

Autism and My Sensory Based World – 3rd Edition



Temple Grandin



- A good teacher is gently insistent
- Early intervention essential
- Minimum 20 hours weekly of one-to-one teaching

- ⦿ A child has to be pushed to keep learning new skills
- ⦿ Pushing too hard causes sensory overload and no progress
- ⦿ Never have sudden surprises. This causes fright and tantrums
- ⦿ Adults and teenagers must also be pushed to try new things and keep learning

Sensory processing disorder occurs with many other disorders (co-morbid)

- ☉ Autism spectrum
- ☉ Dyslexia
- ☉ Learning problems
- ☉ ADHD
- ☉ Asperger
- ☉ Head injury
- ☉ Oppositional defiant
- ☉ Many others

Child blocks ears because certain sounds hurt



Sounds are better tolerated when the child initiates them.

Little Rainman by Karen Simmons

Auditory Threshold Normal



Echolalia increases as receptive language becomes worse.
Jacqueline Roberts, 1997

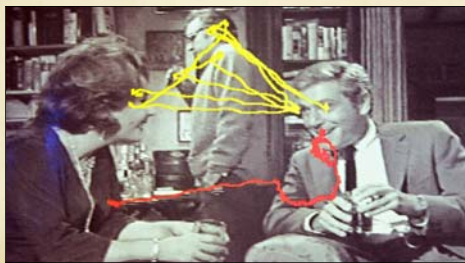
- ☉ Hearing auditory detail is impaired
- ☉ Stretch out and enunciate consonants
- ☉ Hearing may be like a bad mobile phone connection
- ☉ Occurs with many disorders
- ☉ Hearing may fade in and out like a poor mobile phone connection

Attention shifting slowness occurs with many disorders

Takes longer to shift back and forth between two different things

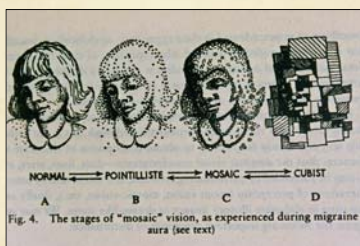


Viewer with Autism (Red Line)
Normal Comparison Viewer (Yellow Line)



Ami Klin

Visual images break up and fragment



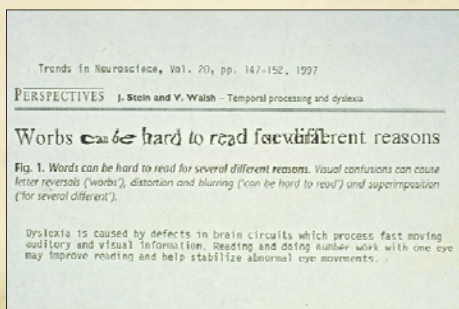
Oliver Sacks

Signs of Visual Processing Problems

- Finger flicking near eyes
- Tilts head when looking at things
- Hates escalators
- Hates fluorescent lights and sees flicker
- Difficulty catching a ball
- Eye exams may be normal



Words vibrate and jiggle on page



Interventions for Visual Processing Problems

- Incandescent lamp by desk
- Block fluorescent lights with a hat
- Laptop or tablet computer
- Gray, tan, or pastel paper
- Irlen lenses or pale colored glasses
- Balancing games - sit on ball
- Prism glasses - Developmental Optometrist



Severe Sensory Problems

- Extreme effort required to screen out background noise and visual distractions
- Needs frequent breaks to prevent sensory overload
- Mono-channel
- Body boundary problems
- Often an auditory thinker

Best Books to Understand Severe Sensory Problems

- *How Can I Talk if my Lips Don't Move* by Tito Rajarish Muhopadhyay*
- *Carly's Voice* by Arthur Fleischmann with Carly Fleischmann*

* Nonverbal and types independently

What Have Scientists Learned?

