

Update: *Let's Face It!*/ Face Camp/CERT

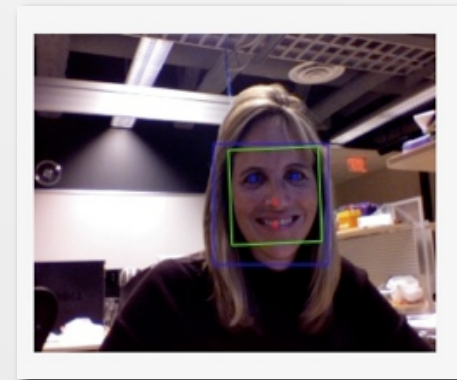
Jim Tanaka (Univ. of Victoria)

Matt Pierce (Univ. of Victoria)

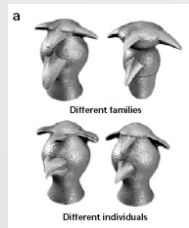
Marni Bartlett (UCSD)

Javier Movellan (UCSD)

Bob Schultz (Children's Hospital of Philadelphia)



Research, intervention, dissemination: From the lab to the classroom



Research I



Intervention



Dissemination



Time (yrs)

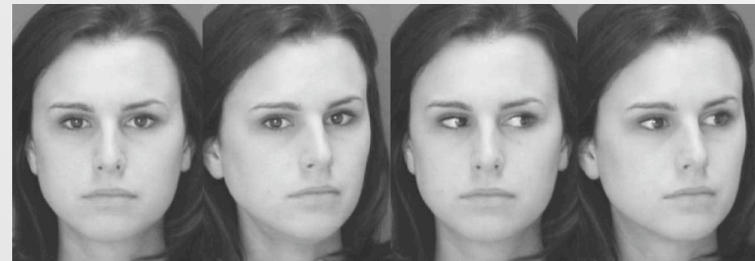
Virtually everyone is an expert at face recognition . . .



Identity



Expression



Gaze

Children with autism are impaired in their face recognition skills

Deficits in processing eye gaze

Volkmar et al., 1986; Joseph & Tager-Flusberg, 1997; Kasari et al., 1990

Deficits in processing facial identity

Langdell 1978; Hobson et al. 1988; Joseph & Tanaka, 2002; Klin et al., 1999

Deficits in processing facial expression

Adolphs et al., 2001; Weeks & Hobson, 1987



Assessing face processing in children with autism: The *Let's Face It!* Skills Battery

RESEARCH ARTICLE

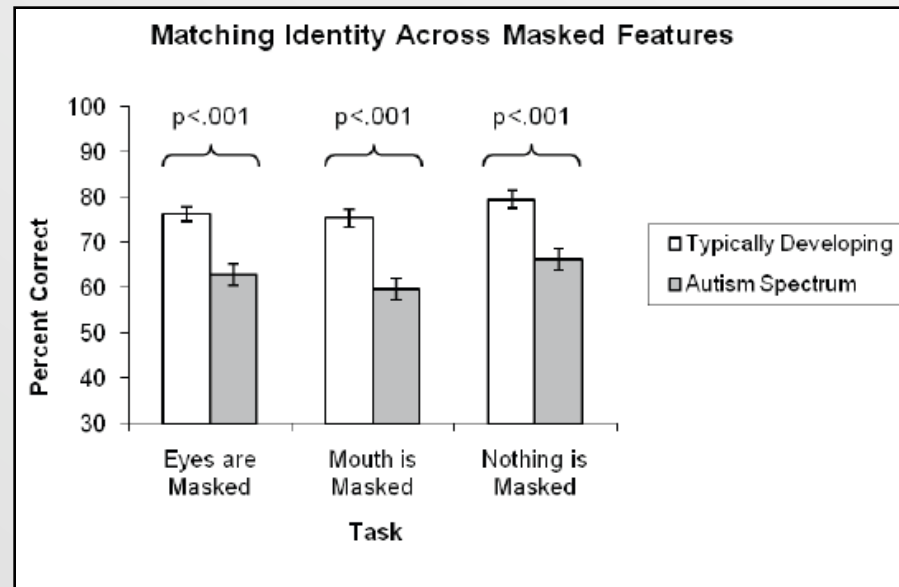
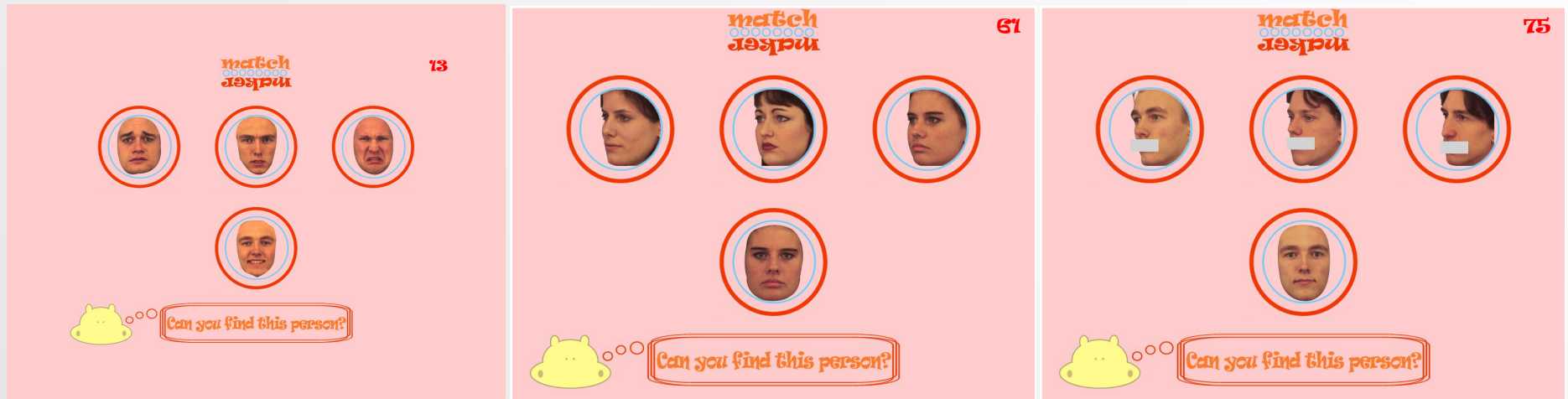
Specific Impairment of Face-Processing Abilities in Children With Autism Spectrum Disorder Using the *Let's Face It!* Skills Battery

Julie M. Wolf, James W. Tanaka, Cheryl Klaiman, Jeff Cockburn, Lauren Herlihy, Carla Brown, Mickle South, James McPartland, Martha D. Kaiser, Rebecca Phillips, and Robert T. Schultz

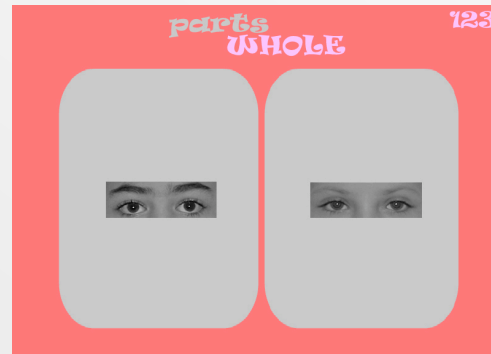
Although it has been well established that individuals with autism exhibit difficulties in their face recognition abilities, it has been debated whether this deficit reflects a category-specific impairment of faces or a general perceptual bias toward the local-level information in a stimulus. In this study, the *Let's Face It!* Skills Battery (Tanaka & Schultz, 2008) of developmental face- and object-processing measures was administered to a large sample of children diagnosed with autism spectrum disorder (ASD) and typically developing children. The main finding was that when matched for age and IQ, individuals with ASD were selectively impaired in their ability to recognize faces across changes in orientation, expression and featural information. In a face discrimination task, ASD participants showed a preserved ability to discriminate featural and configural information in the mouth region of a face, but were compromised in their ability to discriminate featural and configural information in the eyes. On object-processing tasks, ASD participants demonstrated a normal ability to recognize automobiles across changes in orientation and a superior ability to discriminate featural and configural information in houses. These findings indicate that the face-processing deficits in ASD are not due to a local-processing bias, but reflect a category-specific impairment of faces characterized by a failure to form view-invariant face representations and discriminate information in the eye region of the face.

