S8237

Autism Spectrum Disorders:

Introduction, Implications and technology

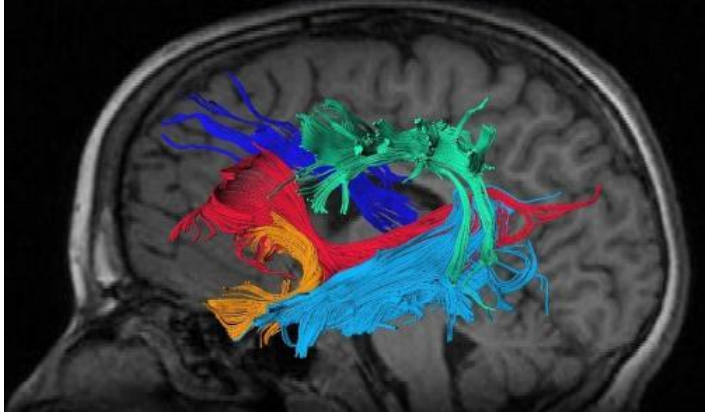
By Qazi Fazli Azeem
South Asian self advocate for the Autism Spectrum

World Autism Awareness Day 2013

My presentation at the UN is at (1:18:54) http://webtv.un.org/watch/panel-3-world-autism-awareness-day-general-assembly-resolution-62139-ares62139/2272970738001/

WHAT IS AUTISM?

- Very complex, often baffling developmental disability
- First described by Leo Kanner in 1943 as *early infantile autism*
- "Auto" – children are "locked within themselves."
- For next 30 years, considered to be an *emotional disturbance*
- Very likely **neurological** in origin – not emotional
- No known racial, ethnic, or social boundaries
- No relation to family income, lifestyle



Autism

A spectrum of neuropsychiatric disorders, with limitations in social interaction, communication, and unusual and repetitive behavior.

"If you've seen one child with autism, you've seen one child with autism."

-Brenda Smith-Myles

Autism is a developmental disorder

Like these disorders:

Cerebral palsy, Down's syndrome, Learning disabilities and ADHD (Attention deficient hyperactive disorder)

People on the Autism spectrum are born with it. Early intervention, educational support and help can lead to independence and better outcomes later in life.

There are no medical tests for Autism, only behavior tests.

Developmental Milestones

What behavior is this child displaying?

Echolalia

- Common in very young children (Age 3)
- Immediate or delayed (even years)
- Is there communicative intent with echolalia?

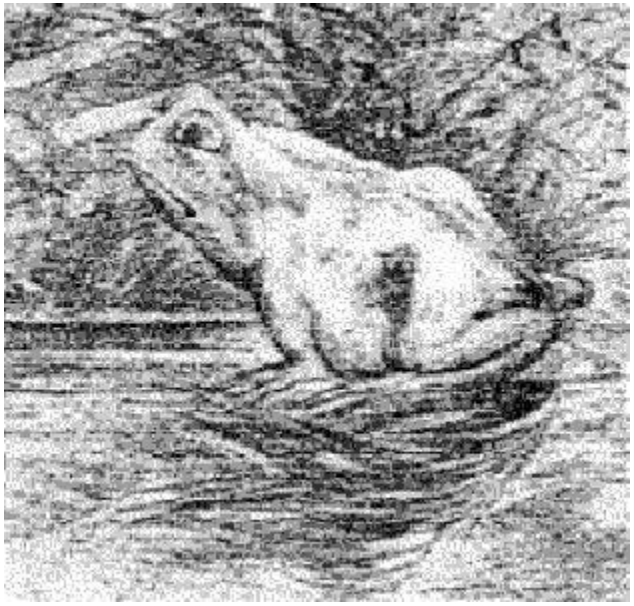
What causes Autism?

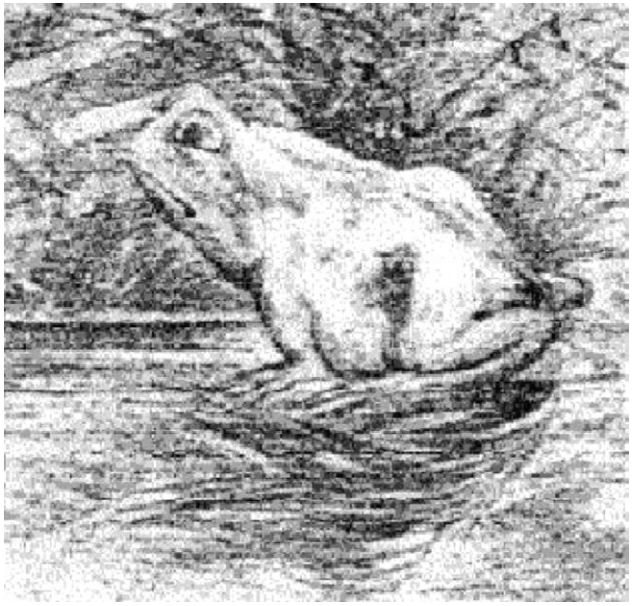
- Good agreement in general that autism is caused by abnormalities in brain development, neurochemistry, and genetic factors

How is Autism Diagnosed?

