

How people on the autism spectrum SEE the world: What EEG studies can tell us



Emily Knight, MD, PhD

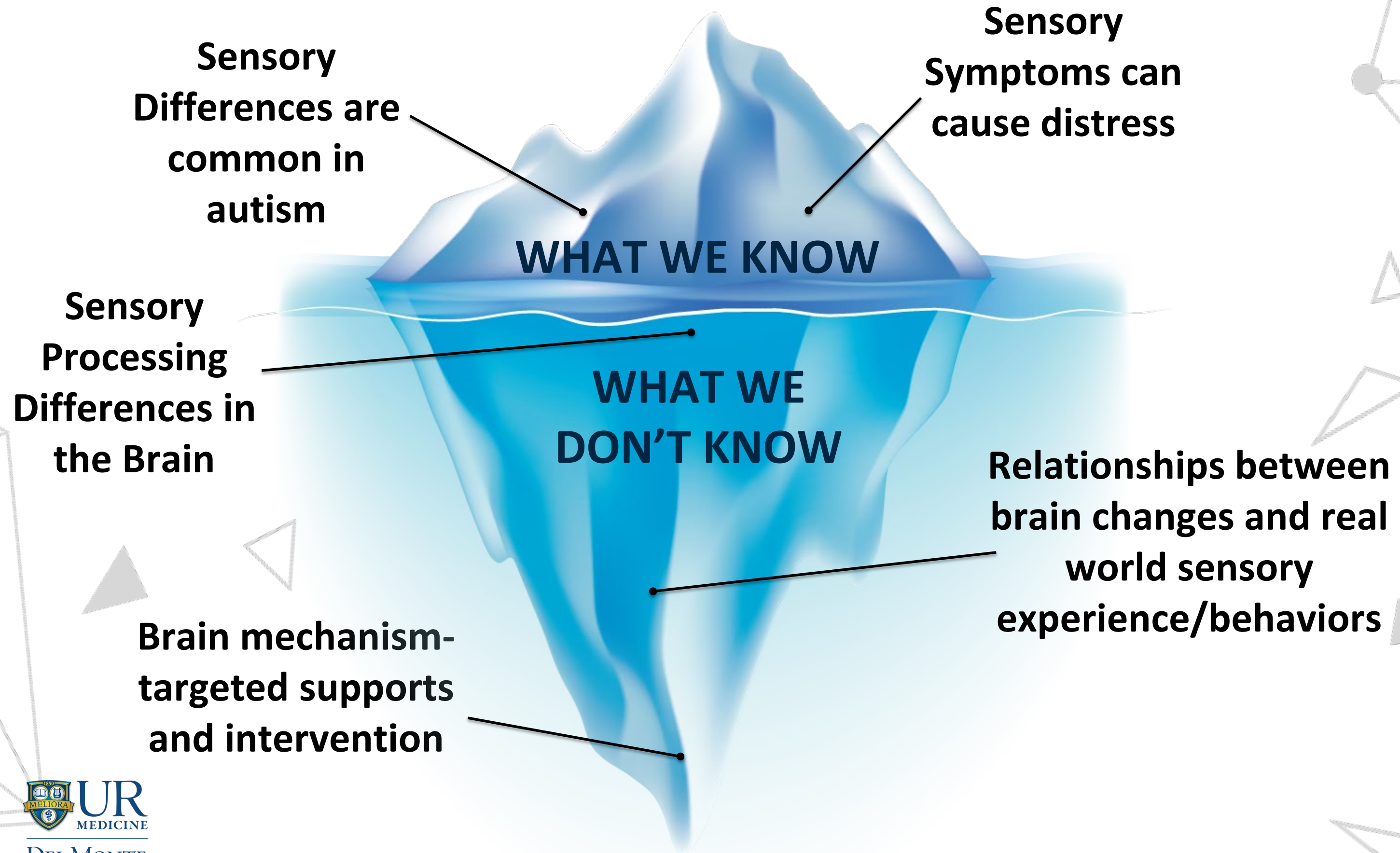
Assistant Professor, Developmental and
Behavioral Pediatrics, Neuroscience