Wolf et al. 2009, *Autism Research*

Recognition across changes in expression, viewpoint and features

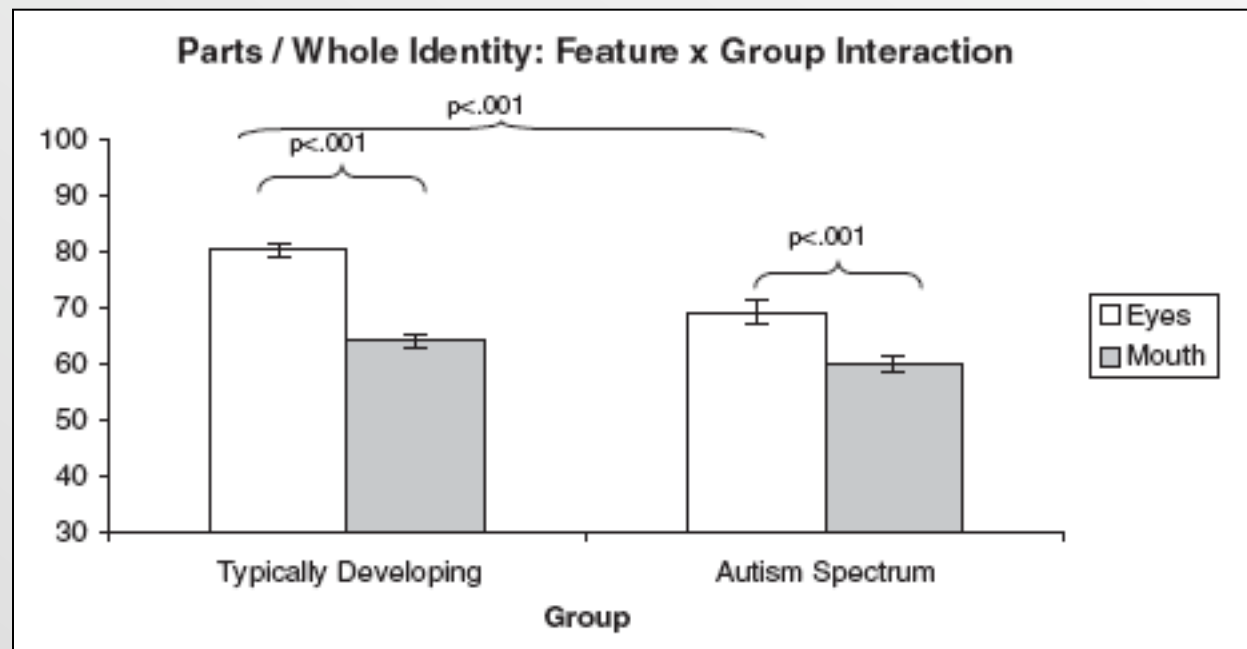


Parts/wholes face recognition

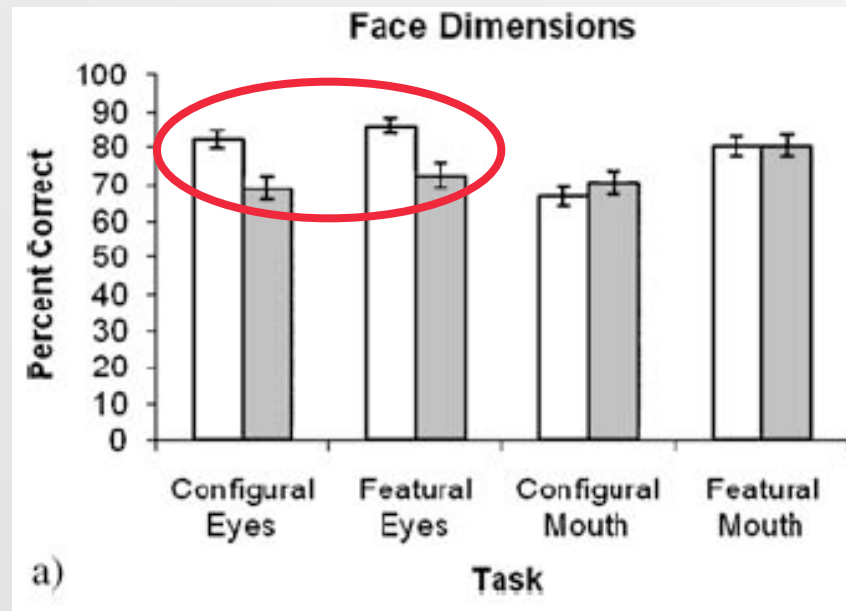
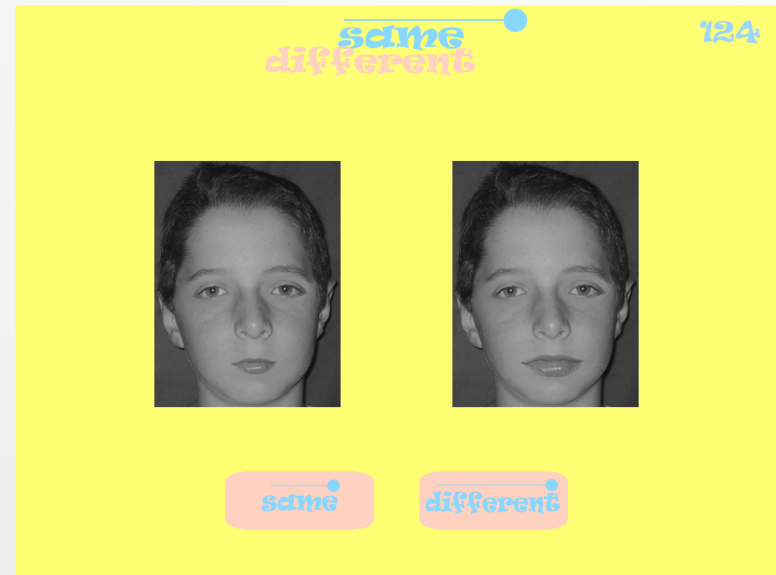
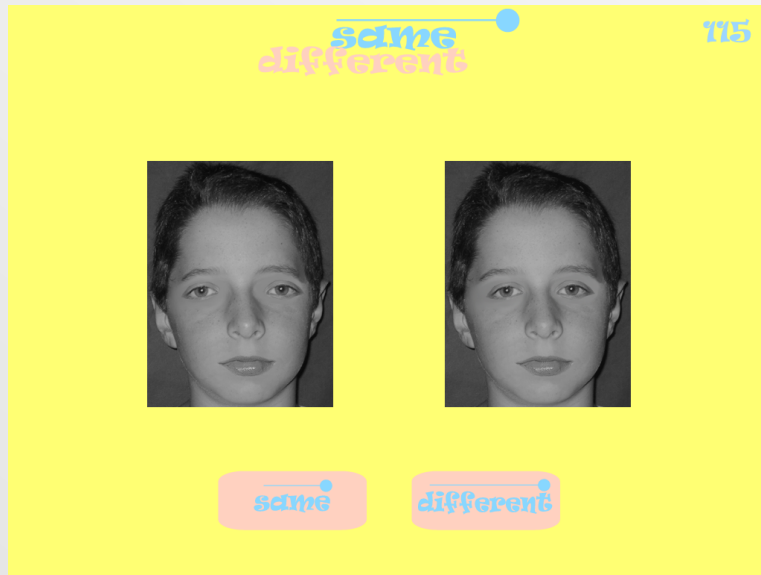


