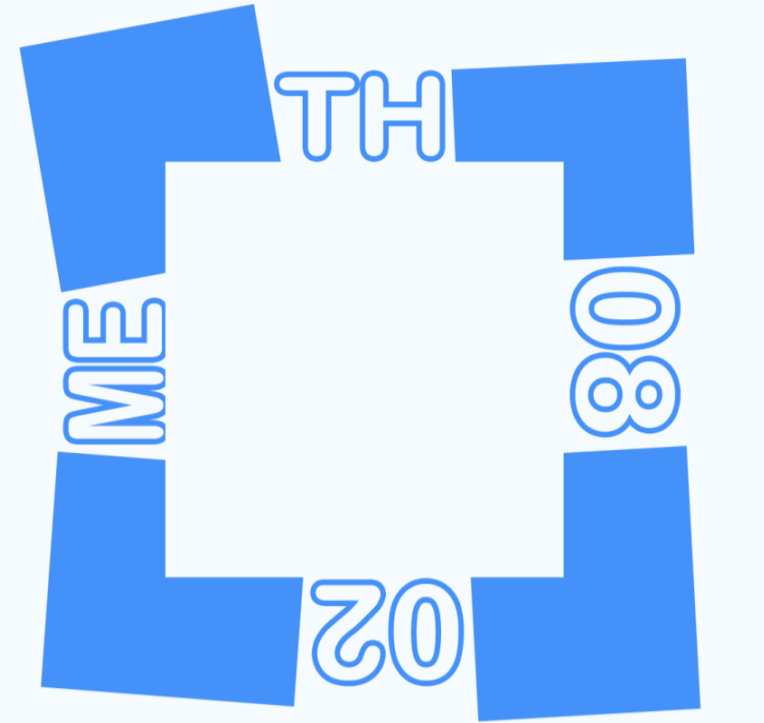




KU LEUVEN

Grouping Interference in ASD: Evidence from a Series of Multiple Object Tracking Experiments



Ruth Van der Hallen^{1,2}, Kris Evers^{1,2,3}, Lee de-Wit¹, Birgitt Haesen^{1,2,3}, Jean Steyaert^{2,3}, Ilse Noens^{2,4,5}, & Johan Wagemans^{1,2}

(1) Laboratory of Experimental Psychology, KU Leuven, Belgium; (2) Leuven Autism Research (LAuRes), KU Leuven, Belgium; (3) Child and Adolescent Psychiatry, KU Leuven, Belgium; (4) Parenting and Special Education Research Unit, KU Leuven, Belgium; (5) Psychiatric and Neurodevelopmental Genetics Unit, Massachusetts General Hospital, Boston, USA

Introduction

Background

- Individuals with ASD are known to suffer from atypical perceptual organization and inadequate motion perception
- Perceptual organization of a visual display influences the allocation of attention in a multiple object tracking task (Scholl et al. 2001)

Objectives

- Investigate the effect of connection-based grouping in children with and without ASD by means of a multiple object tracking task

Methods

Experiment 1

Participants

- 18 children with ASD (6-10 years old)
- 33 children without ASD
=> Matched for age, gender-ratio and IQ

Design

- Multiple object tracking of:
 - four randomly moving targets
 - four randomly moving distracters
- Ungrouped vs grouped conditions = ratio 1:1