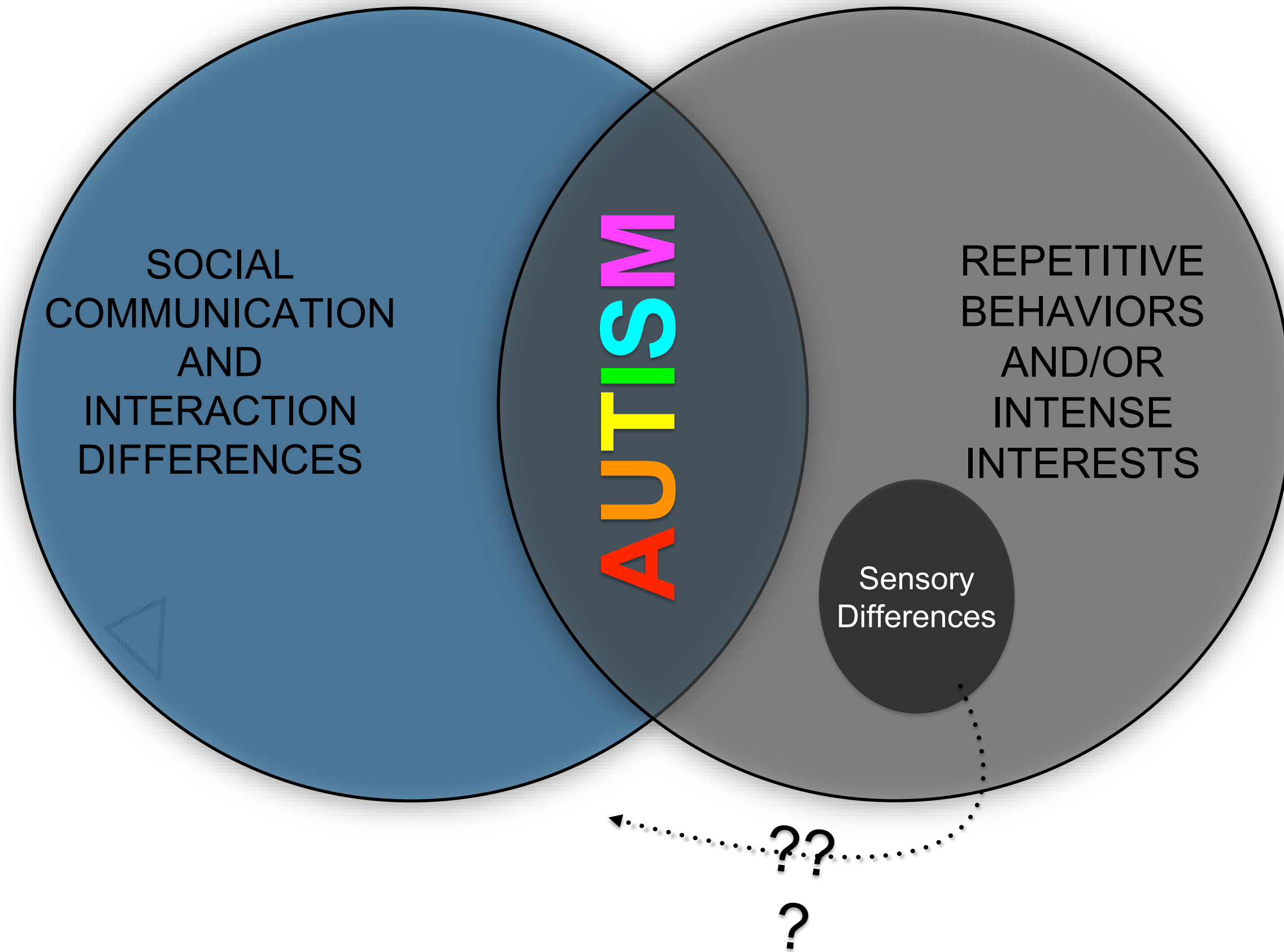
THE FREDERICK J. AND MARION A. SCHINDLER
COGNITIVE NEUROPHYSIOLOGY
LABORATORY

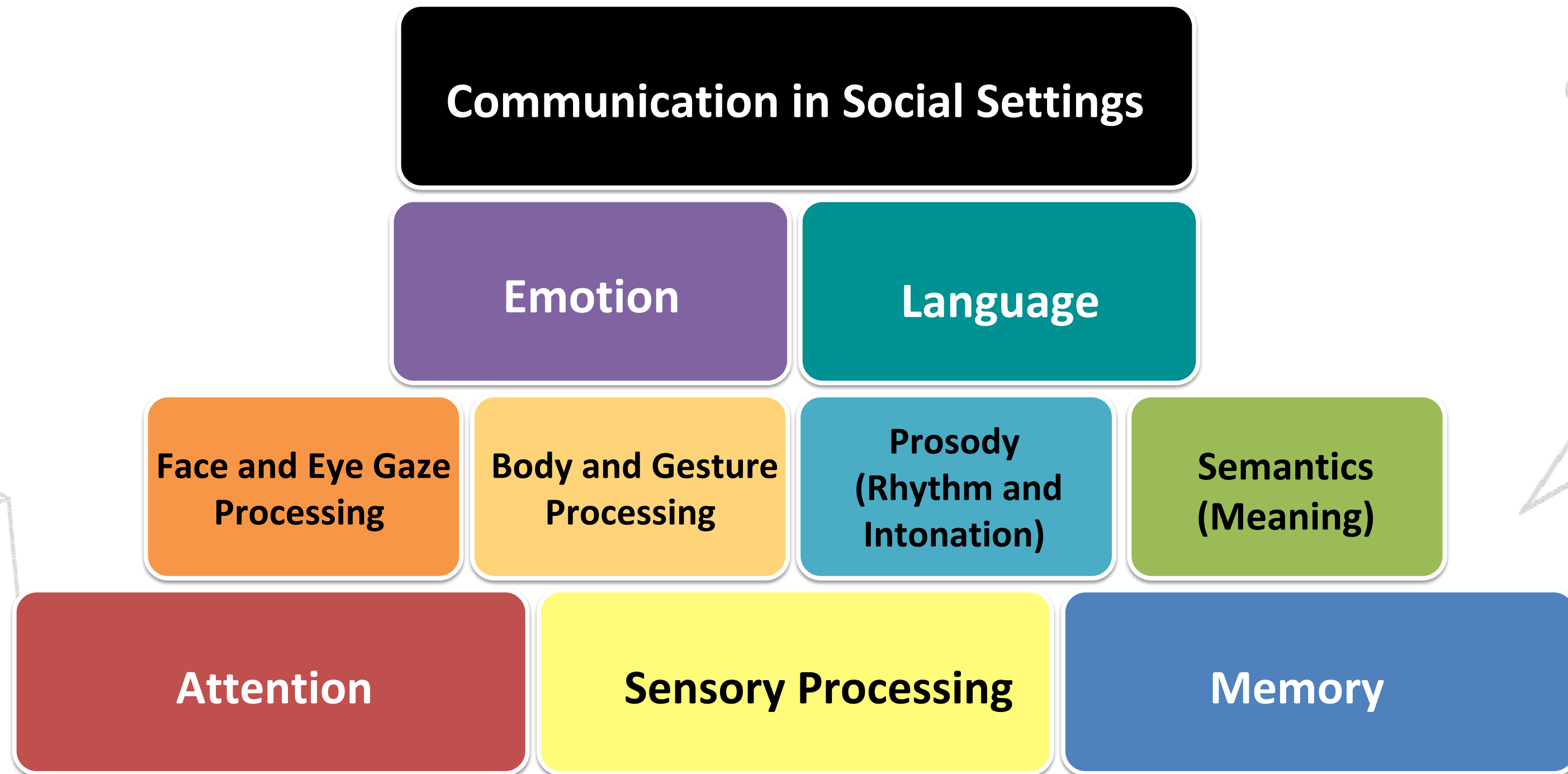


DEL MONTE
INSTITUTE FOR NEUROSCIENCE



HOW PEOPLE ON THE AUTISM SPECTRUM SEE THE WORLD: WHAT EEG STUDIES CAN TELL US

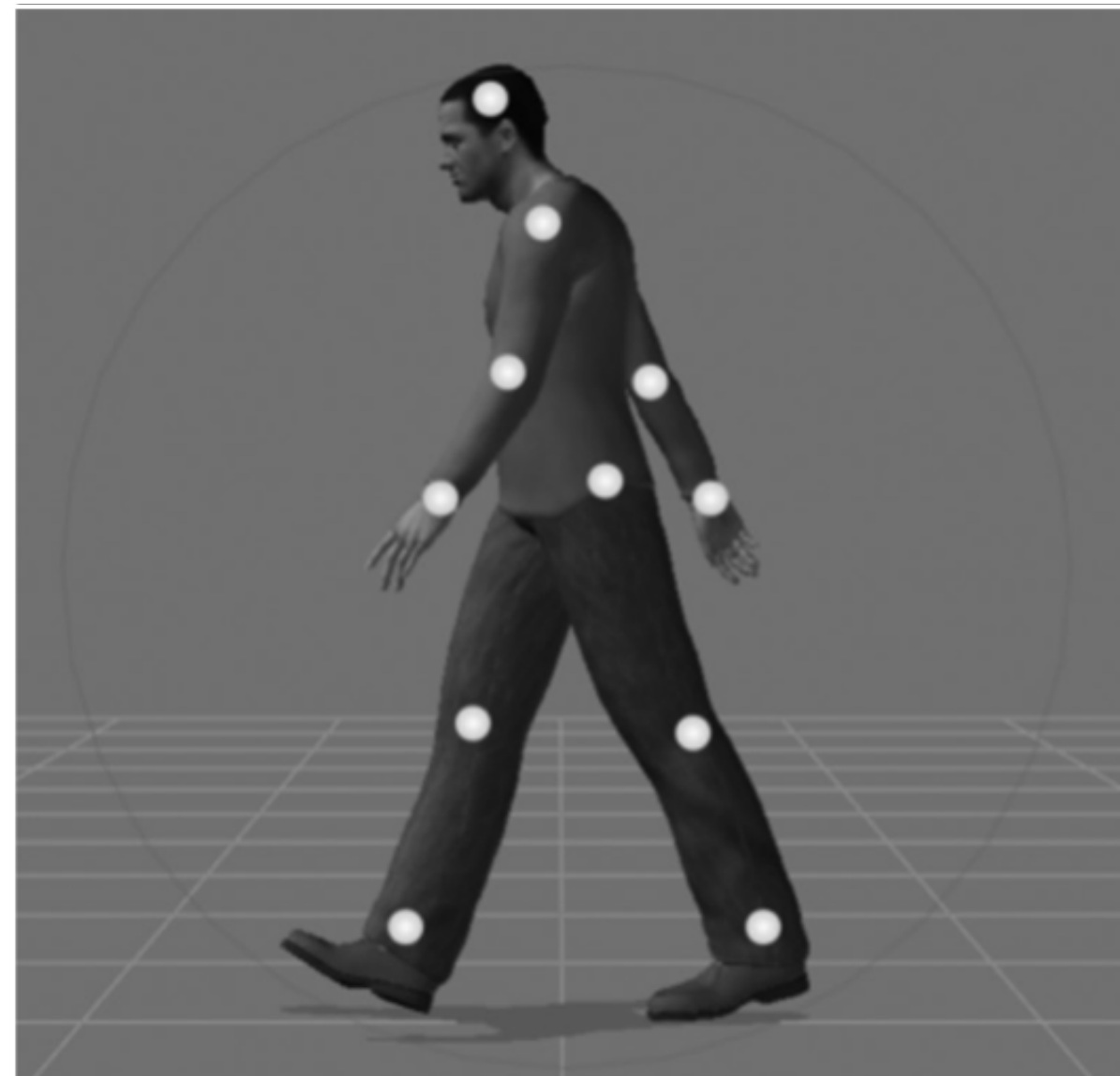