Part Test

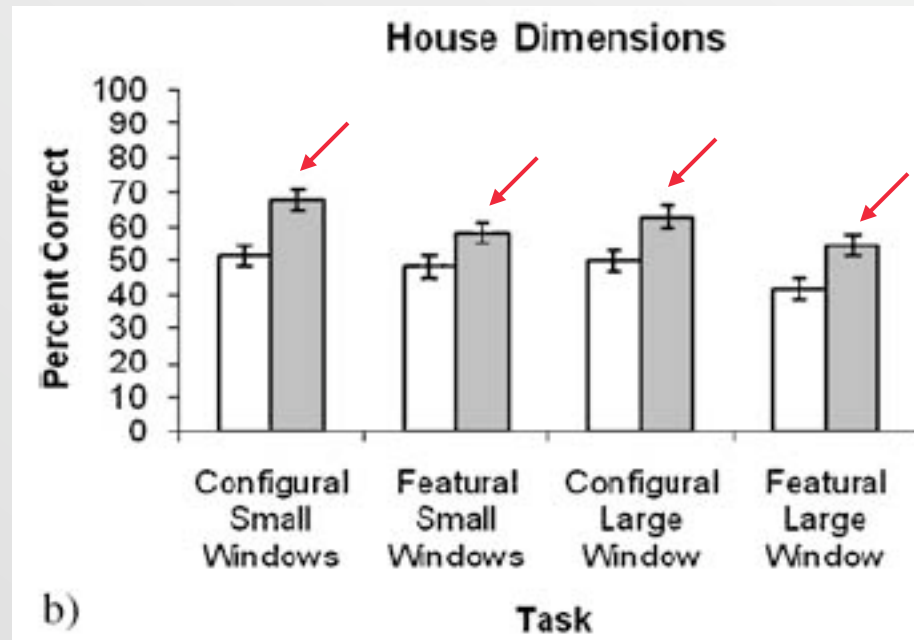
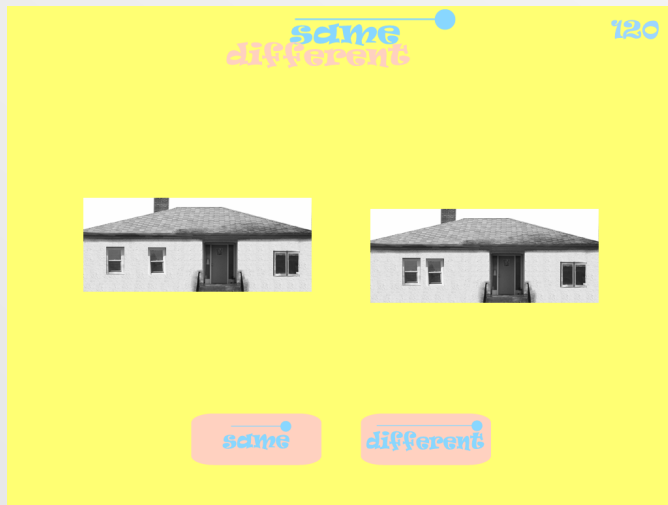
Whole Face Test



Same/Different Faces



Same/Different Houses

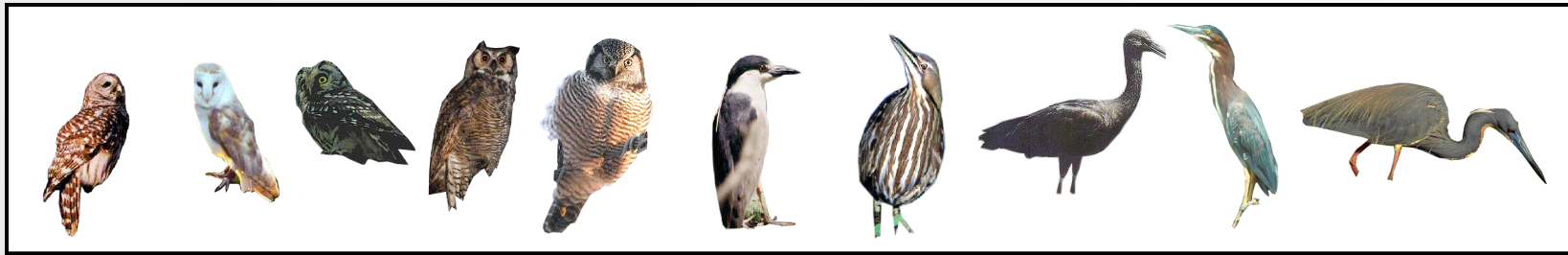


Typically Developing
 Autism Spectrum

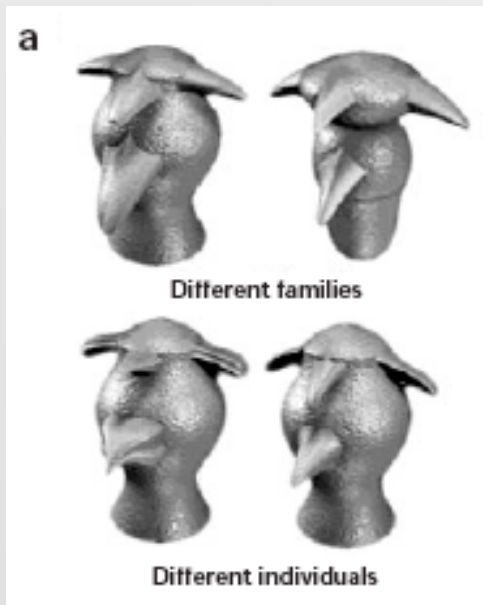
Conclusions

- Children with autism have more difficulty establishing view and expression invariant face representations.
- Children have deficits in processing information in the eye region.
- Children with autism are better than typically developing children in discriminating the fine details of houses.

Training up expertise



Owls and Wading Birds (Tanaka, Curran & Sheinberg., 2005; Scott, Tanaka, Curran & Sheinberg 2006)



Greebles (Gauthier & Tarr, 1999)

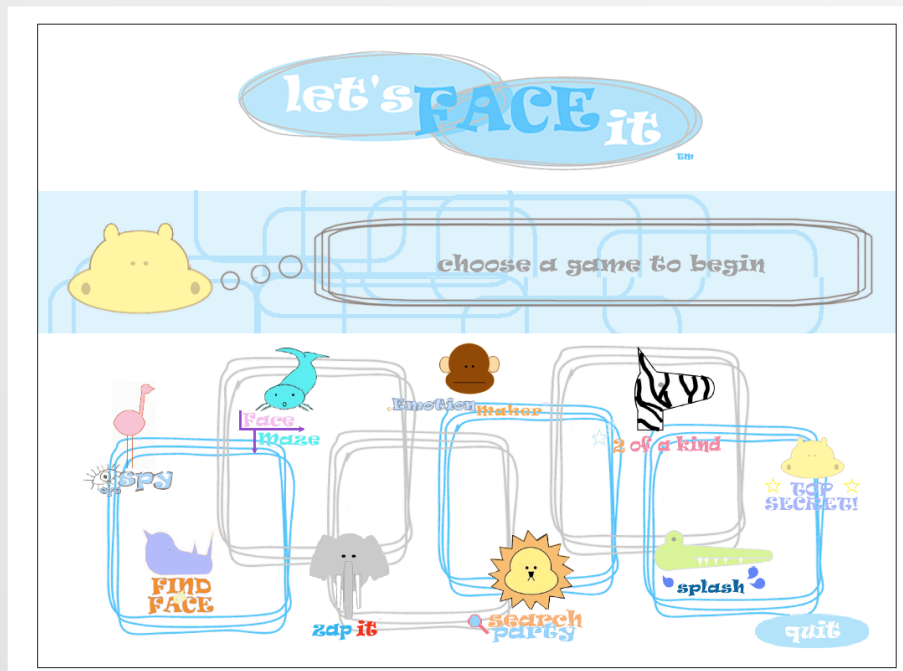


Other-Race Faces

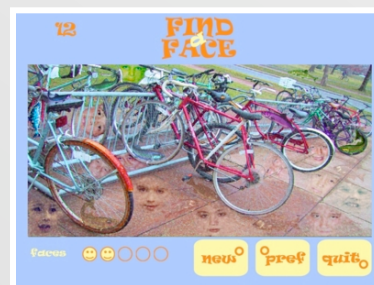
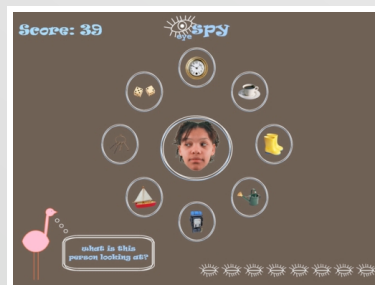
(Lebrecht, Tarr, Pierce & Tanaka, 2009; Tanaka & Pierce, in press.)