Experiment 2

Participants

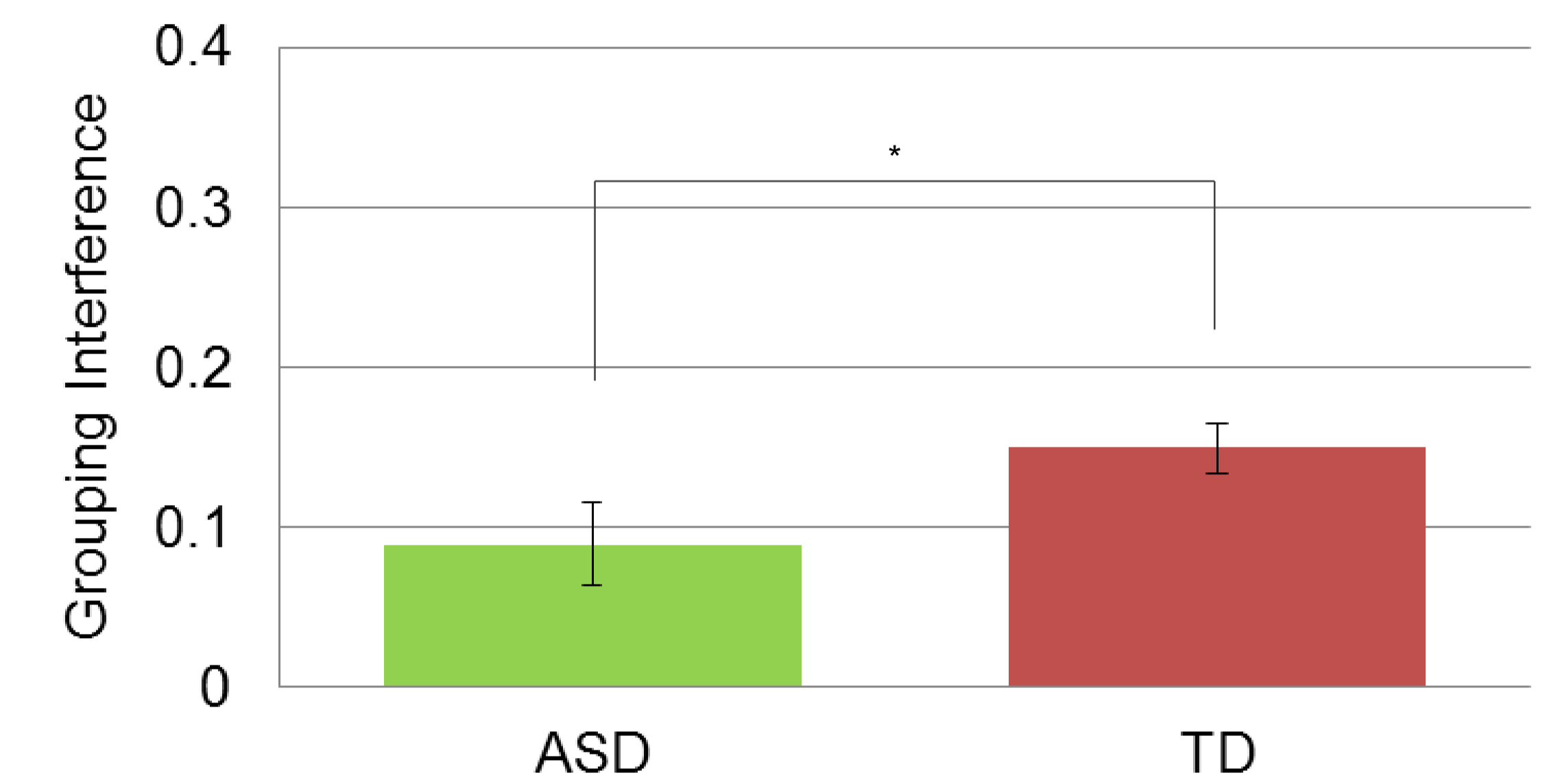
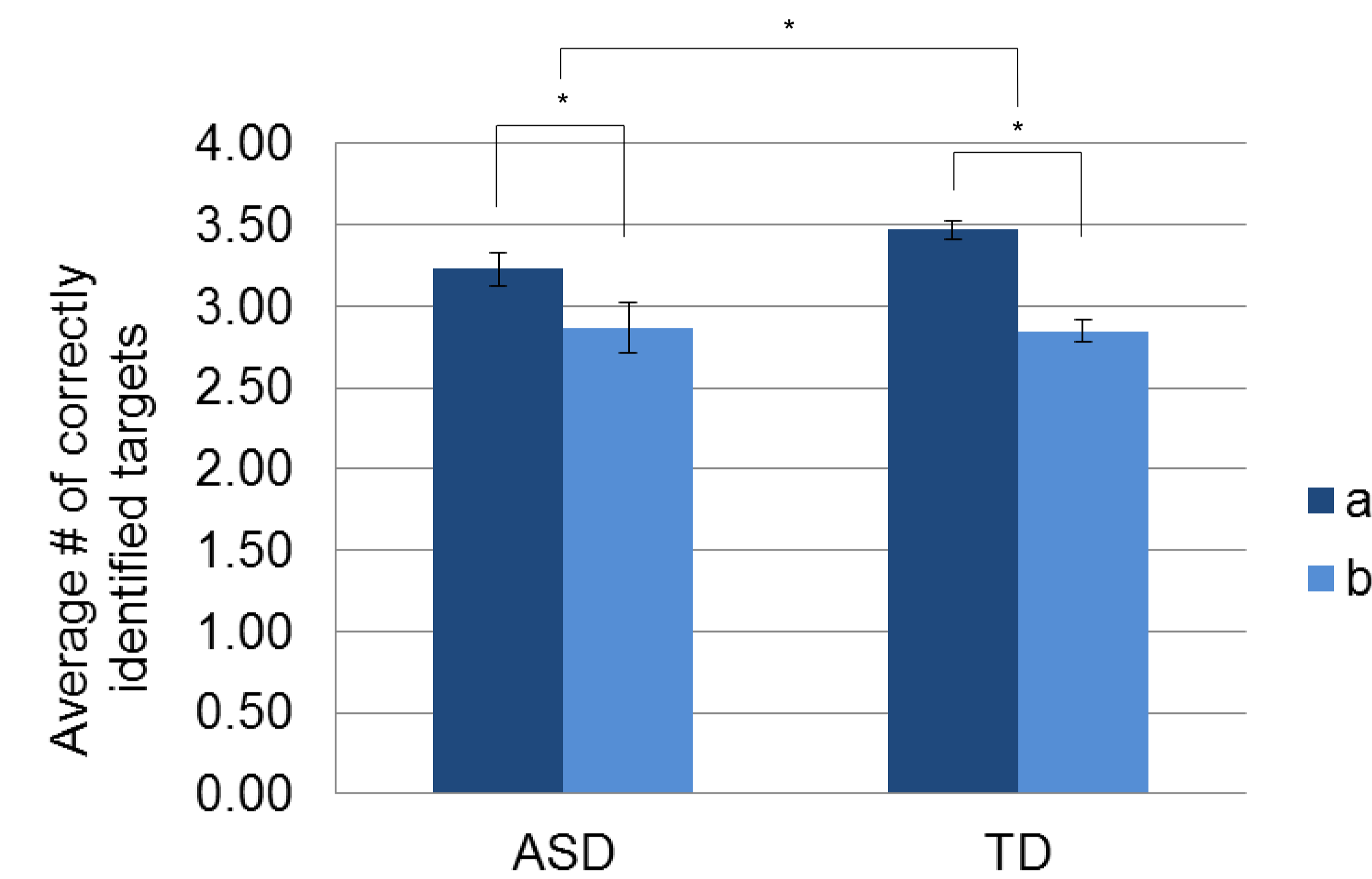