Sensory problems are real


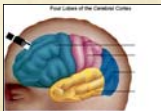
Immature lower brain areas

Abnormal circuits between different brain regions

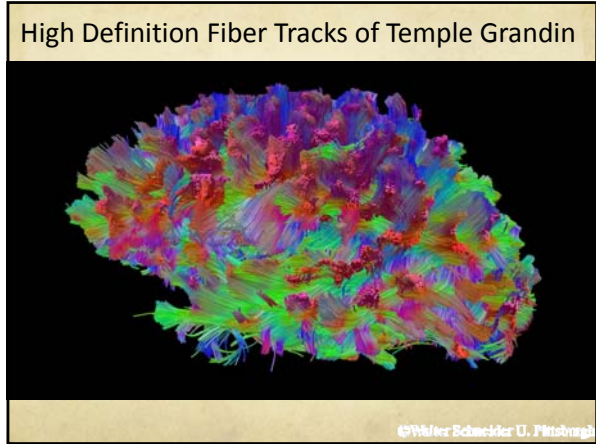
Sensory problems are variable

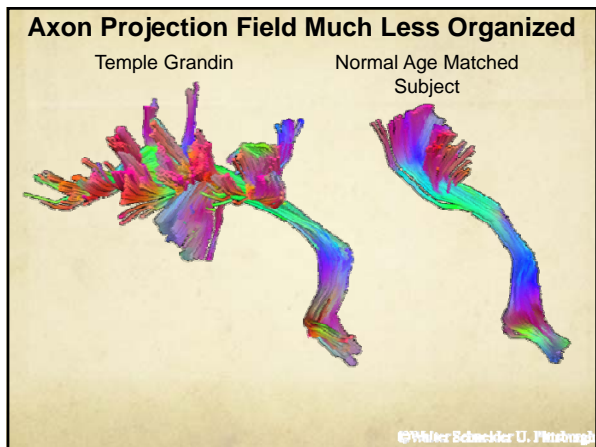
Many word based tasks are processed in visual areas of the brain

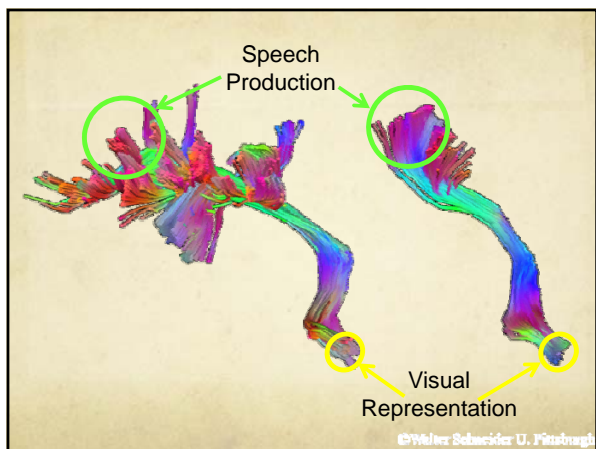
Frontal cortex is used less because it has missing circuits

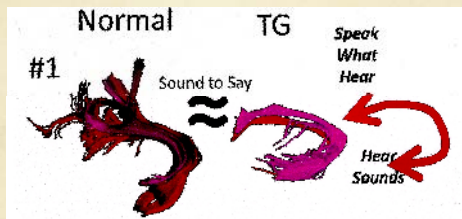
Eric Courchesne, Nancy Minshew, Margaret Bauman