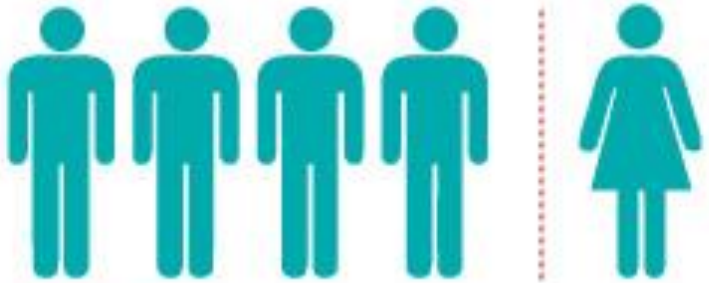
- No definitive medical test
- Team uses interviews, observation, and specific checklists developed for this purpose.
- Team might include neurologist, psychologist, developmental pediatrician, speech/language therapist, learning consultant, etc.
- Must rule out MR, hearing impairment, behavior disorders, or eccentric habits

Turn the picture 90 degrees



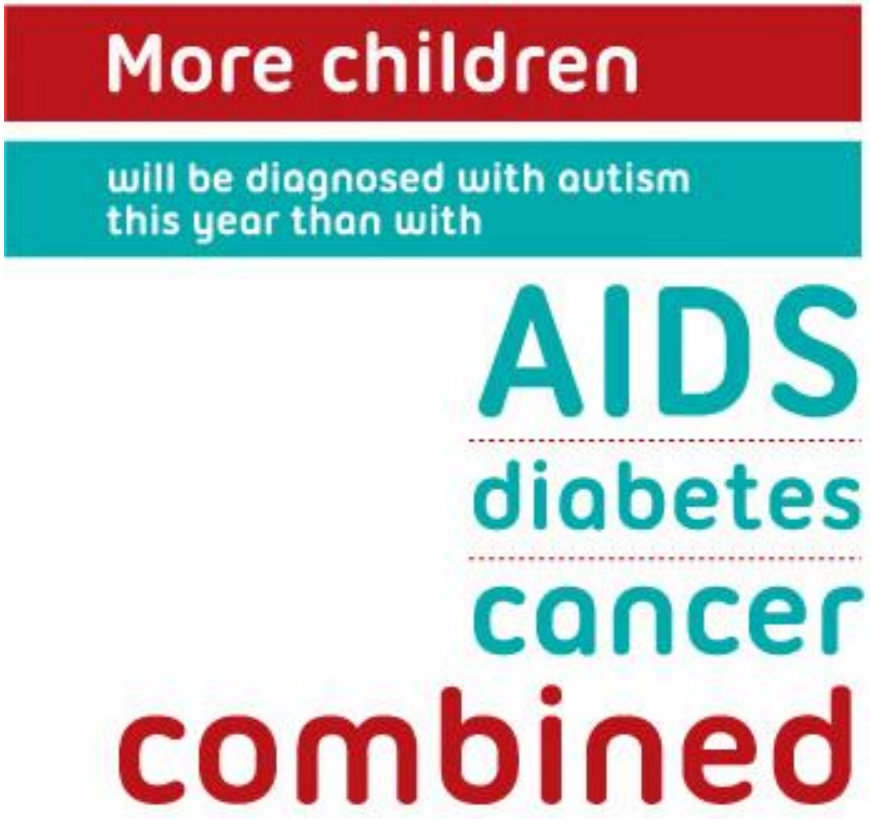


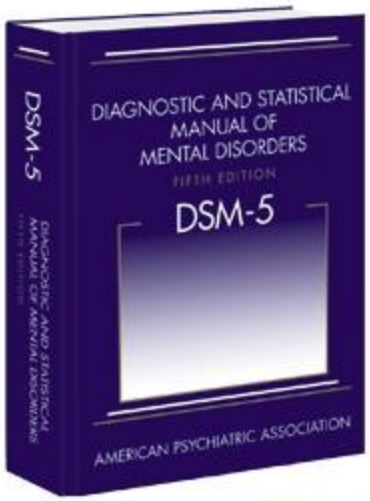
BOYS



Are four times more likely than girls to have autism

1 in 88 children



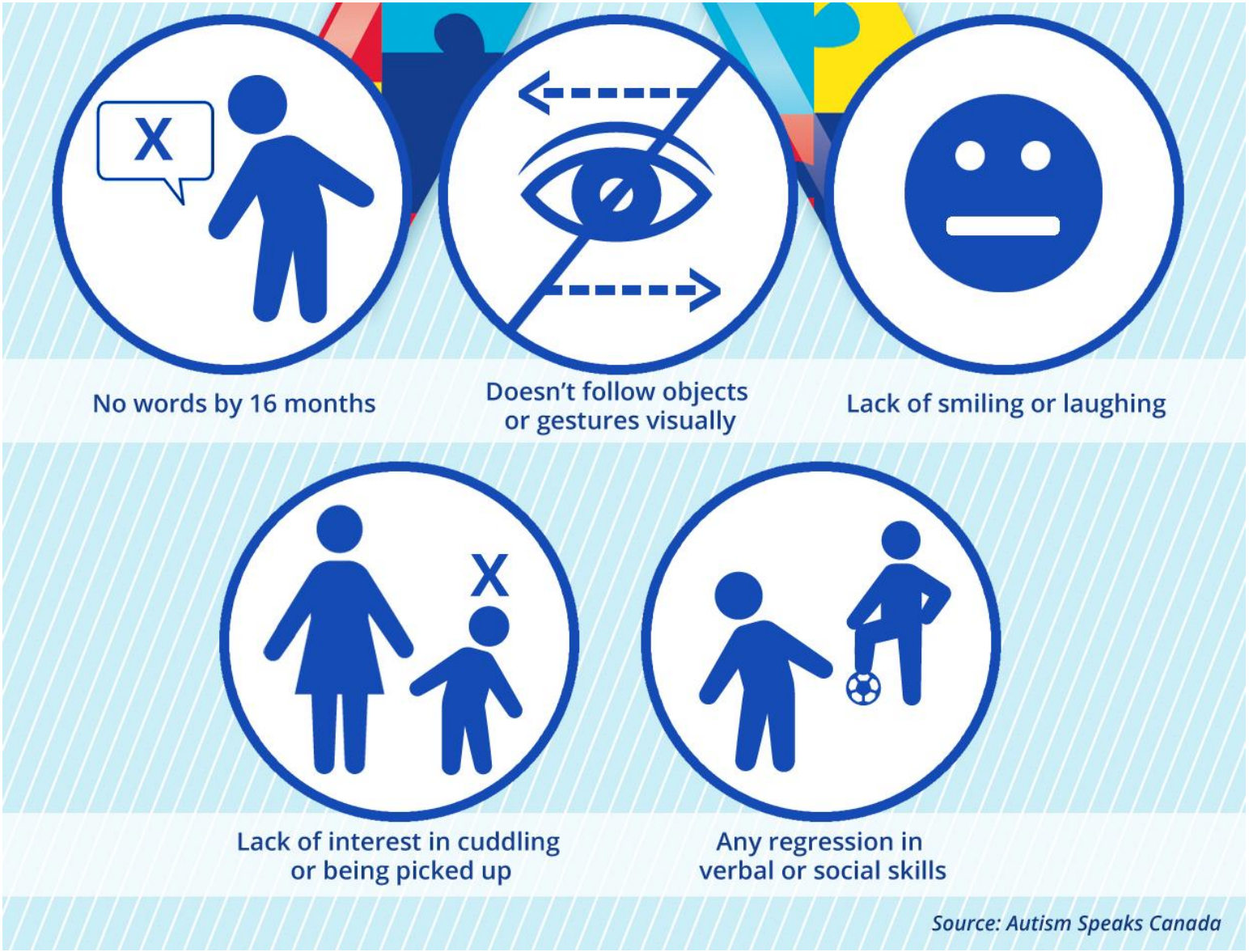


Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)

- **Autism spectrum disorders**
  - Includes **Autism**, **Asperger syndrome**, PDD-NOS, and child disintegrative disorder (CDD)
  - Concentrates on required features
    - Social/communication issues
    - Limited, repeating behaviors, interests
    - Sensory issues

Early Symptoms in toddlers

Early Symptoms in toddlers



Common Symptoms of Autism in Children

Common Symptoms of Autism in Children


Boardmaker
EDMARK
then
first