HOW PEOPLE ON THE AUTISM SPECTRUM SEE THE WORLD: WHAT EEG STUDIES CAN TELL US



Body Movement Processing in Autism



Adapted from: The Cambridge Handbook of Applied Perception Research



THE FREDERICK J. AND MARION A. SCHINDLER
COGNITIVE NEUROPHYSIOLOGY
LABORATORY

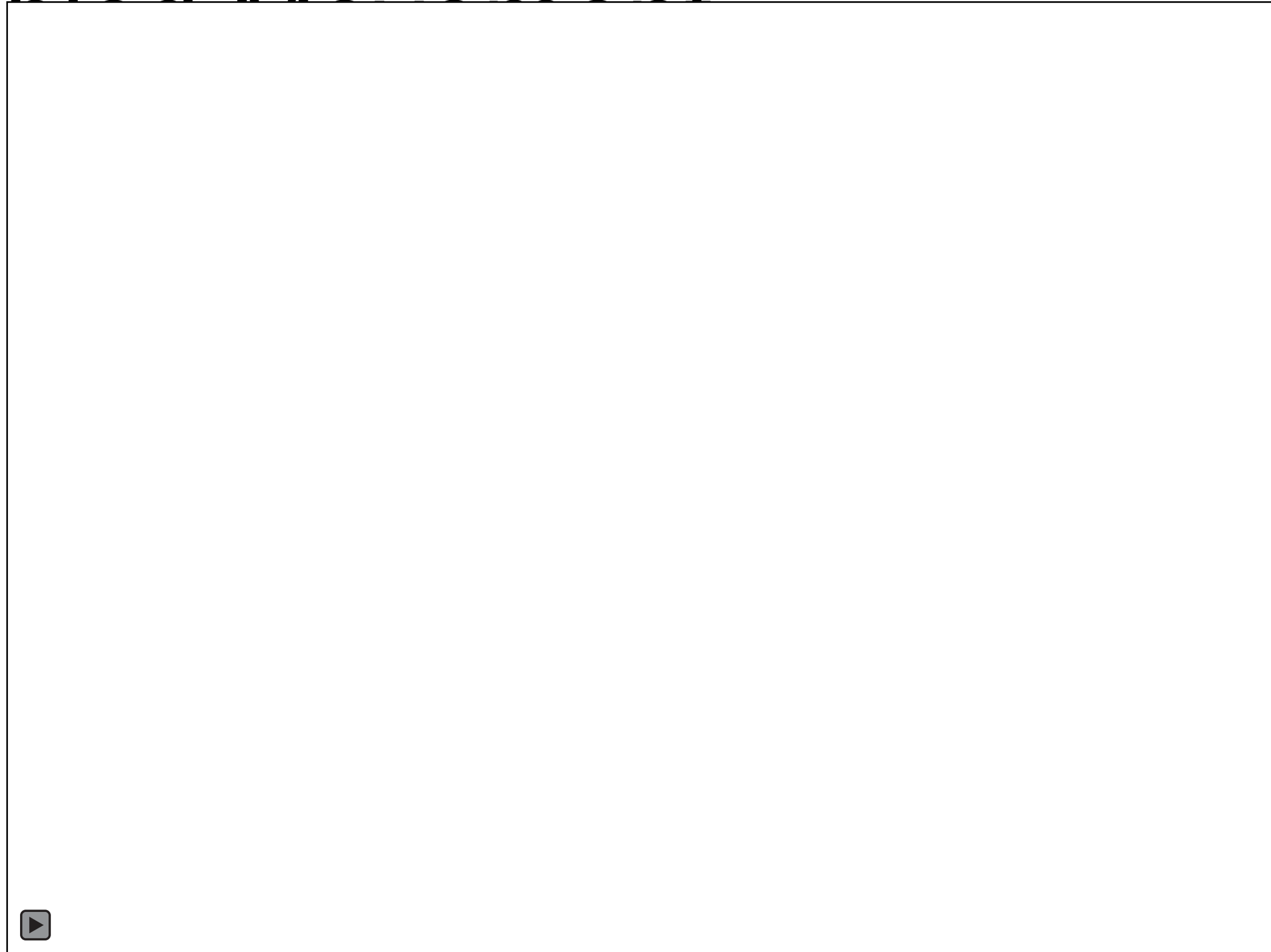


DEL MONTE
INSTITUTE FOR NEUROSCIENCE