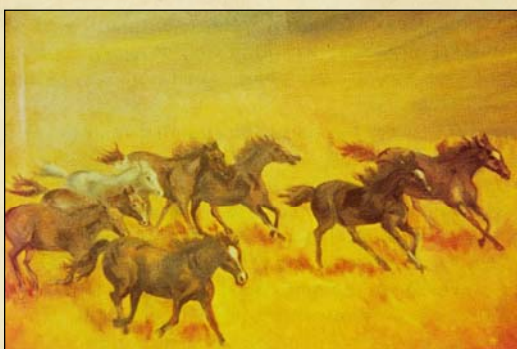




Auditory



Walt Schneider, Univ. of Pittsburgh



Miller et al., 1998 *Neurology*, 51:978-981

Develop the Child's Strengths



BY C.C. AG 9

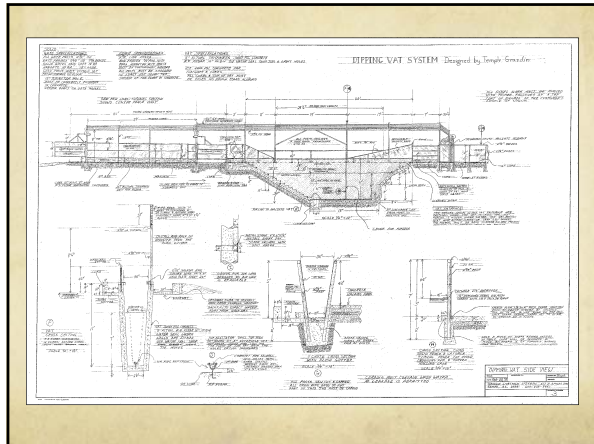
**My mind works like
Google for Images**

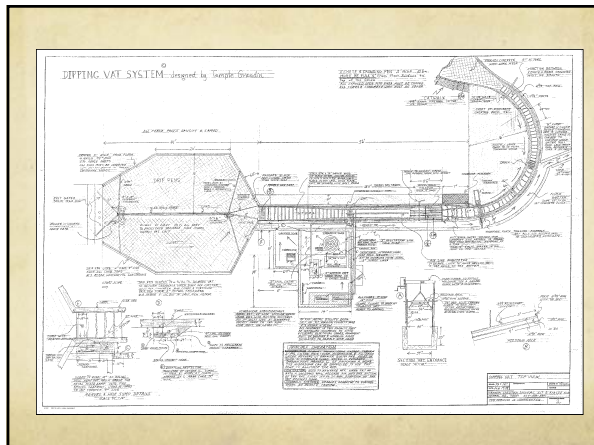


Little Rainman by Karen Simmons










Sensory thinkers sort specific pictures, sounds, touches, and smells into categories



Little Rainman by Karen Simmons

**I realized my thinking
was different when I
asked other people to
think about church
steeples**



**Most people see in
their imagination a
generalized generic
steeple**

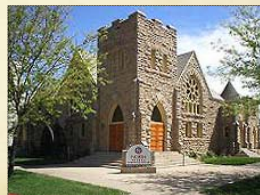
**I see only specific pictures of
steeples I have observed.**

**They flash into my memory like a
series of still Googled pictures**

My childhood church
First category under steeples



Local churches in Fort Collins
Secondary category under steeples



Famous Steeples
Mormon Temple, Washington, D.C.
Third category under steeples



Famous Steeples
Old North Church - Boston
Third category under steeples

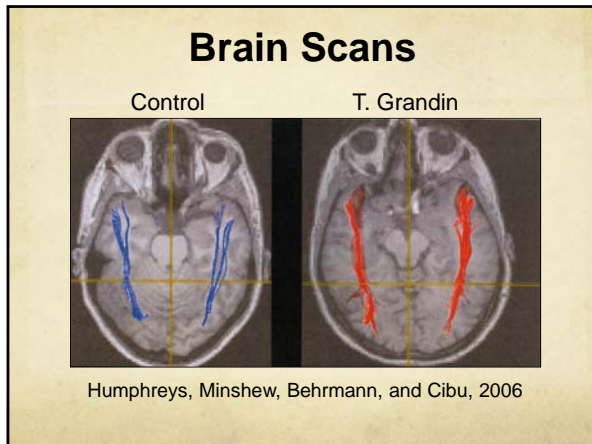


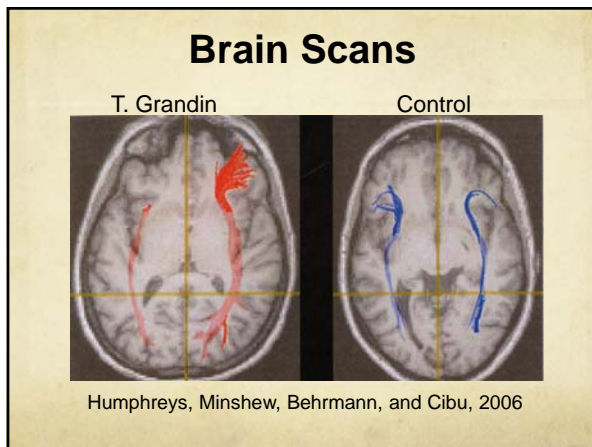
Famous Steeples
Notre Dame
Third category under steeples