Applying an expertise framework, can we train up face processing skills in children with autism?

Can face processing deficits in children with autism be ameliorated through instruction?: The *Let's Face It!* Program

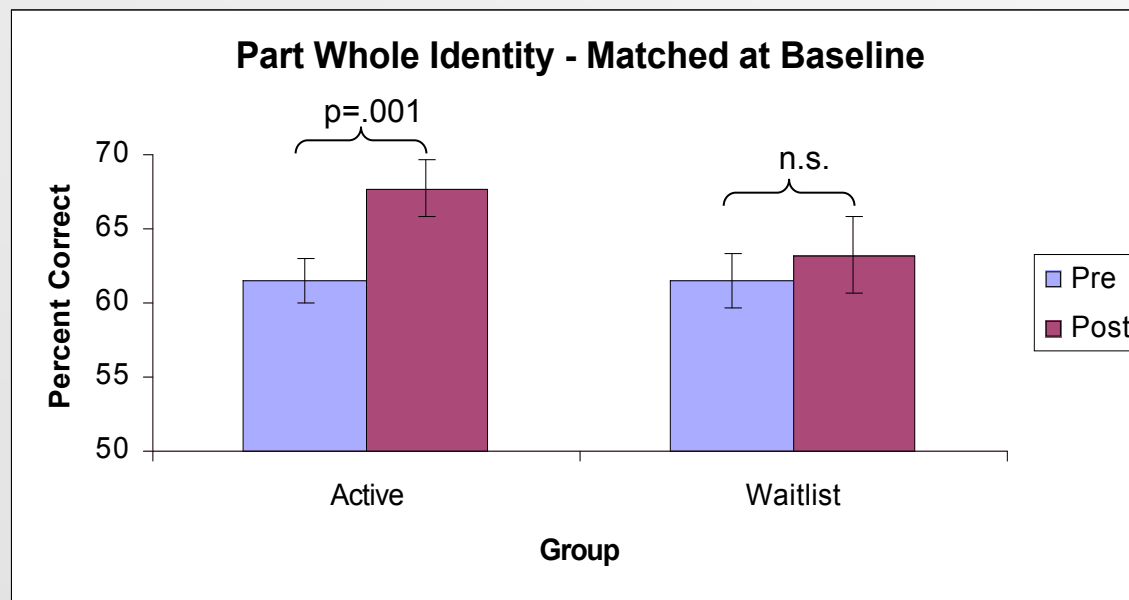


- Computer-based intervention in face perception and recognition
- Seven different activities emphasizing face processing skills in eye gaze, recognition of identity and expression
- Program logs the child's high scores and time on game



Results

In a randomized clinical trial, children who played the *Let's Face It!* games for 20 hours or more outperformed children from the ASD control group on measures of part & whole face recognition.



Missing pieces from *Let's Face It!* program

- **Static images (no temporal dynamics)**

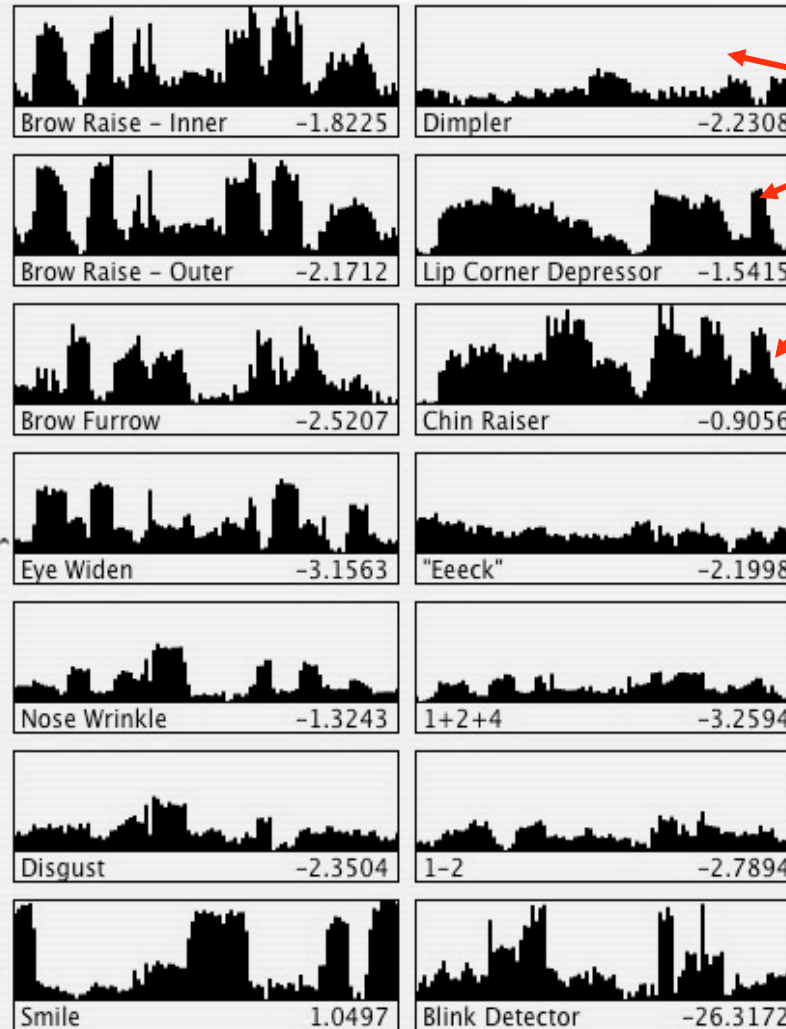
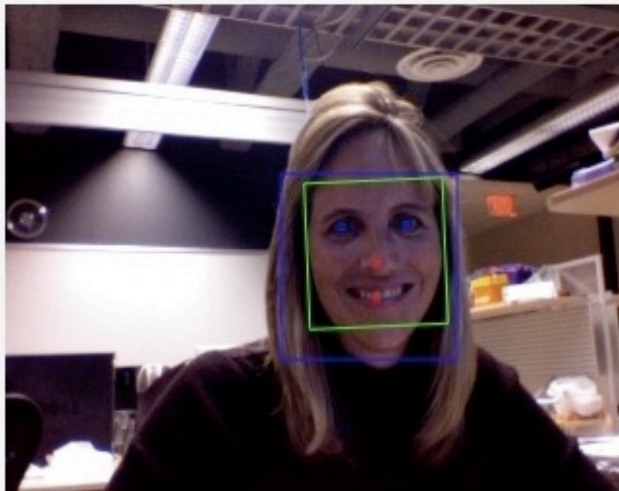


- **Passive engagement**

- **No effects on facial expression**

The Computer Expression Recognition Toolbox (CERT)

Ekman Action Units (AU's)



Find Faces

Video Settings:

Width: 320

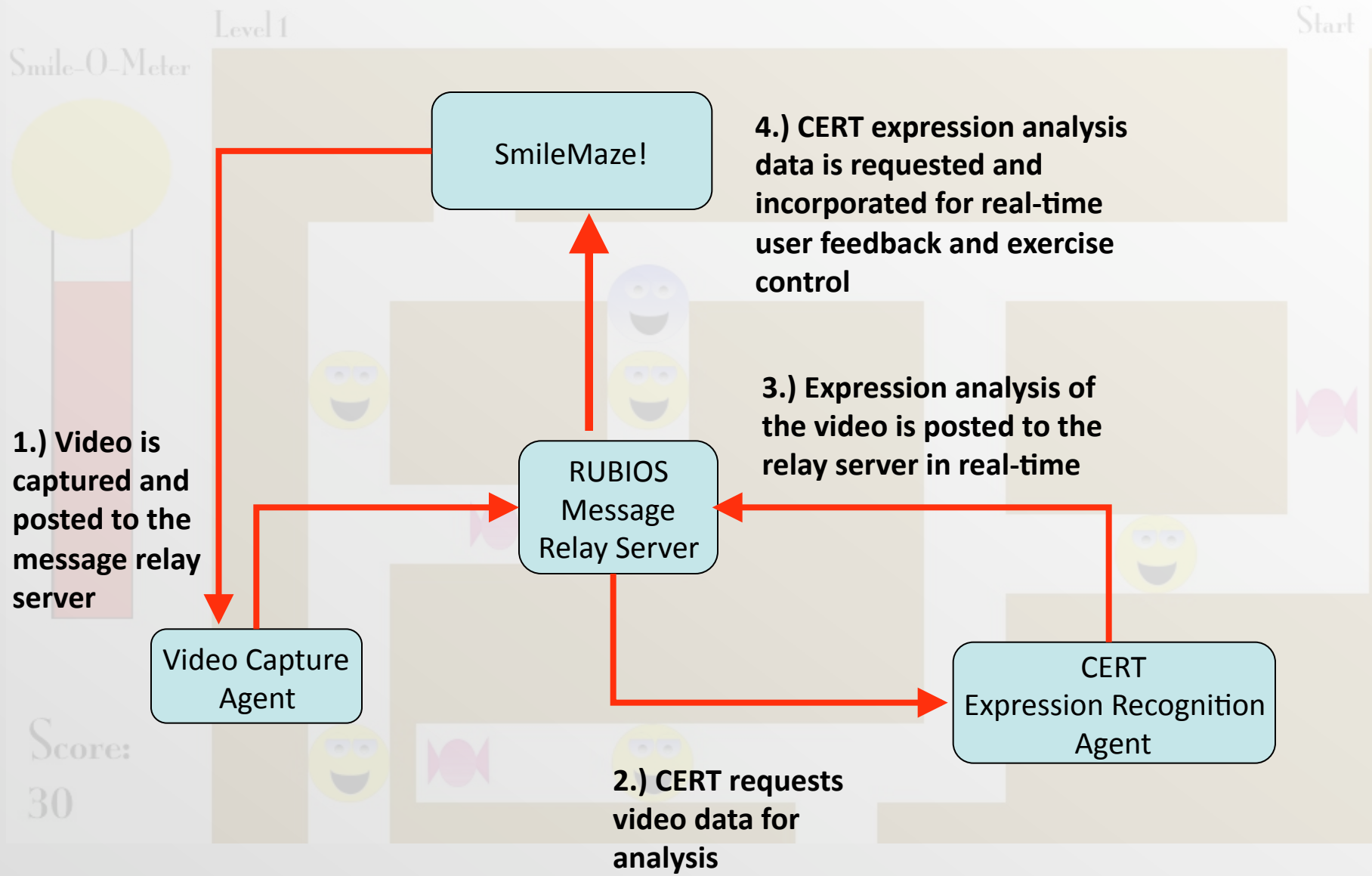
Left Eye: {208.032, 108.244}

Height: 240

Right Eye: {175.046, 109.645}

Frame Rate: 4.75

How to Play: Smile to Fill the Meter!



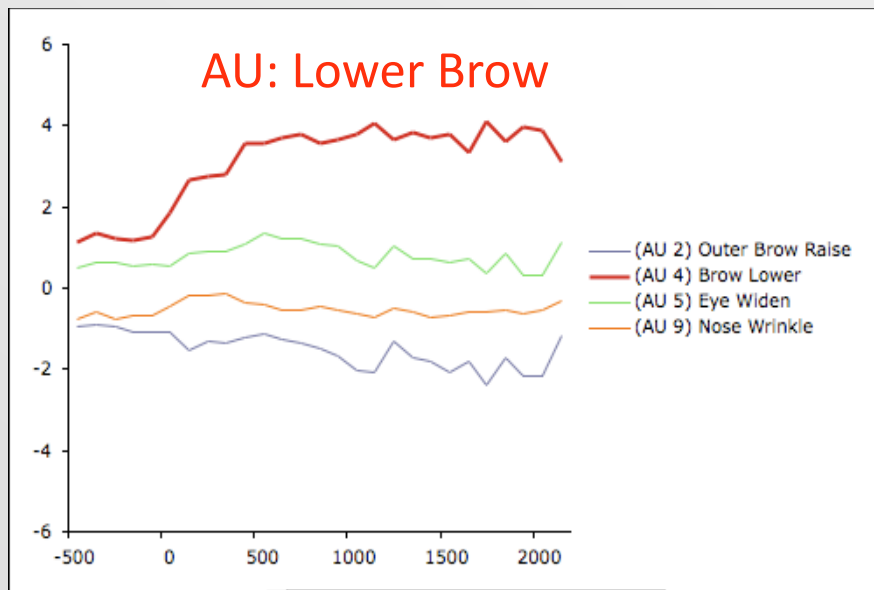
(Insert Demo here)

Comparing CERT to electromyography (EMG)

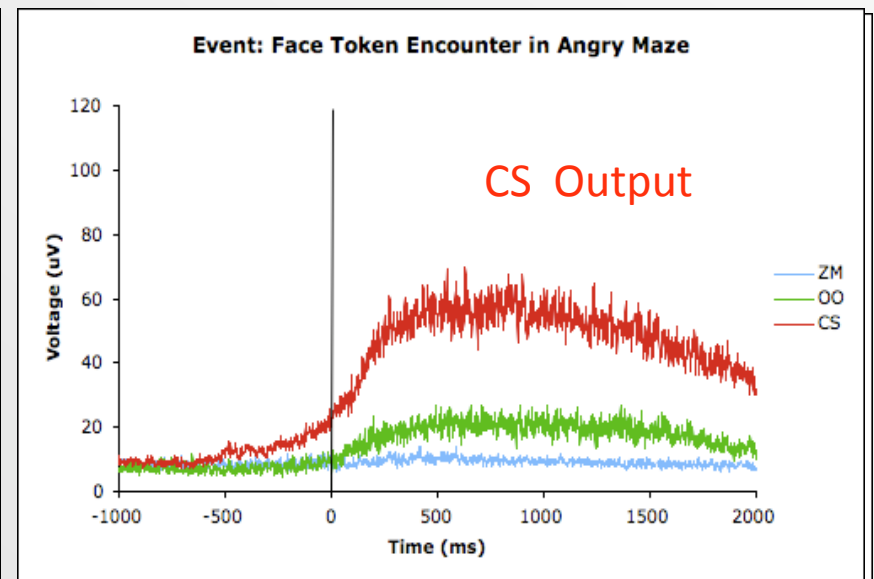
Corragator
Supercilli (CS)



Zygomatcus
Major (ZM)