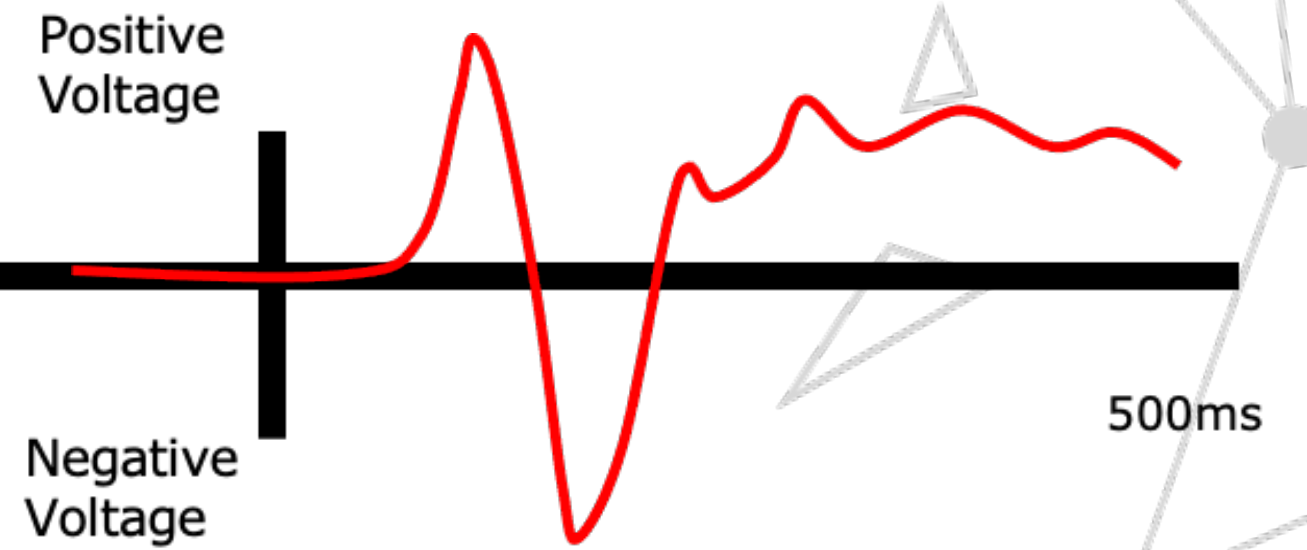
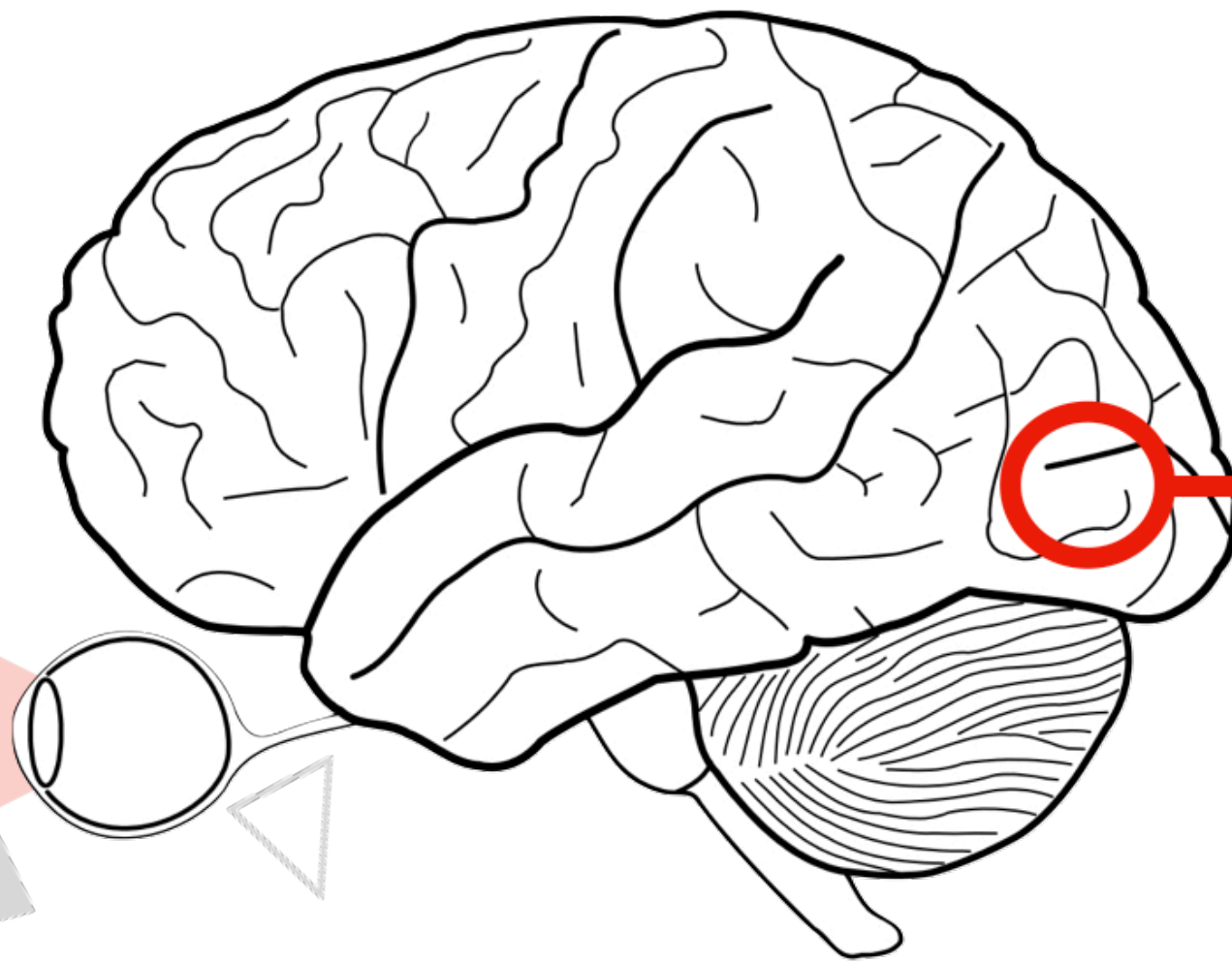
Move



Scrambled Movie



HOW PEOPLE ON THE AUTISM SPECTRUM SEE THE WORLD: WHAT EEG STUDIES CAN TELL US

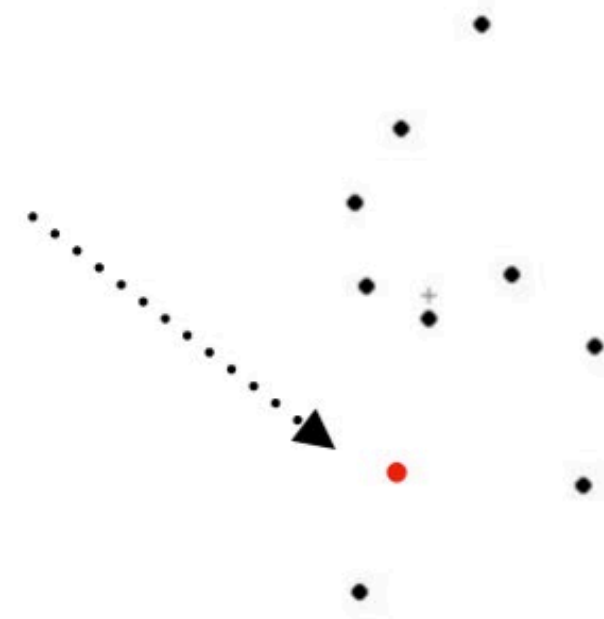


Question 1

Do children on the autism spectrum process body movements differently?



Task 1: What color did the dot turn?