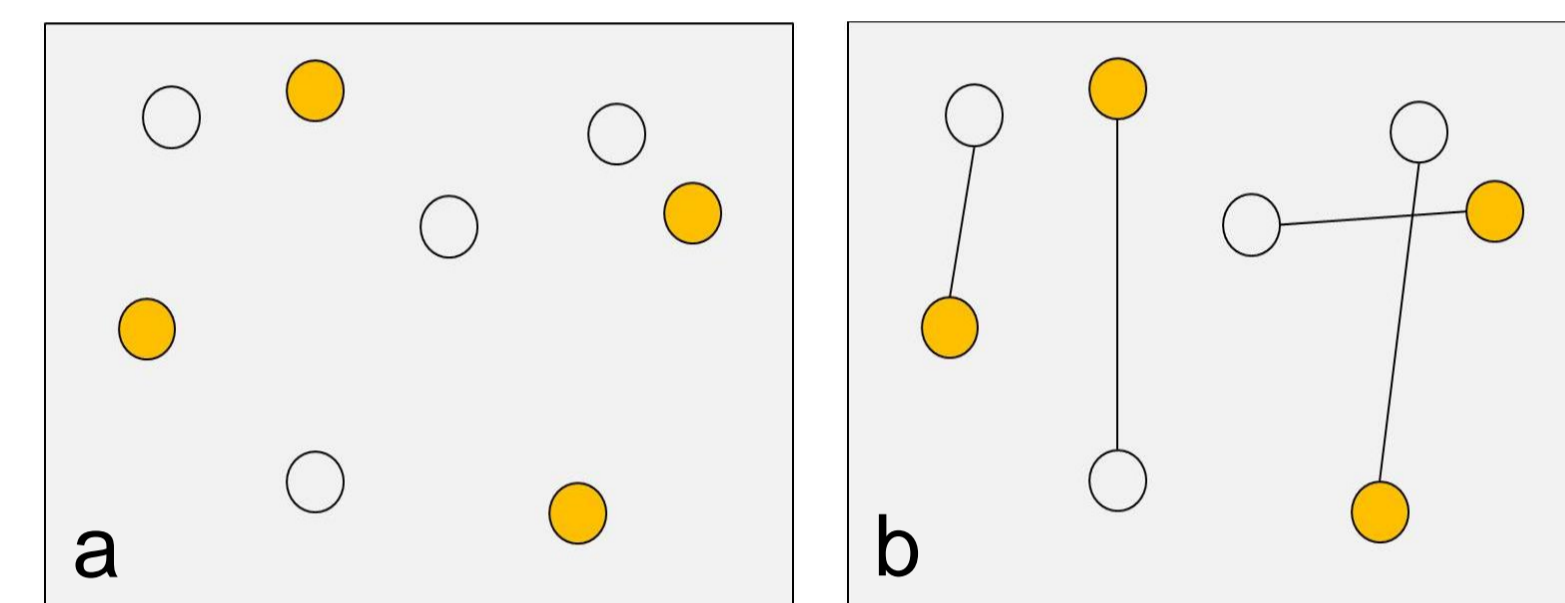
- 26 children with ASD (8-14 years old)
- 27 children without ASD
=> Matched for age, gender-ratio and IQ