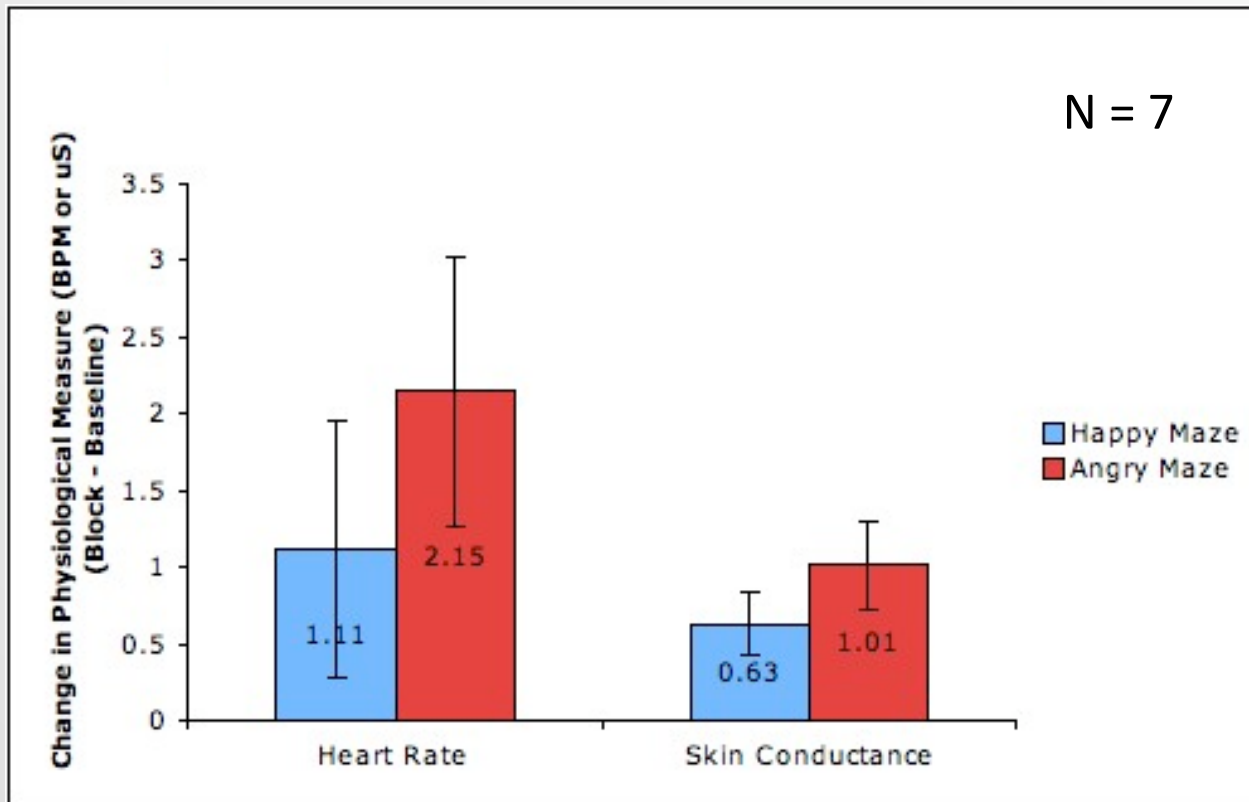
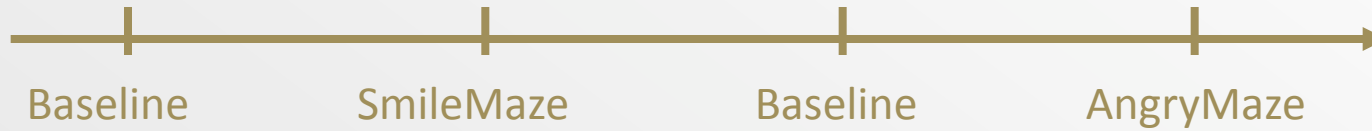


CERT Output

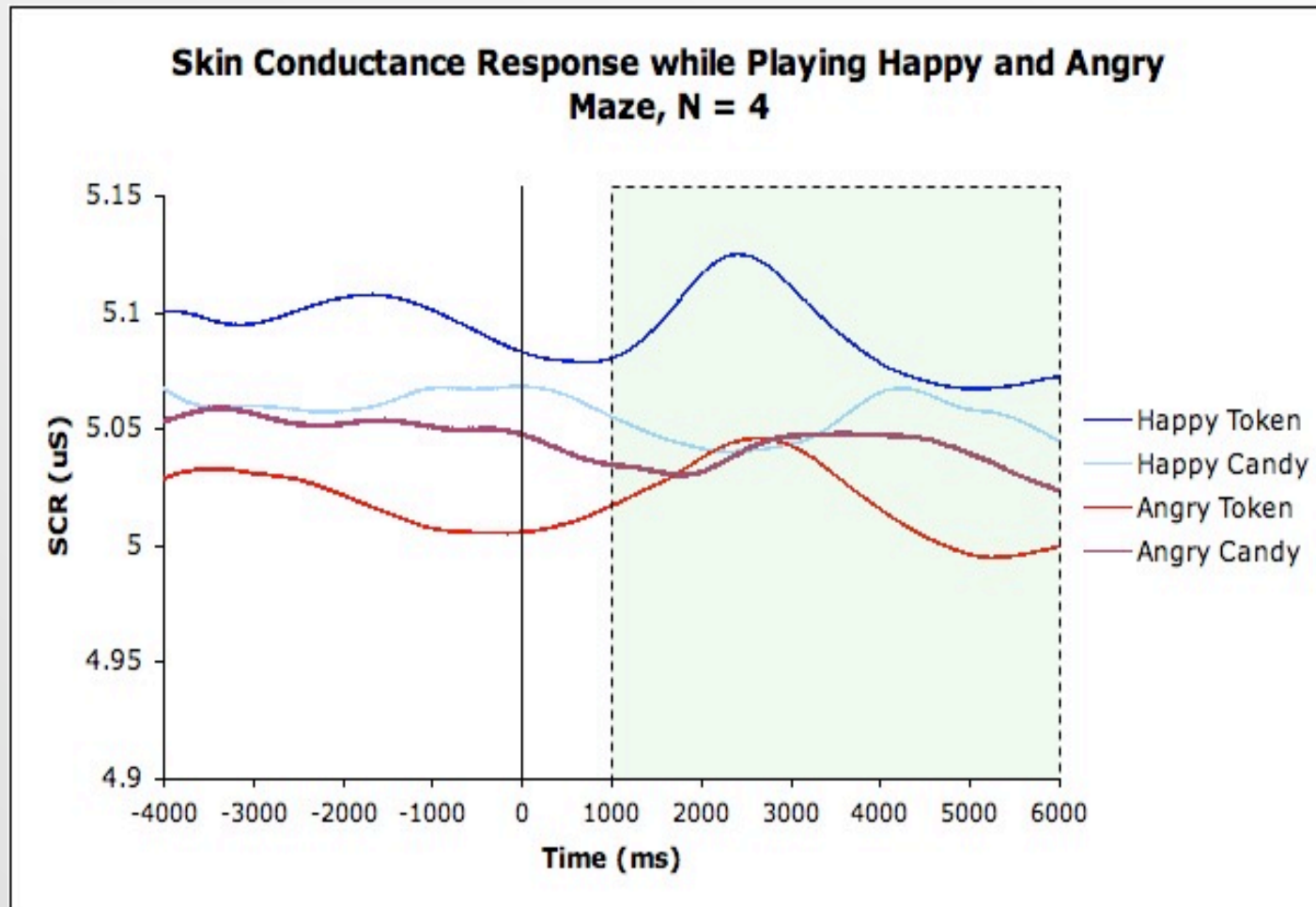


EMG Output

Physiological measures (Heart Rate, Skin Conductance) while playing SmileMaze



Event-related skin conductance



Self-report measure of affect (PANAS) after playing Smile/Angry Maze

questionnaire

http://localhost/~matt/questionnaire/

Mood Questionnaire:

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then select (click) the appropriate answer from the scale. Indicate to what extent you feel this way right now (that is, at the present moment):

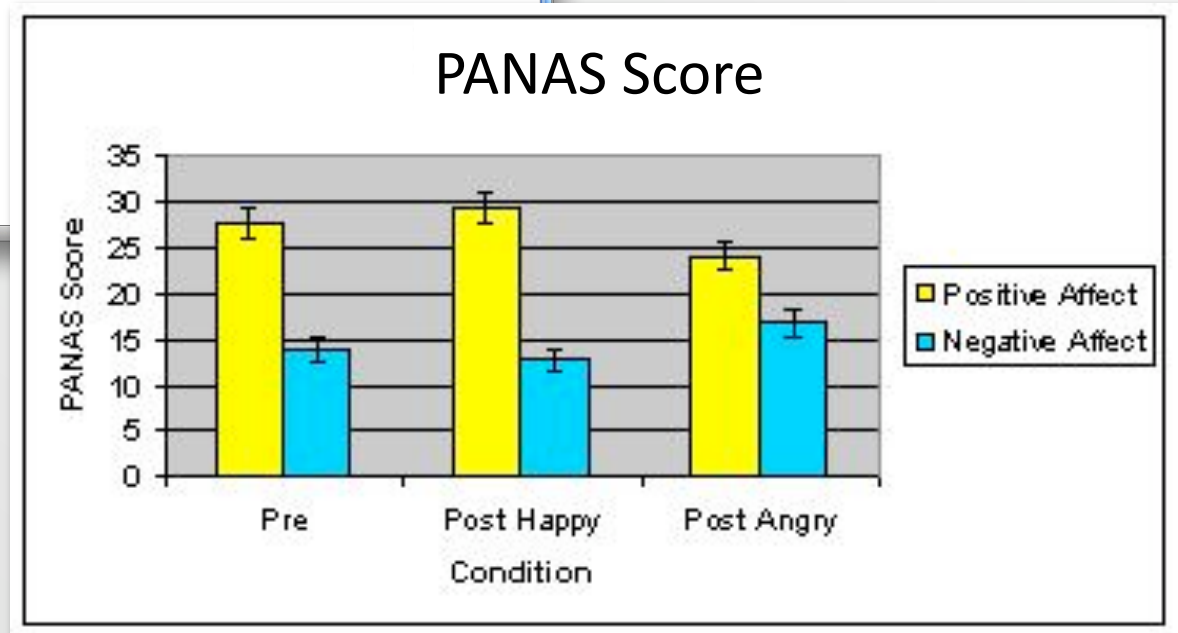
Do You Feel...