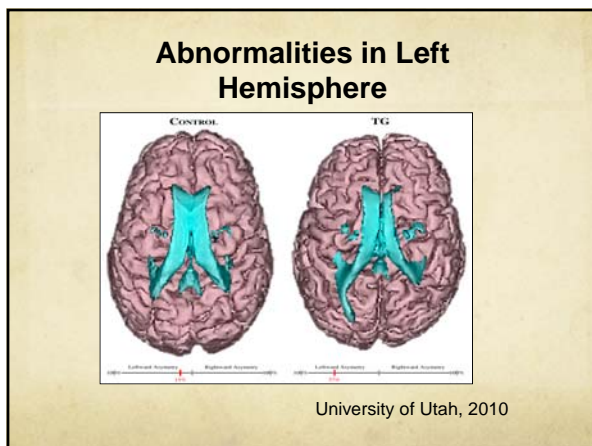


Famous Steeples
Westminster Abbey









Develop Talents in the Individual's Specialist Brain

1. Photo Realistic Visual Thinking – Poor at algebra
2. Pattern Thinker Music and Math – Poor in reading
3. Verbal Facts Language Translation – Poor at drawing
4. Auditory Thinker – Visual perception fragmented

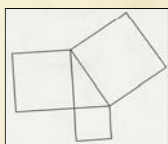


There can be mixtures of these thinking types

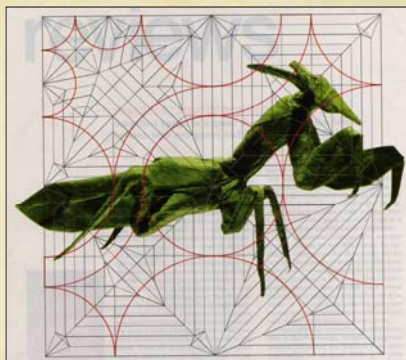
Two Categories of Mathematicians

Geometers – See this figure

Algebraists
 $a^2 + b^2 = c^2$



Masha Gessen – Perfect Rigor, 2009



Robert Lang, 2006

**Hands-on Activities Taught
Practical Problem Solving Skills**





- All my thinking uses specific examples to create concepts
- It is **bottom up thinking** and not **top down thinking**
- I learned ALL concepts using specific examples

Play games with categorizing many objects to learn concepts such as color, shape, bigger than, smaller than, clothing, food, etc.



Details are Attended to Instead of Whole Gestalts

CONSISTENT		INCONSISTENT
S S S	H H	H H H H S S
S	H H	H S S
S S S	H H H H	H H H H S S S S
S	H H	H S S
S S S	H H	H H H H S S

- Autism faster response time to small letters
- Attend to details of faces instead of the whole

Behrmann et al., *Neuropsychologia* 2005



Is autistic learning just memorization? It is memorization and scripting, but as more information is memorized, it can be assembled into more and more categories which will help thinking to become more flexible.

Teach Number Concept Generalization

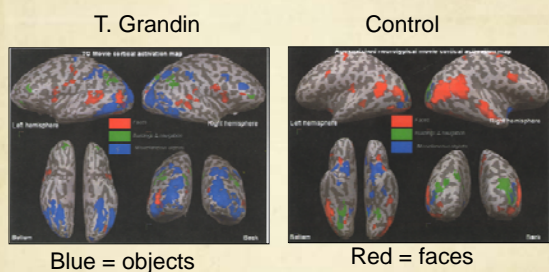
- Count a variety of different kinds of objects
- Addition and Subtraction - Teach with many objects
- Fractions – Teach by cutting up fruit and paper circles



Teach Word Concepts with Specific Examples

- Walk **down** the stairs
- A plane goes **down** and lands
- Put a cup **down**
- Lie **down** on the bed

Objects are More Interesting than Faces



Humphreys, Minshew, Behrmann, and Cibu, 2006

Social Interaction Through Shared Interests

- School Clubs
- Organizations such as Scouting
- Hobbies
- Careers
- Classes that really interest an individual