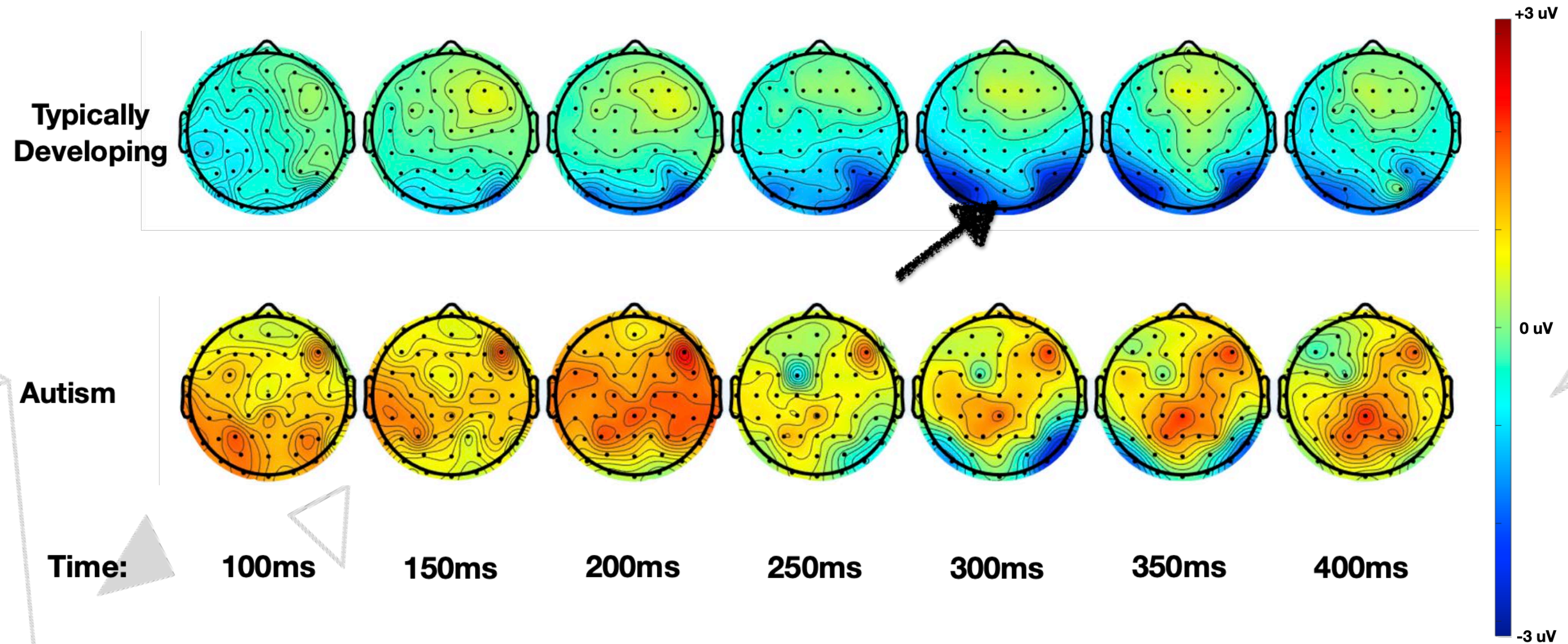


Question 2

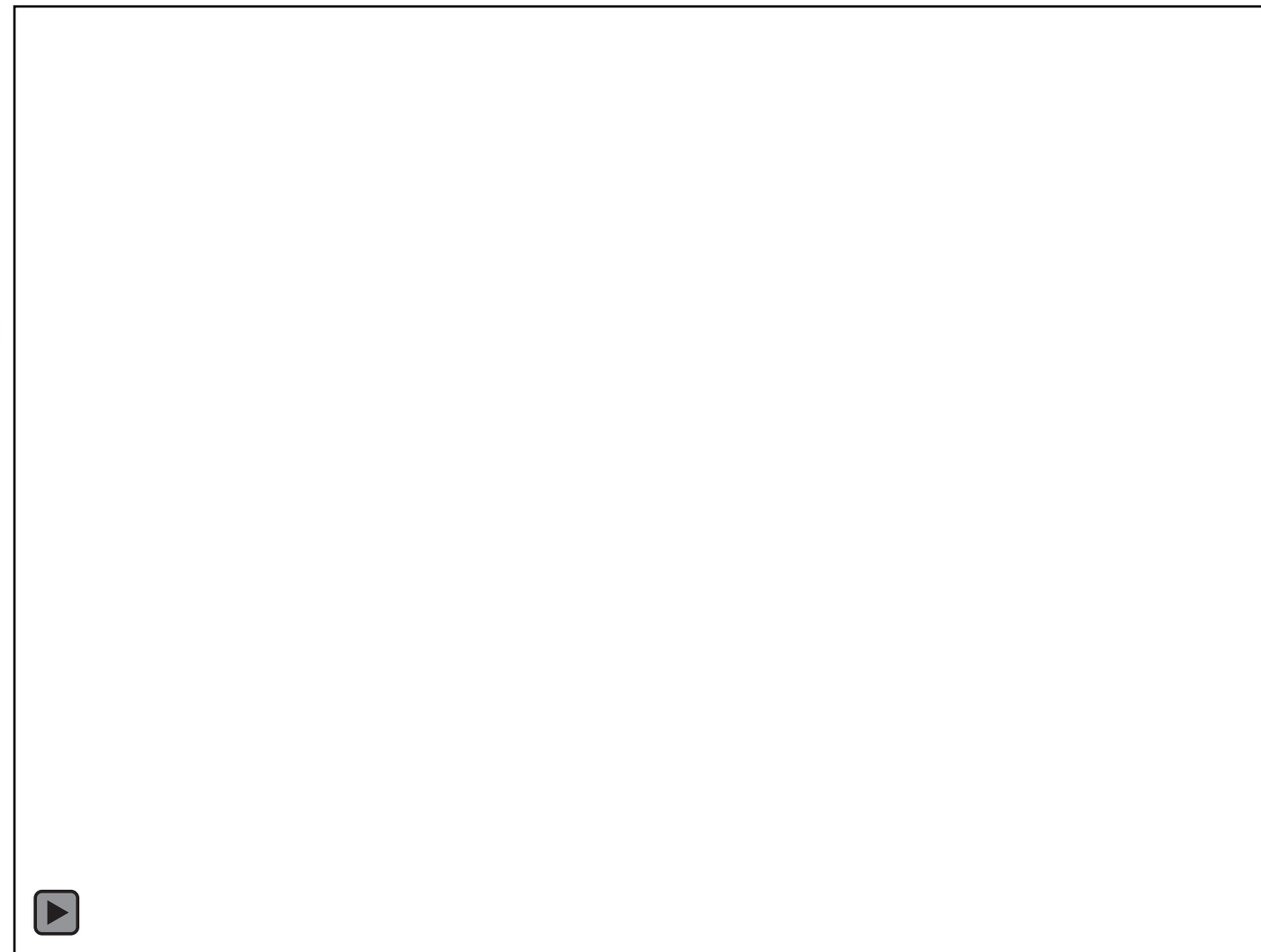
Does attention help support body movement processing in autism?



Task 1: What color did the dot turn?



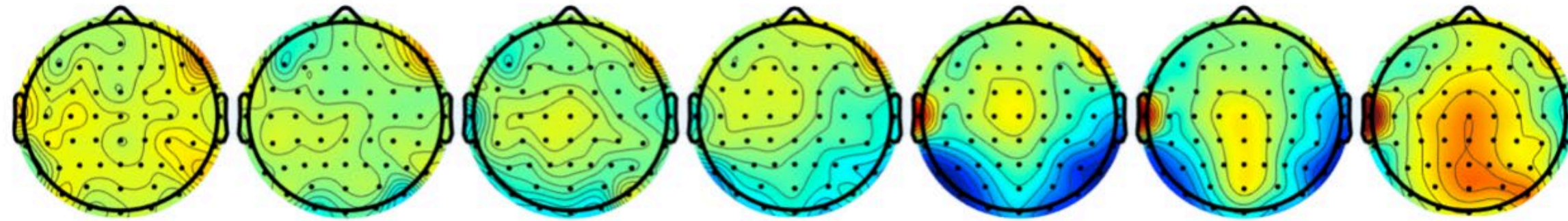
Task 2: Do the dots move like a person?