CHIPS

Educating children with Autism

- Treatment and Education of Autistic and Related Communication Handicapped Children (TEACHH) and PECS (Picture exchange communication system)

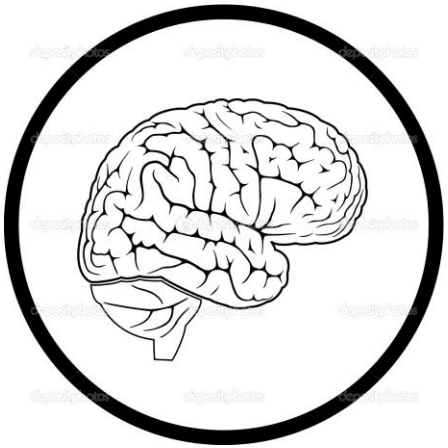
Structured Teaching

- Considers a student's special interests
- Relies on data to make or change programming
- Increases independent functioning in many environments

Visual Supports

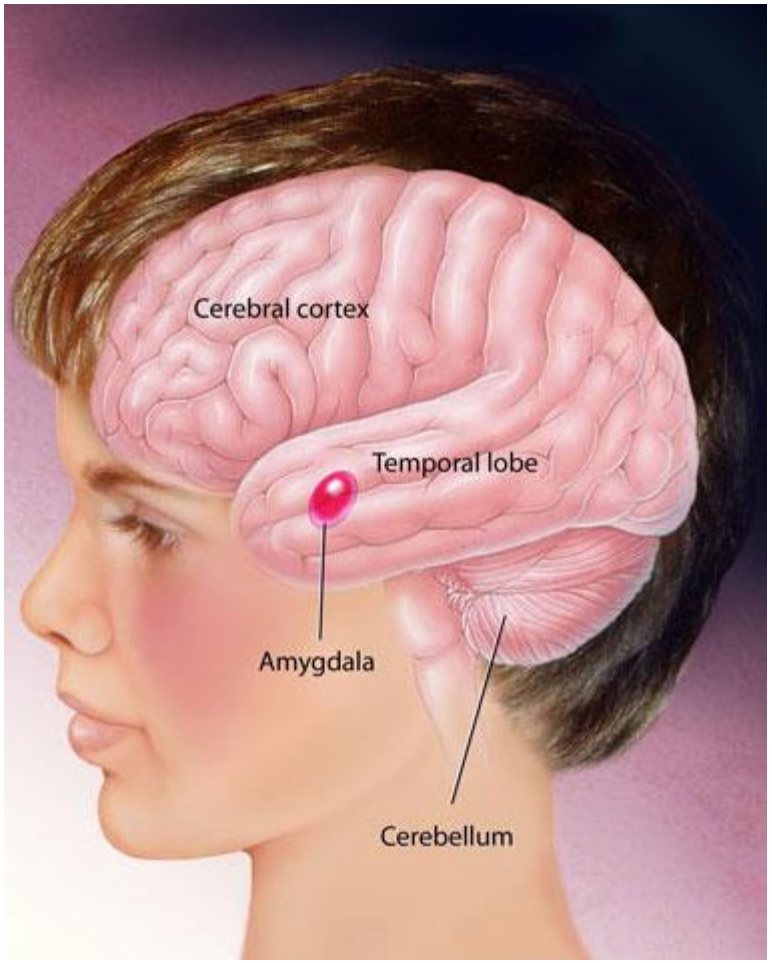
- **Things you can make to address student needs**
  - Schedules
  - Calendars
  - Choice Boards
  - Rule Charts
  - Lists
  - Instructions
  - Behavior clues

Autism and the Brain



Areas of Possible Difficulty	**Functions**
Prefrontal Cerebral Cortex	Social thinking
Hypothalamus	Attachment behaviors
Amygdala	Social orientation, emotional learning
Fusiform Gyrus	Face recognition
Middle Temporal Gyrus	Recognition facial Expression
Pulvinar	Emotional relevance

Macrocephaly: 10-20% larger brain size



Larger Amygdala

Key role in the processing of emotions. This brain structure is linked to both fear responses and pleasure as well as anxiety.