Afraid

Very Slightly or Not At All A Little Moderately Quite a Bit Extremely

[Next](#)

Done

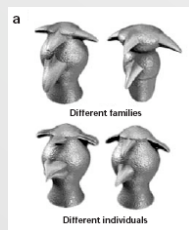


Questions for future research

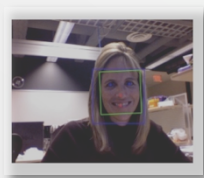
Do children with autism perceive and produce dynamic facial expressions differently than typically developing children?

Do children with autism differ in the physiological correlates of emotion?

If there are deficits, can they be remediated through CERT training?



Research I



Intervention



Dissemination



Time (yrs)

The challenge of dissemination

The screenshot shows a web browser window displaying the website 'Let's Face It!'. The browser's address bar shows the URL 'http://web.uvic.ca/~jtanaka/letsfaceit/'. The website has a blue header with the logo 'let's FACE it'. A navigation menu on the left includes links for Home, Test Your Face IQ, Computer Fun, Face Activities, Downloads, and Links. Below the navigation menu, there is a section titled 'The Let's Face It! website is supported by funding from:' with logos for the 'Temporal Dynamics of Learning Center' and 'The Perceptual Expertise Network'. The main content area features a large 'let's FACE it' logo, a section titled 'About Let's Face It!' with a paragraph of text and an image of a child at a computer, and a section titled 'LFI/CERT Integration' with another paragraph of text. The browser's status bar at the bottom indicates 'Internet | Protected Mode: On' and a zoom level of '100%'.

Navigation:

- Home
- Test Your Face IQ
- Computer Fun
- Face Activities
- Downloads
- Links

The Let's Face It! website is supported by funding from:

- Temporal Dynamics of Learning Center
- The Perceptual Expertise Network

To be put on the LFI mailing list

Contact: fpffi@uvic.ca

Last Updated: 11/14/08

About Let's Face It!

Let's Face It! is a joint project between the University of Victoria Brain and Cognition Lab and the Yale Child Study Centre. The program is a multimedia, computer-based intervention that is designed to teach face processing skills to children with autism. Research has shown that in addition to their difficulties with language and social communication, children with autism may experience difficulties in their ability to recognize facial identity and emotions.



The Let's Face It! program guides the child through a series of engaging, interactive game modules designed to teach basic face processing skills. The games are further described in the Games Guide section on this site. Each module targets some aspect of face processing, such as the recognition of facial emotions, interpretation of eye gaze and eye contact and the recognition of people across changes in facial expression.

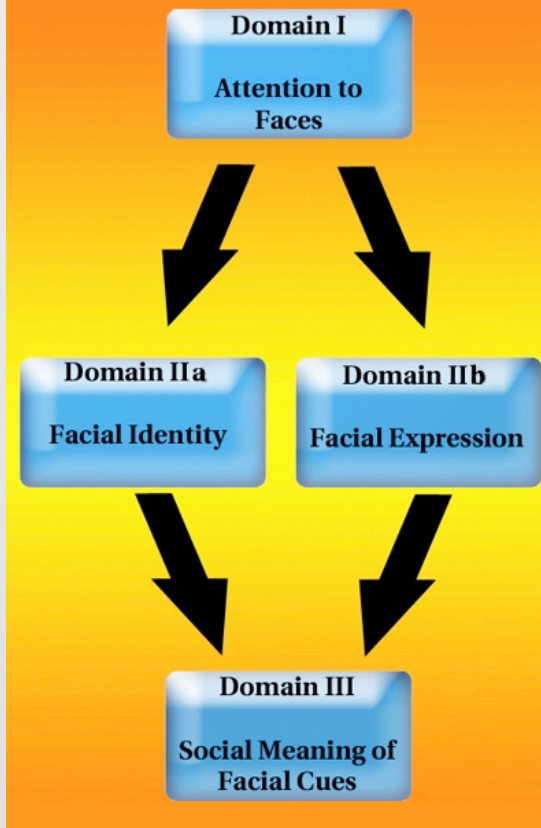
LFI/CERT Integration

The Computer Expression Recognition Toolbox (CERT) developed by the Machine Perception Laboratory at UCSD, analyzes facial expressions in real-time. The system automatically detects frontal faces in a video stream and codes each frame with respect to 37 continuous dimensions, including basic expressions of anger, disgust, fear, happiness, sadness and surprise. Most importantly, CERT provides information on the dynamics of facial expression at high spatial (30 dimensions of expression) and temporal resolution (30Hz).

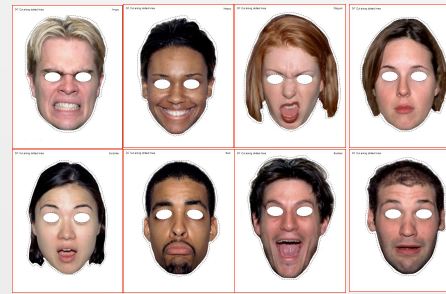
web.uvic.ca/~jtanaka/letsfaceit

A curriculum in face processing

Hierarchical Face Processing Model



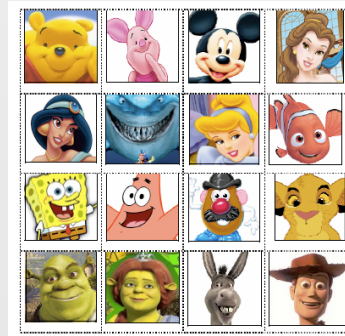
Downloadable hands-on activities



Face masks



Arcimboldo fruit faces



Face bingo



CSI lineup

Spreading the *LFI!* Gospel



Spring 2009

Professional Development for Teachers

TO REGISTER OR FOR MORE INFORMATION: www.uvcs.uvic.ca/register/
Phone: 250 721 6192 Email: education uvcs.uvic.ca
Continuing Studies in Education

Sex, Drugs and Rock & Roll: Adolescent Risky Behaviour

Dr. Carmen Gress

April 17, 2009: 10:30 am – 2:30 pm (one hour lunch break)
Fee: \$55 plus GST

This workshop is geared to in-service and pre-service teachers from middle and high schools. Research suggests that risky behaviours among adolescents are on the rise. For example, the number of young and older adolescents engaging in oral sex has increased over the past 15 years. This behaviour among young adolescents in particular was once thought to be an indicator of previous victimization or perpetration, but times have changed. Younger adolescents engaging in sexual behaviour is still a concern, however, because research suggests they are likely to do so without proper protection. The purpose of this workshop is to review current research on adolescent risky behaviour and discuss what is and what isn't problematic. The first half of the workshop will provide an overview of the latest research results while the second half will discuss practical steps on evaluating individual behaviours (i.e., what questions to ask) and how the answers can inform, if necessary, appropriate interventions.

Dr. Carmen L. Z. Gress is a sessional instructor at University of Victoria and the Director of Research Planning and Offender Programs with the Corrections Branch, BC Ministry of Public Safety & Solicitor General. Her research interests include the assessment and facilitation of self-regulatory processes throughout the life span and with all learners in and outside of regular educational settings.