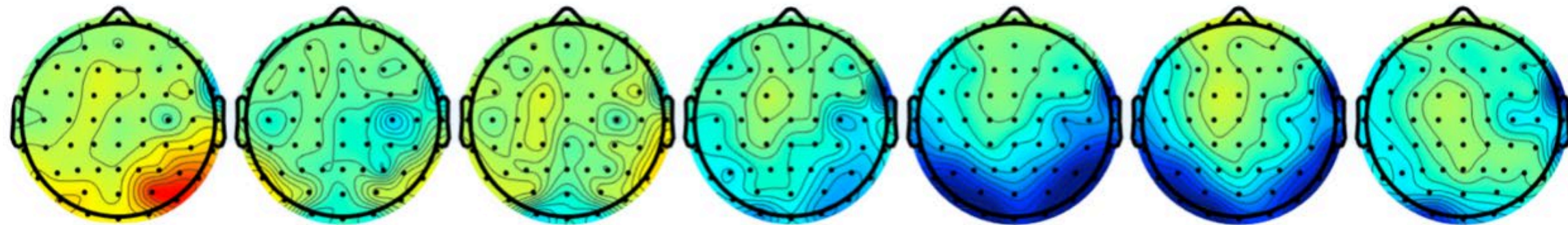
Task 2: Do the dots move like a person?

DIFFERENCE WAVEFORM (BM-SM)

Typically Developing



Autism



Time:

100ms

150ms

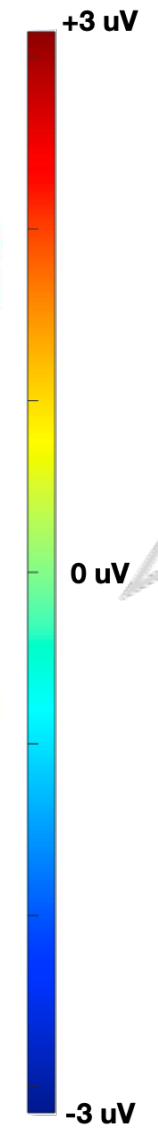
200ms

250ms

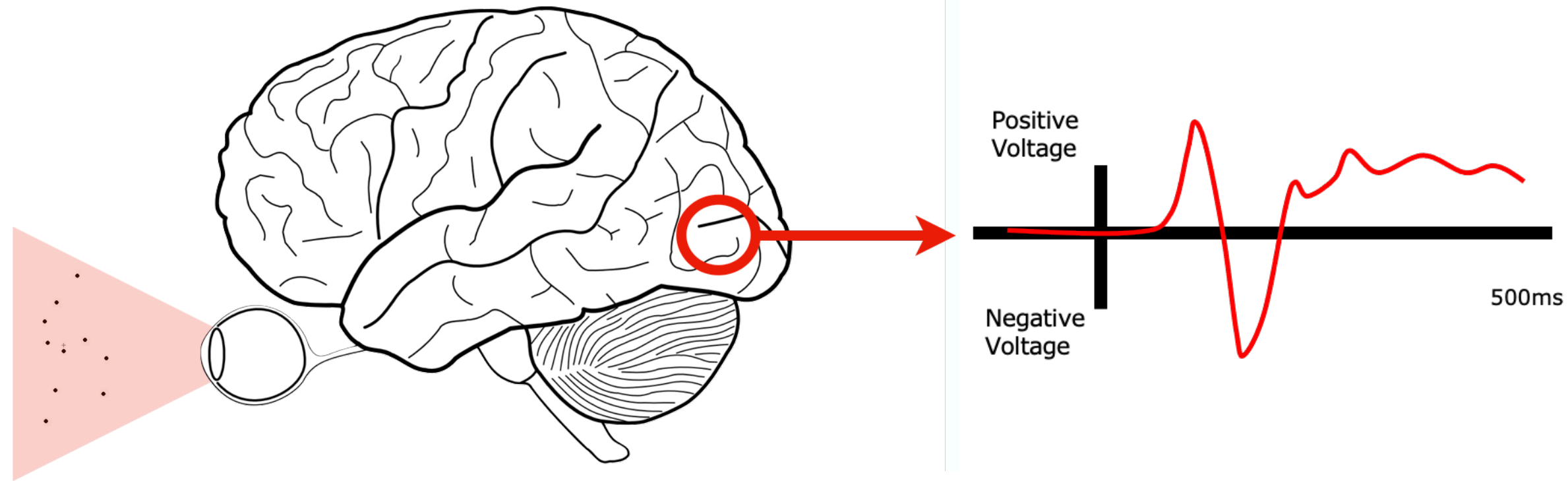
300ms

350ms

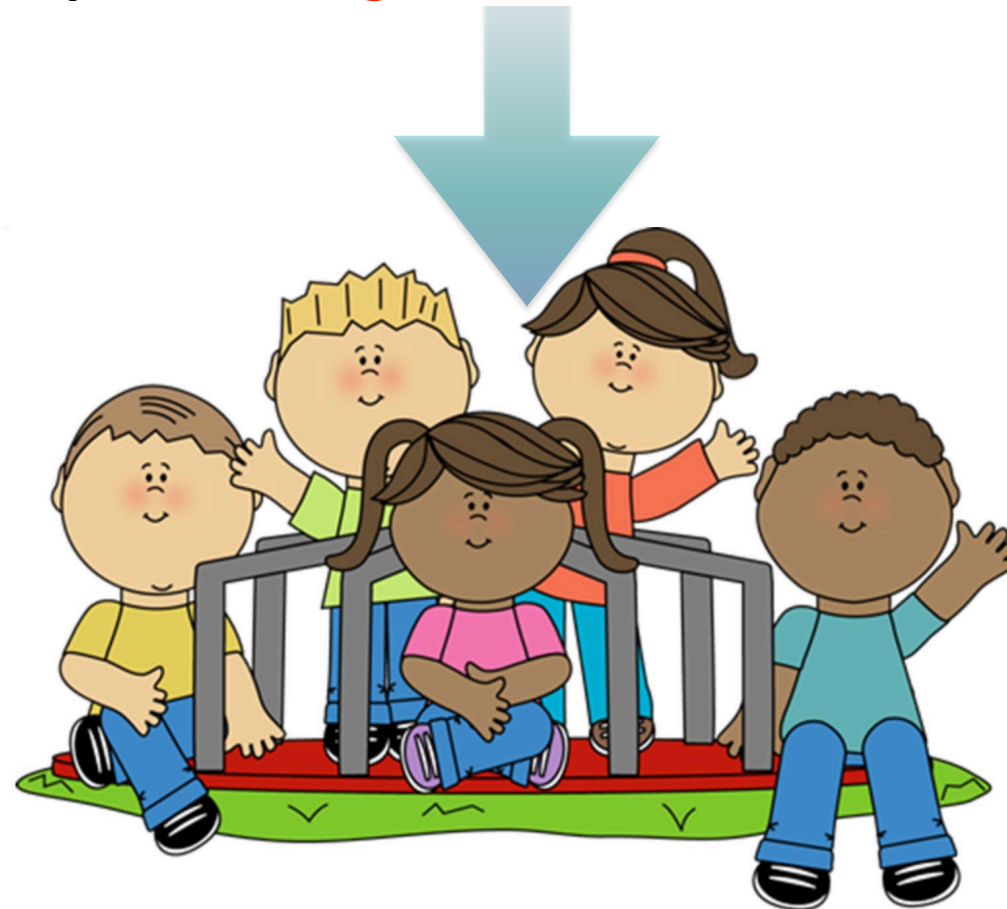
400ms



HOW PEOPLE ON THE AUTISM SPECTRUM SEE THE WORLD: WHAT EEG STUDIES CAN TELL US



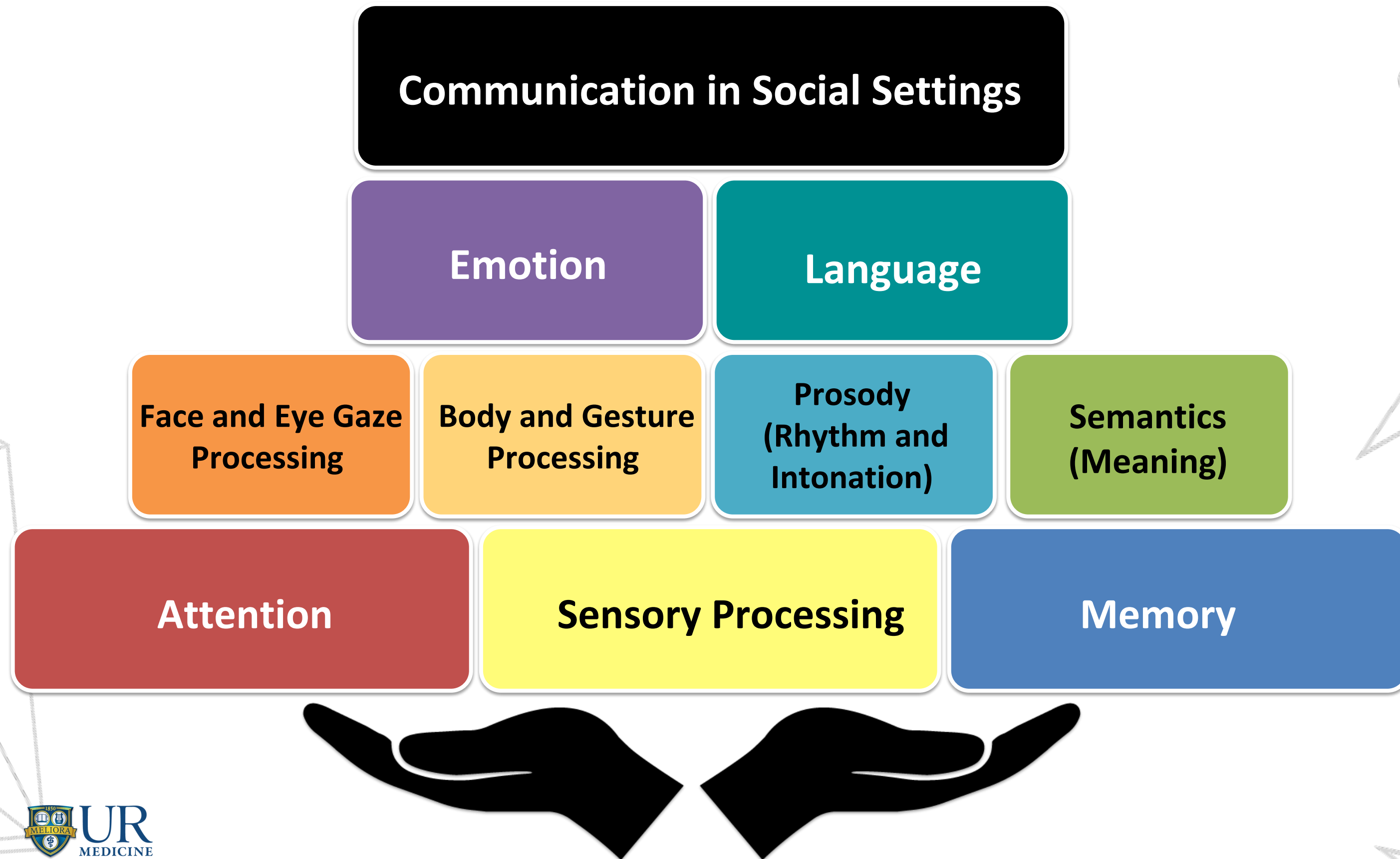
Children who had **stronger brain responses** to the videos of moving people had **higher socialization scores**.