CAT

TIGER

Hypo (under) Sensitive

Normal

Hyper (over) Sensitive

Sensory overload.

Sensory integration therapy

sound, lights, touch

MIT Media Lab Games for Autism Spectrum Disorders

Auditory Desensitization

Persons on the autism spectrum often report hypersensitivity to sound. Efforts have been made to manage this condition, but there is wide room for improvement. One approach - exposure therapy – has promise, and studies show that it can help some individuals overcome sound sensitivities.

In this project, we borrow principles from exposure therapy and use fun, engaging, games to help individuals gradually get used to sounds that they might ordinarily find frightening or painful. Offending sounds are gradually introduced into the games as sound effects, where they are paired with rewarding and pleasant elements of the gameplay.

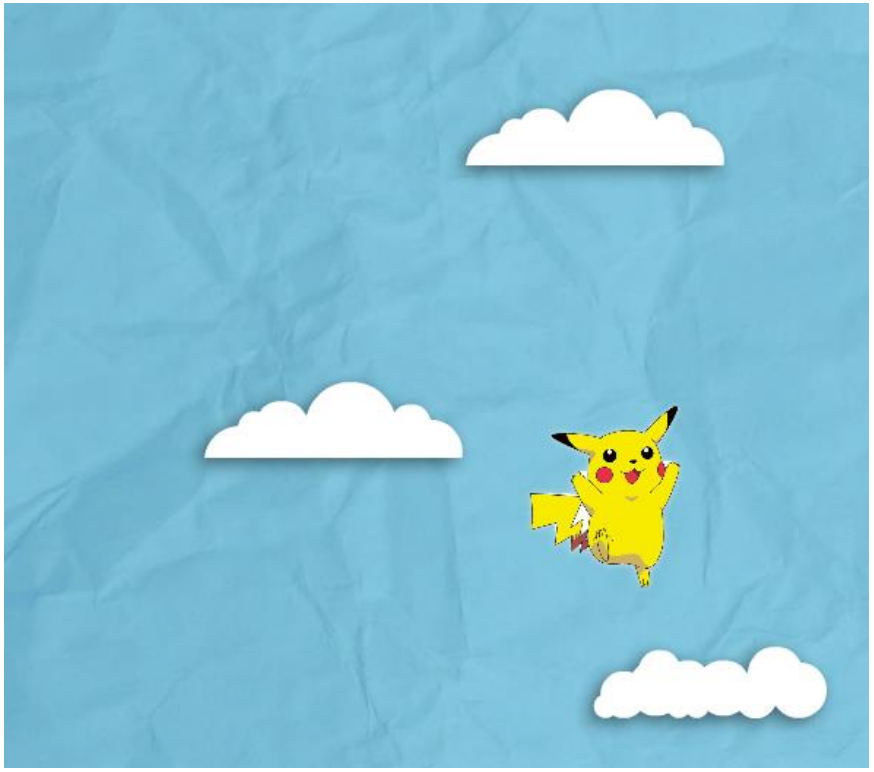
Research Contact

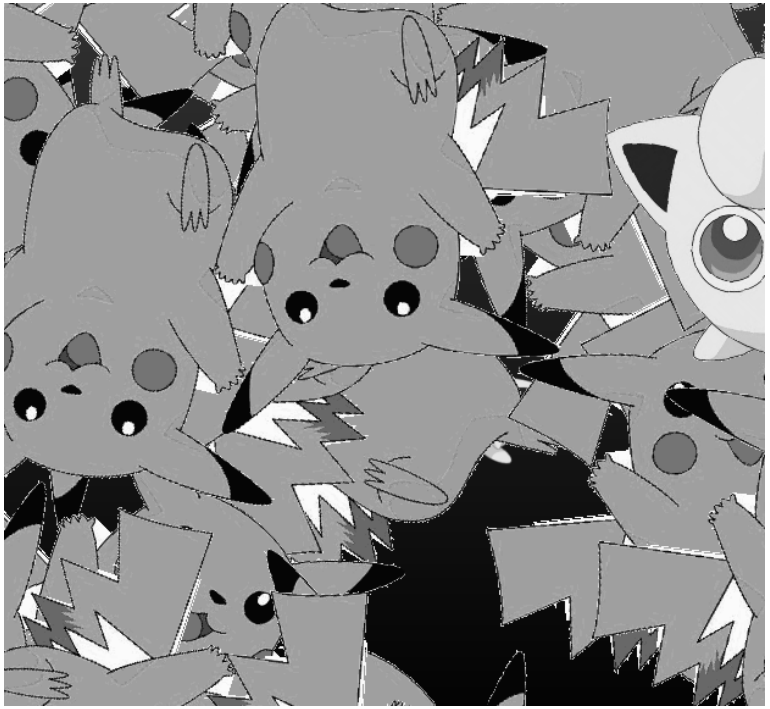
This project was designed at the MIT Media Lab, by researchers in the Affective Computing Group.