Design

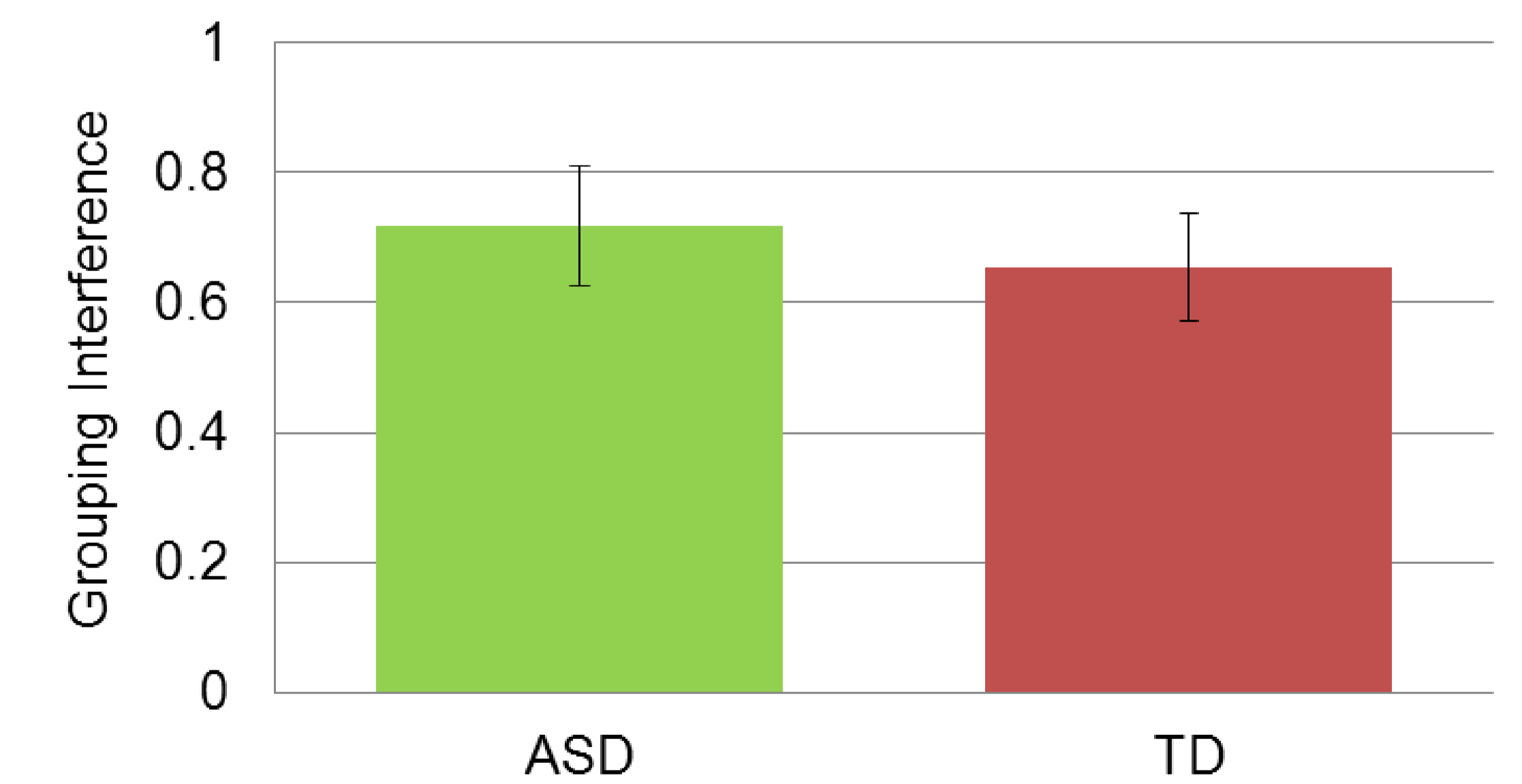
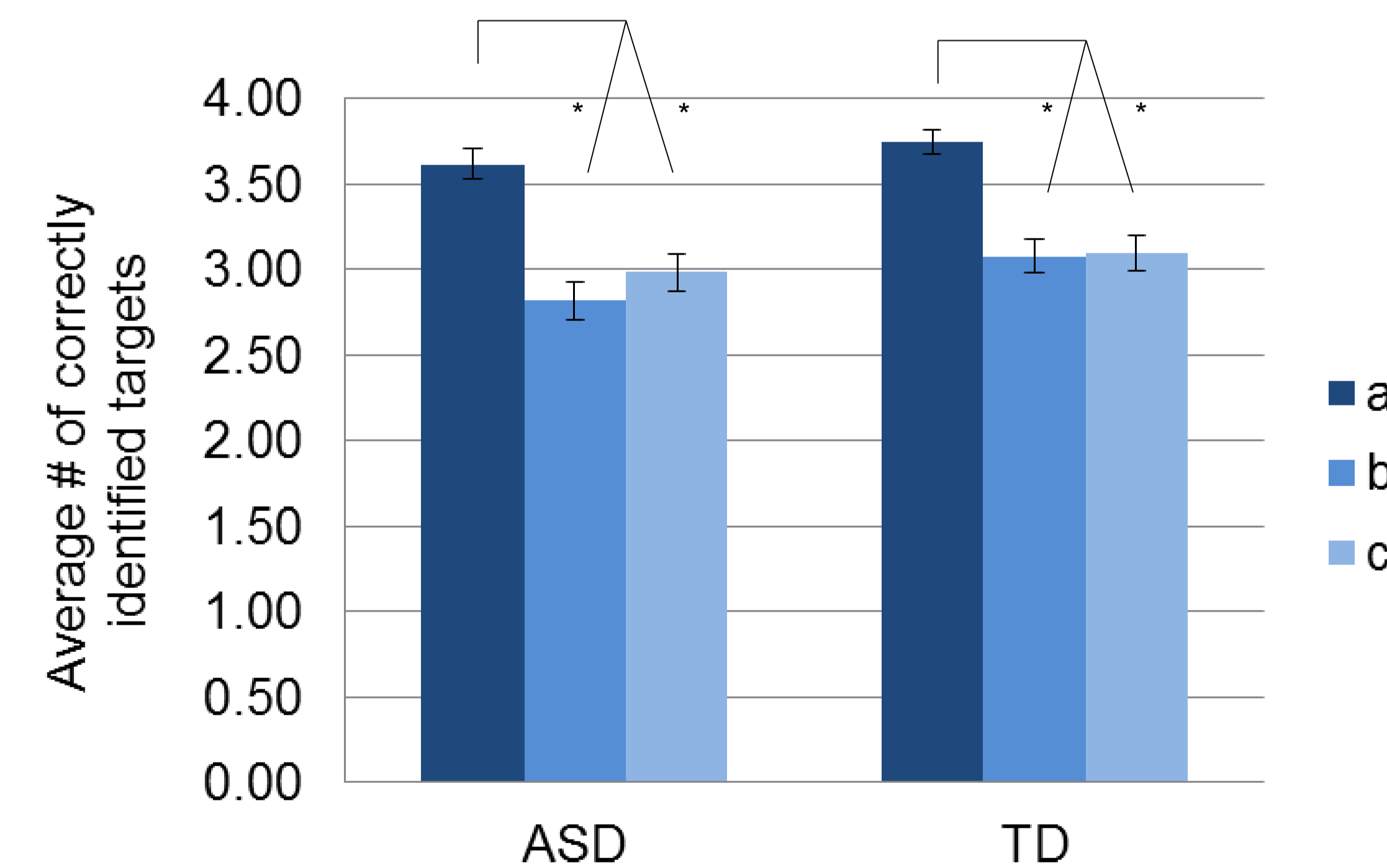
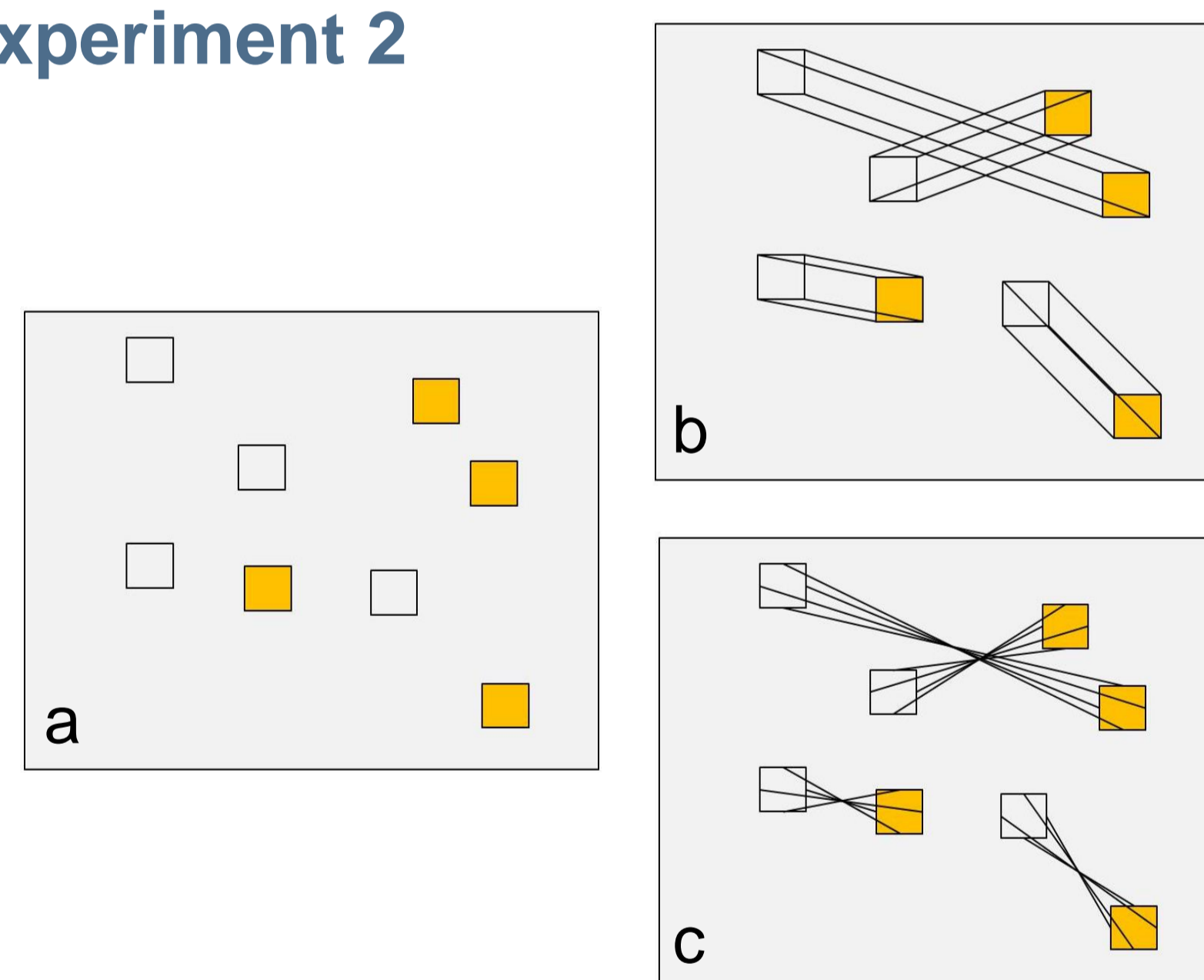
- Multiple object tracking of:
 - four randomly moving targets
 - four randomly moving distracters
- Ungrouped vs grouped conditions ratio = 1:2

Results

Experiment 1



Experiment 2



Results

Experiment 1

- Object tracking is hampered by task-irrelevant grouping
- Grouping interference is stronger for TD than ASD

Experiment 2

- Object tracking is hampered by both types of task-irrelevant grouping
- Grouping interference is similar for TD than for ASD sample

Conclusions

- In TD children: clear evidence of grouping interference on tracking ability
- In ASD children: mixed evidence of grouping interference on tracking ability
- Results indicate atypical visual processing in ASD is dependent on the specific task and stimulus set, what suggests a qualitative difference in visual processing rather than a general visual processing deficit in ASD.

Supported by the Methusalem program by the Flemish Government (METH/08/02)
Contact: ruth.vanderhallen@ppw.kuleuven.be