Cameras in the Classroom—Digital Photography Across the Curriculum

Dr. Laurie Rae Baxter

April 17, 2009: 10:30 am – 2:30 pm (one hour lunch break)
Fee: \$55 plus GST

There are very few people now that don't own or have access to a digital camera, kids included. The direct and simple interface of digital cameras to portable printers and computers has made photography virtually instant and very economical. The intent of this workshop is to take advantage of the digital revolution and bring cameras into the classroom. Through hands-on activities, teachers will explore the countless ways for digital images/photos to be used across the curriculum to enrich and enhance student learning. Bring a camera if you have one; a few will be available for participants' use.

Dr. Laurie Rae Baxter is passionate about teaching and photography and has been actively involved in both for nearly 25 years. Laurie enjoys getting the most from new digital photography technologies, starting with composing and taking the picture; to the computer darkroom for image processing; to the final archival printing of the photograph for exhibition. Her images span the globe: exhibitions and slide presentations from the Galapagos islands and the Amazon basin to the highlands and the people of northern Mexico. "Stone Angels," Laurie's most recent exhibition, was a collection of her work from the Necrópolis Cristóbal Colón in Havana, Cuba.

Let's Face It—A Breakthrough Intervention in Autism

Dr. Jim Tanaka, Rebecca Phillips and Magali Segers

April 18, 2009: 10:00 am – 2:00 pm (one hour lunch break)
Fee: \$55 plus GST


Most people are considered face experts, quick to recognize a familiar face or interpret a facial expression in a moment's glance. However, recent research suggests that children with Autism Spectrum Disorder (ASD) are less expert in their face recognition abilities and have difficulty identifying faces and understanding facial emotions. Can facial processing abilities, like other forms of perceptual expertise, be taught through direct instruction and training? This workshop will offer educators insight into the theories behind facial processing and how these theories can be put into practice to improve facial processing skills in children with ASD. The workshop will present how the Let's Face It! curriculum uses computer software and hands-on activities as dynamic teaching tools to promote face processing skills in youth.

Jim Tanaka is a professor of psychology at the University of Victoria. Rebecca Phillips is a counsellor/autism interventionist at Child and Family Counselling Association (CAFCA) in Victoria and doctoral student at Fielding Graduate University, Santa Barbara. Magali Segers works as an autism interventionist with Family Centred Practices Group.



- Presentation to Tri-district meeting of the children's mental health centers, Queen Alexandria Children's Health Centre, September 2008
- Presentation to Research in Early Childhood Care and Education and Health (REACH), University of Victoria, Nov. 2008
- Autism Community Training (ACT) Conference, Vancouver, Dec. 2008
- Applied Behavior Analysis International Conference, Feb. 2009
- BC Applied Behavior Analysis Conference, Mar. 2009
- Saanich Autism Parent Group, Victoria, BC, Mar. 2009

Science meets science education. . . FACE CAMP



Face Camp 2007
The science, art and fun of face recognition

July 14th (Sat.) or July 21st (Sat.)
8:45 AM to 3 PM
Uvic Campus



Ever thought of morphing a picture of yourself with a picture of your best friend? One side of your face is more emotional? Would you be able to recognize Avril Lavigne?

This summer, Dr. Jim Tanaka and Dr. Ulrich Mussler, psychology professors at the University of Victoria, are conducting research examining face recognition in children. They are seeking children to participate in their Face Camp research project. At Face Camp, each child's face recognition skills will be measured using an entertaining computer program. Children will also learn about face recognition, hands-on activities and exciting demonstrations by guest scientists and artists.

Face Camp is run by the faculty and students of the Uvic psychology department. A FREE pizza lunch and snacks will be provided and camp participants will receive a cool Face Camp t-shirt.

To register for the July 14th or July 21st Face Camp session, email research assistant Kim Maynard at kmaynard@uvic.ca or natalie@uvic.ca. Registration will be limited to 30 kids per session. For more information about Face Camp, call Dr. Jim Tanaka at 721-7541 or send him email at jt@uvic.ca.

Face Camp 2007 is sponsored by:

HOLLYWOOD FACE CAMP


Face Camp: Hollywood Edition
Uvic Campus
9 AM to 3 PM

Dates:
SAT. July 05th: Kids ages 11 to 12
SAT. July 12th: Kids, ages 9 to 10
SUN. July 13th: Kids, ages 7 to 8

Lights, camera, action! Get ready for a day of glitter, glam and glitz! Uvic psychologists are rolling out the red carpet to make way for Victoria's future rising stars. Dr. Jim Tanaka, a psychology professor at the University of Victoria, is seeking children - ages 7 to 12 - to participate in a Face Camp research project. At Face Camp, each child's face recognition skills will be measured using an entertaining computer program.

HOLLYWOOD Face Camp is free, fun, and educational. It is run by the Face Camp Crew composed of Uvic faculty, students, and community professionals. A FREE pizza lunch and snacks will be provided and campers will receive a cool HOLLYWOOD Face Camp t-shirt. Campers will learn about the scientific principles of face recognition by participating in a personalized screen test, create their own exciting animations and produce celebrity morphs.

To register for Face Camp, email research assistant Kim Maynard at kmaynard@uvic.ca. Registration is limited to 30 participants so early sign up is encouraged. To learn more about Face Camp, go to: web.uvic.ca/~jtanaka/facecamp.



Face Camp CSI Edition

Face Camp CSI Edition
For Kids Ages 9 through 12
Saturday, Oct. 27, 2007
Uvic Campus

Who's the culprit? Can you pick a criminal out of a lineup of suspects or solve a mystery? Put your investigative skills to the test!

This year, Dr. Ulrich Mussler, psychology professor at the University of Victoria, is seeking children - ages 9 to 12 - to participate in their Face Camp research project. At Face Camp, each child's face recognition skills will be measured using an entertaining computer program. FACE CAMP CSI "trainees" will also learn about the scientific principles of face recognition and their applications in police work. Trainees will use a 3D facial reconstruction kit, produce computer graphic mug shots and solve a mystery.

Face Camp is free, fun and educational. It is run by the Face Camp Crew composed of Uvic faculty, students, and community professionals. A FREE pizza lunch and snacks will be provided and campers will receive a cool FACE CAMP CSI t-shirt.

To register for Face Camp, email research assistants Kim (kmaynard@uvic.ca) or Natalie (natalie@uvic.ca). Registration is limited to 30 participants so early sign up is encouraged. To learn more about Face Camp, go to: web.uvic.ca/~jtanaka/facecamp.

Snippet from the closing ceremony

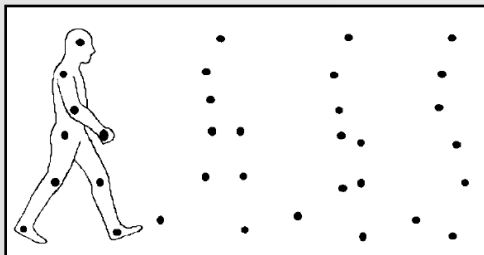




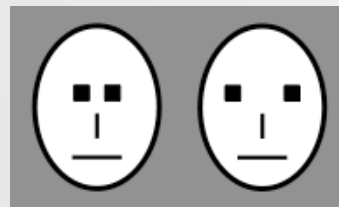
Face Camp Guest Scientists



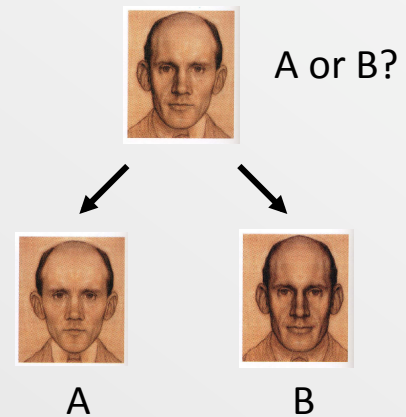
Maggie Shiffrar
Rutgers University



Suzy Scherf
CMU
(TDLT Trainee Fellow)



Janet Hsiao
UCSD





Special thanks to:

Sean Butler, Laura Dixon, Olav Krigolson
and members of VizCogLab at Uvic

Gwen Littlewort, Jacob Bergsman, and
members of the Machine Perception Lab at
UCSD