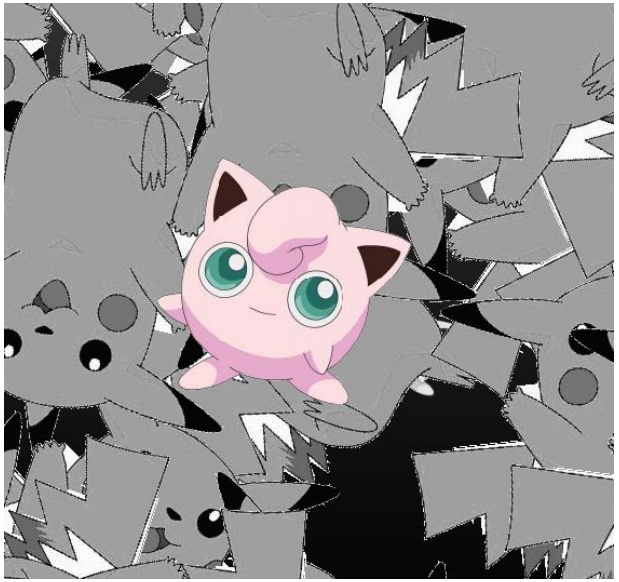
For more information about this project, please contact Rob Morris at:

rmorris [at] media.mit.edu

Interest based learning







Emotions

LISTS 10/15/2010 @ 12:12PM | 2,234 views

New Technology Coaches Autistic Children and Their Caretakers on Emotional Understanding

+ Comment Now + Follow Comments

I'm spending the day at the M.I.T. Media Lab's 25th anniversary celebration—an exuberant open house and series of lectures that's drawn a crowd of academics, technophiles and reporters to swirl around rooms full of robots, sensors and smart screens at the lab's new building here in Cambridge, Mass.

My first meeting is with Media Lab professor Rosalind Picard, an electrical engineer by training who develops ways to measure emotional response. When I walk into her

The MIT Media Lab, Cambridge, Mass. Photo courtesy of MIT.