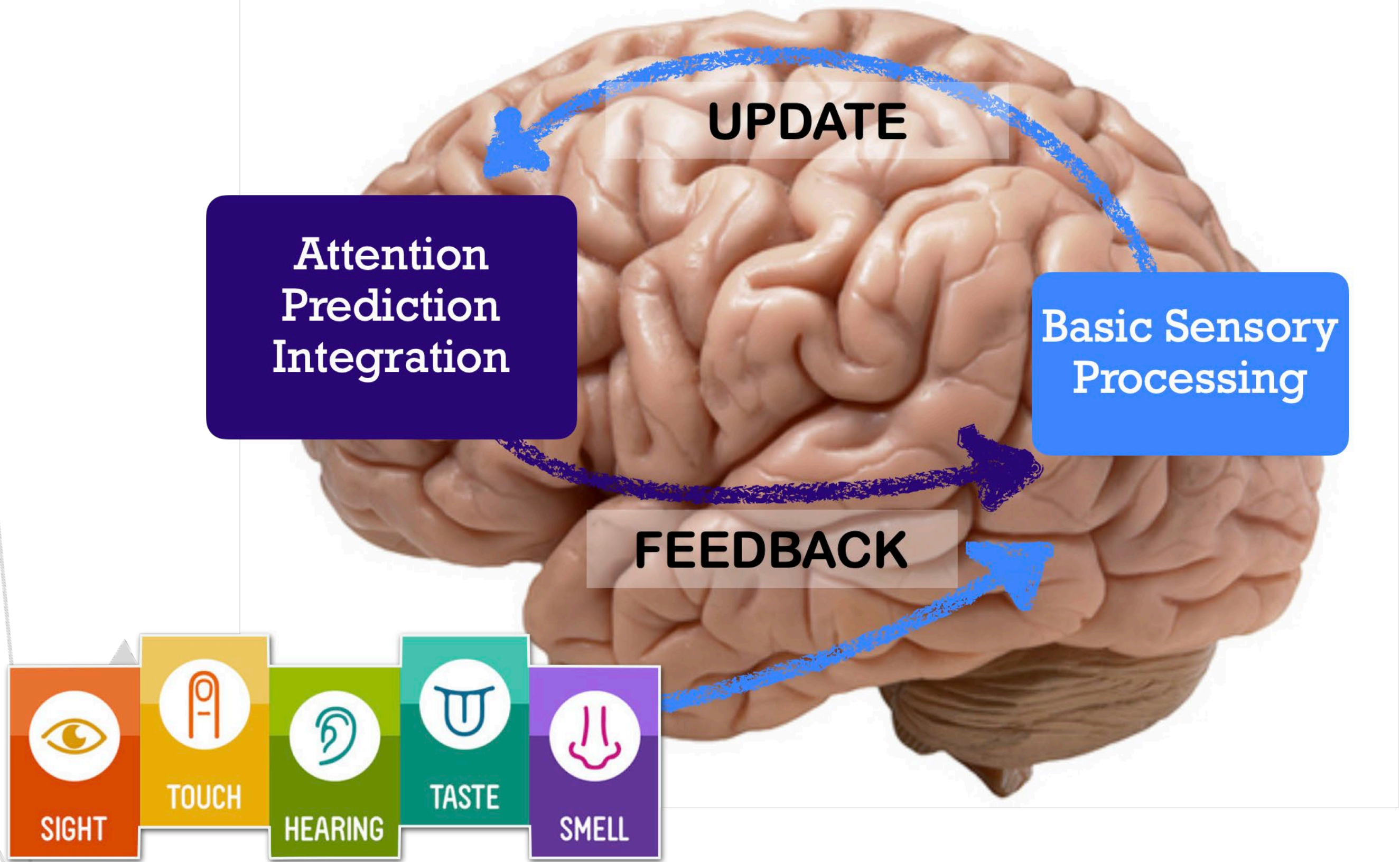
Summary

- When children with autism were distracted by something else, their brains process the movements of another person differently than their peers.
- This processing was better when children had to pay special attention to body movements.
- These differences may be related to social communication development.



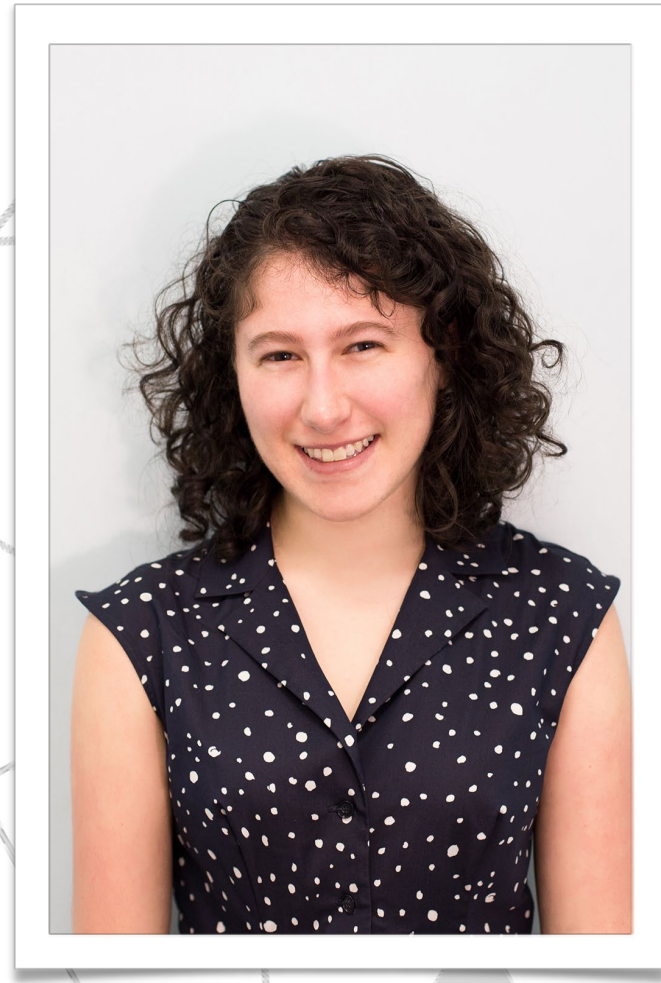


HOW PEOPLE ON THE AUTISM SPECTRUM SEE THE WORLD: WHAT EEG STUDIES CAN TELL US



HOW PEOPLE ON THE AUTISM SPECTRUM SEE THE WORLD: WHAT EEG STUDIES CAN TELL US

**Emily Isenstein, MD, PhD
Candidate**



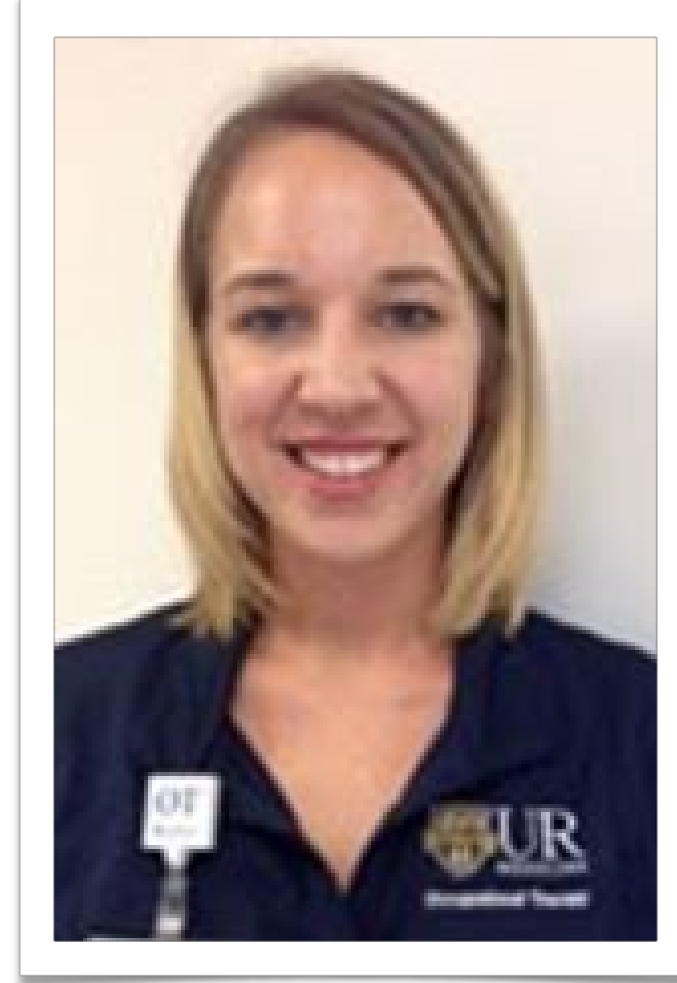
Getting in *touch* with autism: how we interact with the physical world

Edmund Lalor, PhD



I knew you were going to say that!
Neural measures of predictive speech processing in people with autism

Hannah Peck, OTR/L



A Practical Approach to Sensory Processing

Bryan Rogers, Senior Certified Driver Rehabilitation Specialist



Learning to Drive: Putting all your sensory processing to work

Acknowledgments

URMC Collaborators



External Collaborators

Sophie Molholm, PhD

Aaron Krakowski, PhD

John Butler, PhD

Alaina S. Berruti, BS

Douwe Horsthuis, BS



Funding

Frederick J. and Marion A. Schindler

Harry T Mangurian Jr. Foundation

NIMH RO1 MH065350 and MH085322; PI
Foxe, Molholm

NICHD P50 HD103536; PI Foxe, Mink

Trainee Funding Support: (Knight) URMC
Department of Pediatrics Chair Fellow Award
and through Kyle Family Fellowship support.
(Krakowski) CUNY Graduate Science
Fellowship

Phenotyping: NICHD U54 HD090260

Special Thanks to the Children and Families who Participated



THE FREDERICK J. AND MARION A. SCHINDLER
COGNITIVE NEUROPHYSIOLOGY
LABORATORY



DEL MONTE
INSTITUTE FOR NEUROSCIENCE