Professor Rosalind W. Picard

Director

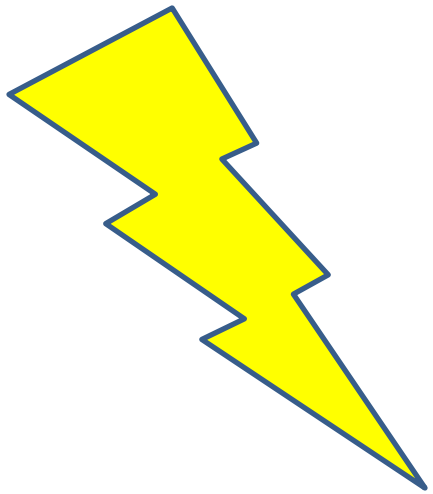
Affective Computing Research Group

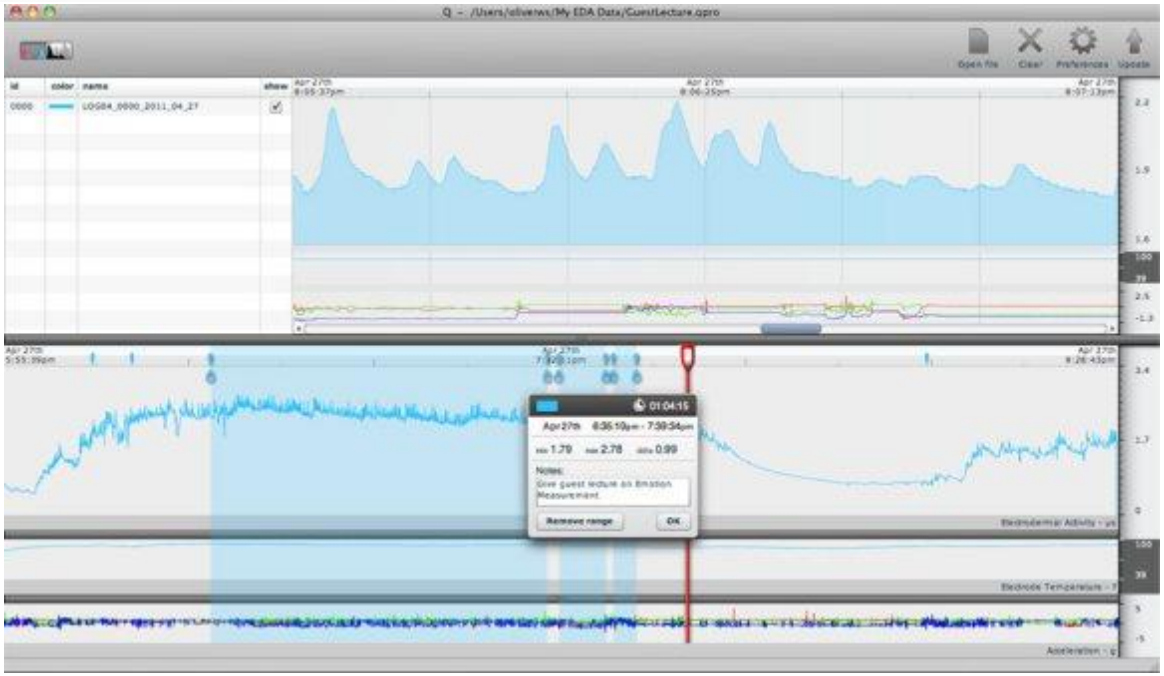
MIT Media Lab

affectiva

Q Sensor

What is Electrodermal Activity (EDA

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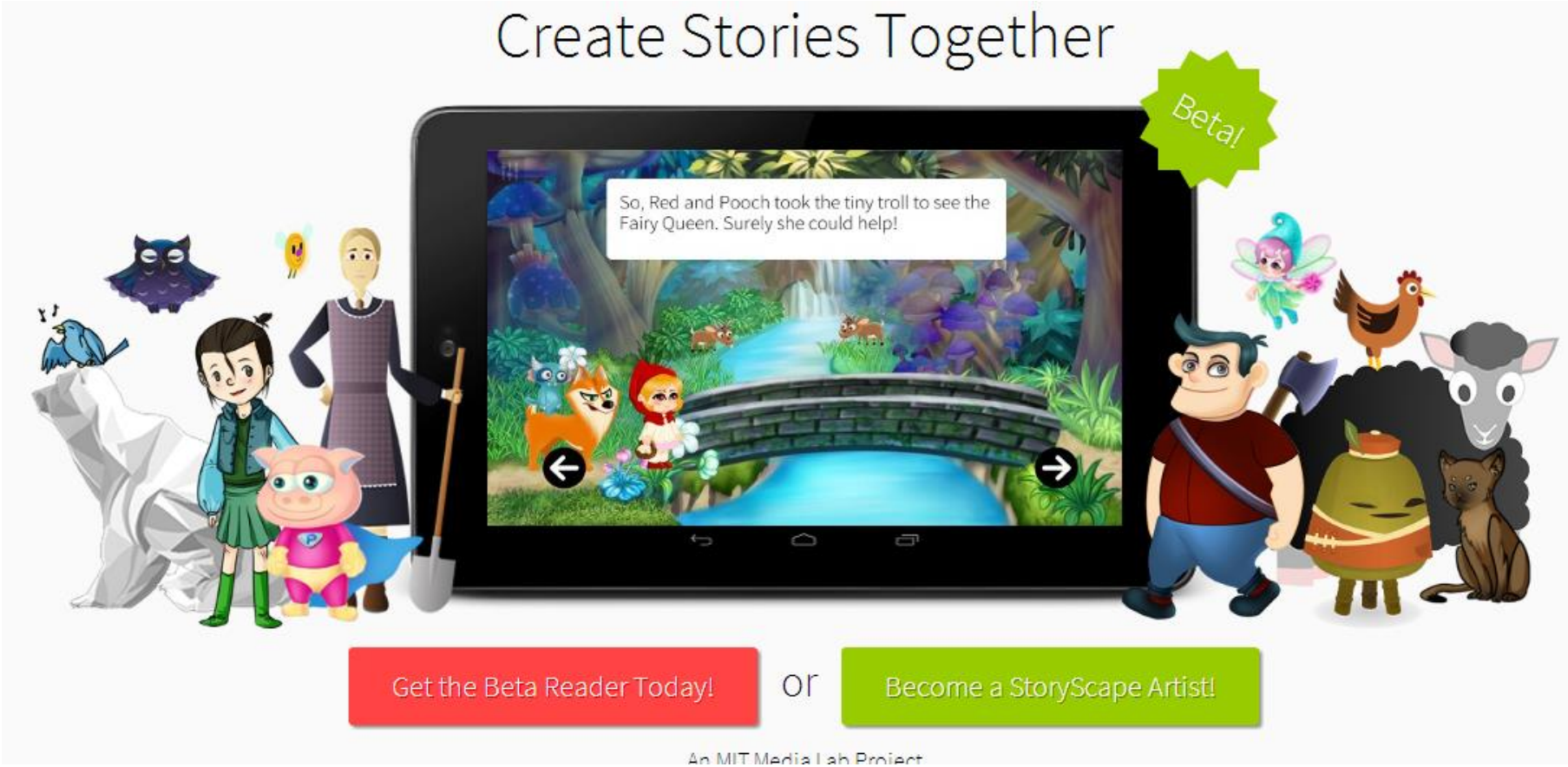
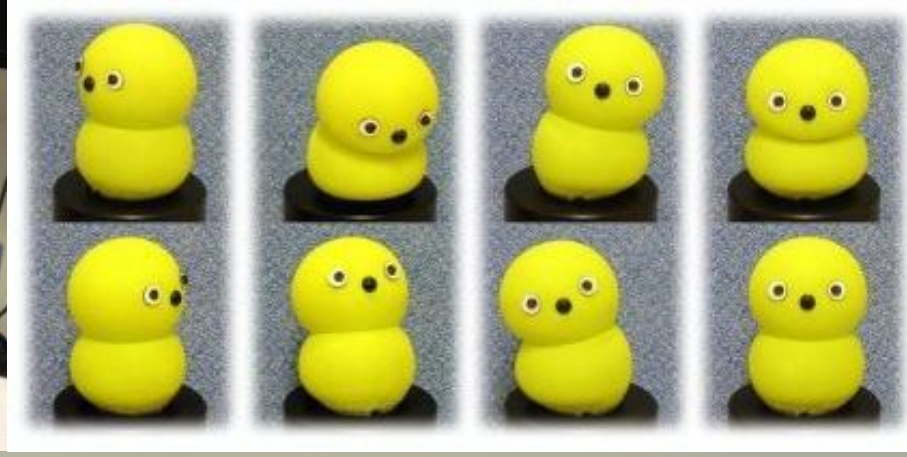
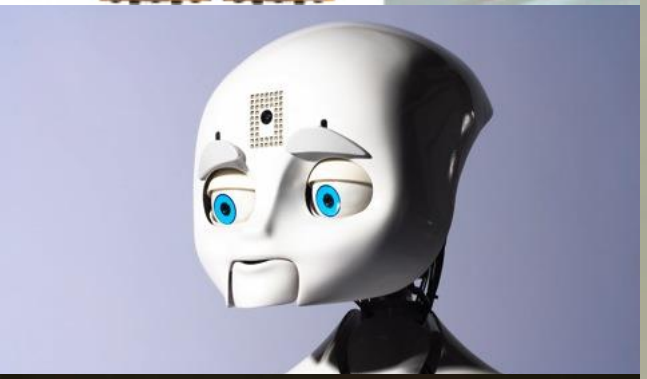
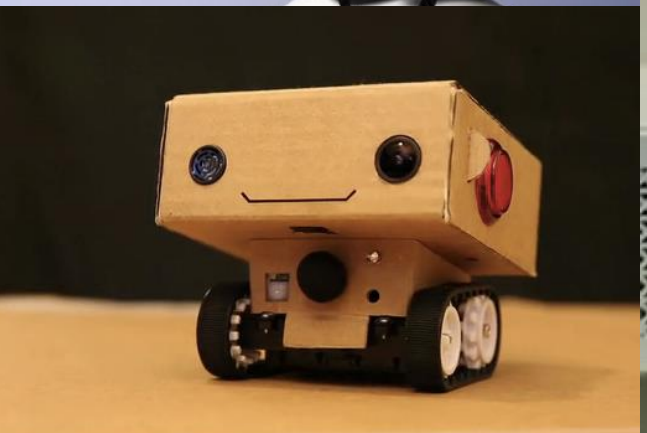
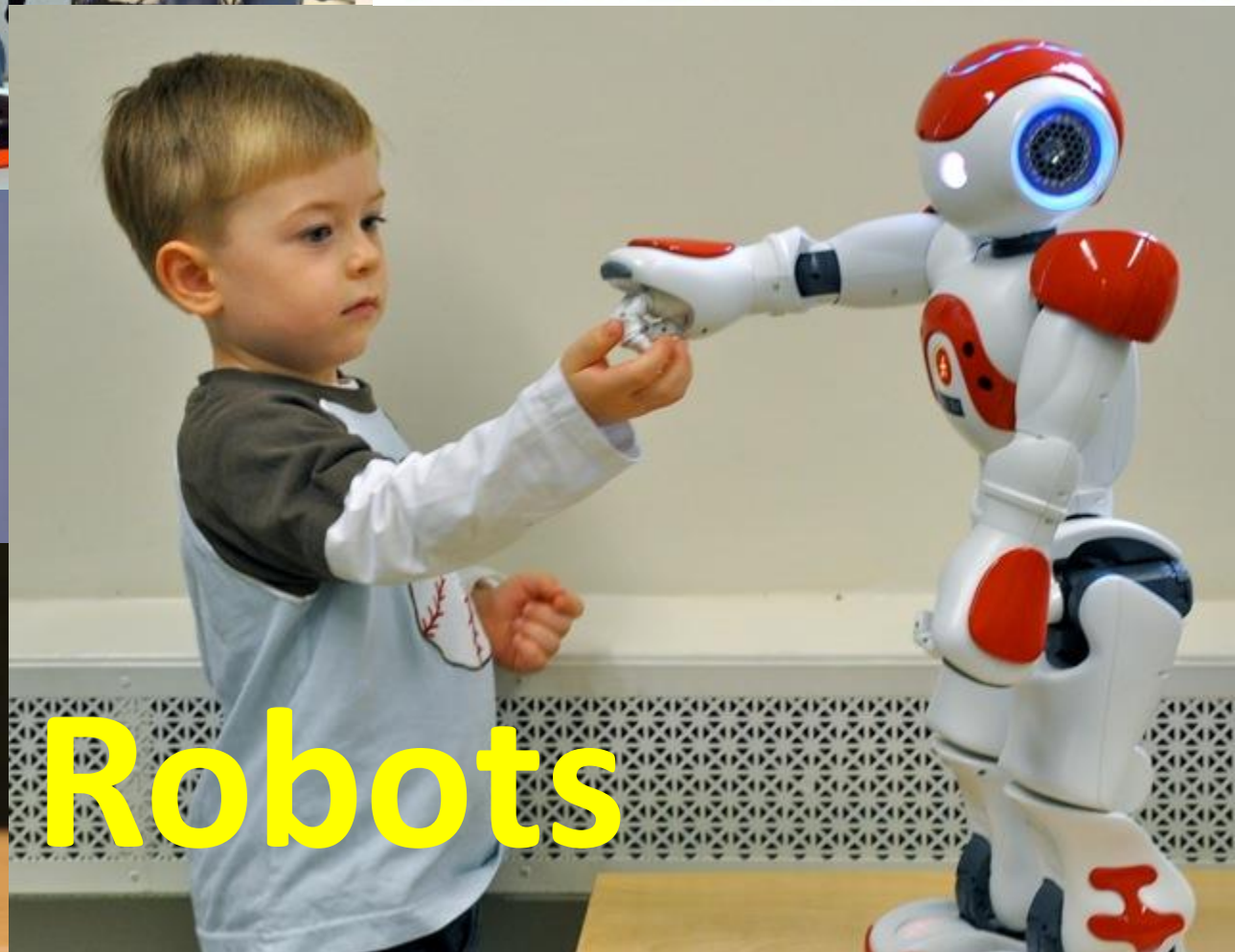
Social Stories



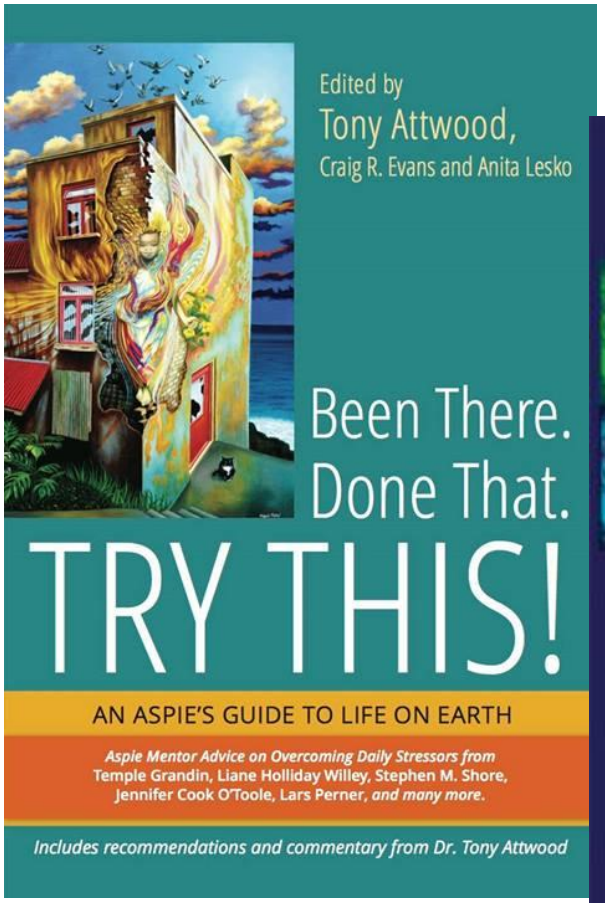
http://storyscape.io

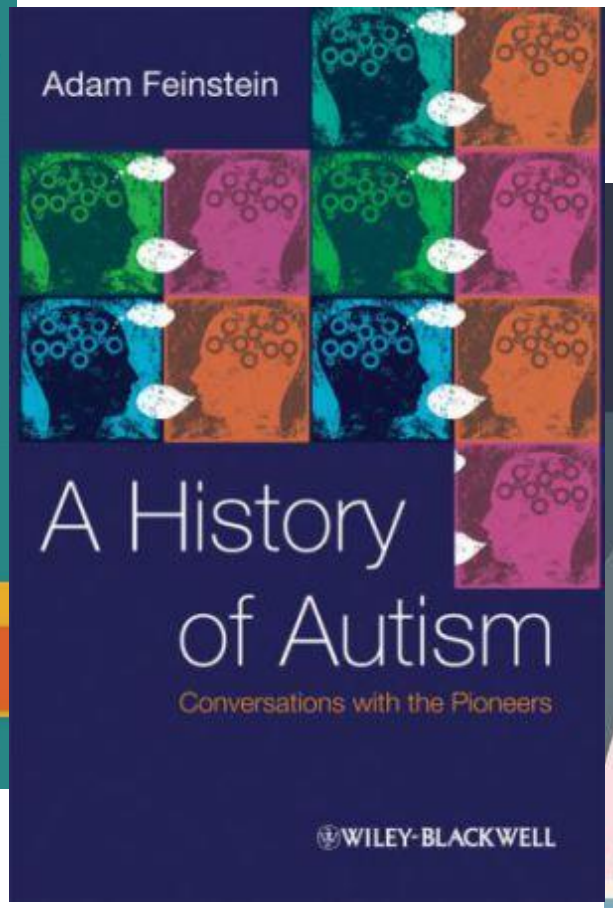


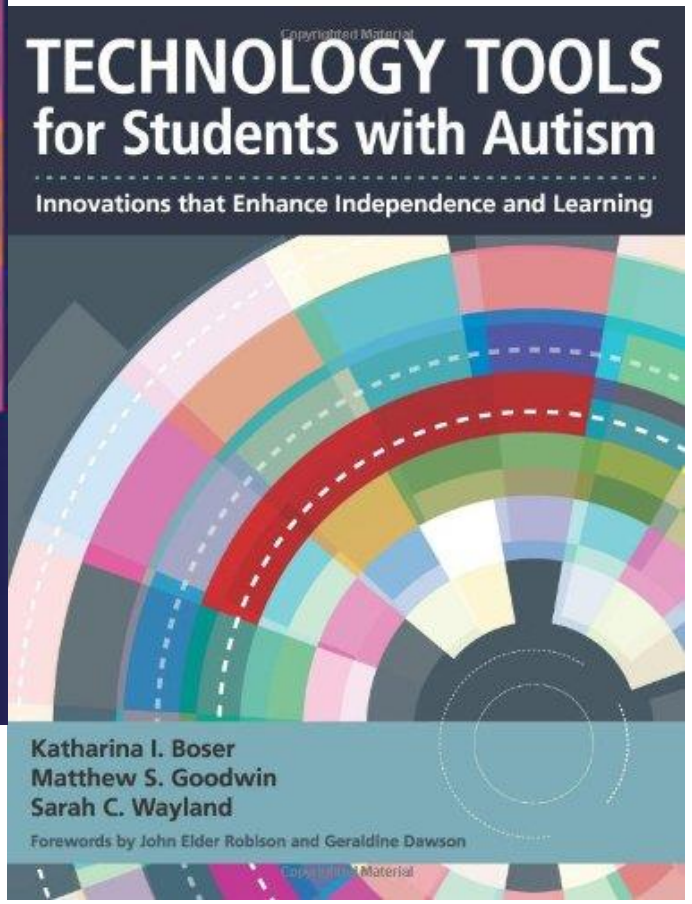






Robots

Further reading







The Future?

In general trend has been towards greater improvement

- Better adult outcomes
- More individuals with language
- Higher levels of IQ

Problems do remain, difficulties understanding ‘normal’ ‘cure’

Career possibilities to help people on the Autism spectrum: Game Designers, Neuroscientists, Special Educators, Researchers (psychology),