Categorize Behavior Problems

- ◉ Is it **biological**?
 - Sensory over sensitivity
 - Hidden painful medical problem
- ◉ Is it **behavioral**?
 - Frustration because cannot communicate
 - Get attention
 - Escape from a task

Sensory and Neurological Problems That May Need Accommodations

- ❖ Screams when the fire alarm rings
- ❖ Tantrums in a supermarket
- ❖ Cannot tolerate scratchy clothes
- ❖ Poor handwriting
- ❖ Tantrums or hyperactive under fluorescent lights
- ❖ Difficulty multitasking
- ❖ Difficulty with long verbal directions – provide written directions

My 1950' s upbringing taught me many important social and job skills. Everything was learned by categorizing specific examples into these concepts:

- ❖ Turn taking in conversation and activities – such as board games
- ❖ Being on time
- ❖ Doing family activities I disliked
- ❖ Doing things that pleased other people
- ❖ Saying *please* and *thank you*
- ❖ Social mistakes were instantly corrected by telling me what to do

Bad Behavior Was Not Tolerated When I was a Child

- ❖ Being rude
- ❖ Bad table manners
- ❖ Manipulating a teacher by having a tantrum – constant rules at both home and school
- ❖ Poor grooming and sloppy clothes
- ❖ Laughing at an overweight woman
- ❖ Swearing

Teach Social Skills in the Community

- Shaking hands
- Eye contact when meeting people
- Ordering food in restaurants
- Table manners
- Shopping – Talking to store staff

Kids doing projects and playing games where the rules and duties are negotiated teaches valuable social skills



- Eccentric is acceptable; being dirty and rude is not.
- Do not try to de-geek the geek!



NASA Space Scientist Cries When the Shuttle Was Cancelled



It's ok for Geeks to cry!

Rule System

1. Really bad things
2. Courtesy rules
3. Illegal, but not bad
4. Sins of the system

Hidden Painful Medical Problems in Non-Verbal Individuals That Can Cause SEVERE Behavior Problems

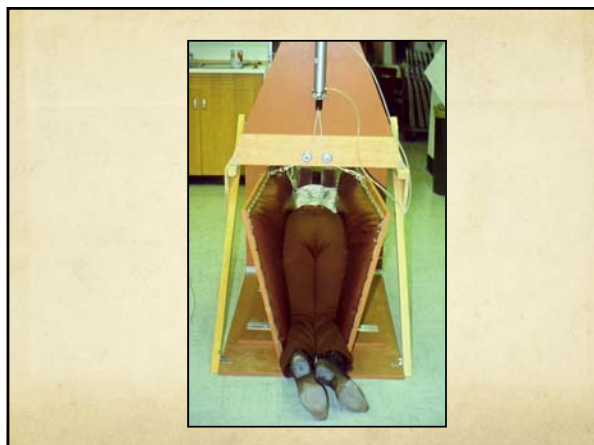
- Acid Reflux heartburn (most common). Not always obvious.
- Constipation
- Urinary tract infection
- Yeast infection
- Ear infection
- Bad tooth
- H pylori (stomach, ulcer bug)



The squeeze machine helped reduce anxiety and panic attacks

**Fear is the main emotion
in Autism. My amygdala
(fear center) is three
times larger.**

University of Utah, 2010



**Using pressure to calm the nervous
system during therapy**



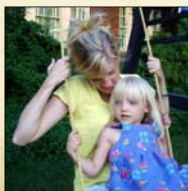
Sometimes speech is easier when the child is swinging



Sitting on a ball and wearing a weighted vest helps concentration. Use for 20 minutes then take off for 20 minutes.



It is important to desensitize touch sensitive autistic children so that they will enjoy affection. Feeling the good feelings of being held helps to develop feelings of kindness.



Preparing for Employment

1. Jobs for teenagers
2. Mentors
3. Visit work place
4. Trade journals
5. Wall Street Journal
Make portfolio - people respect talent
6. Sell your skill, not yourself



I was a poor student but I learned lots of valuable work skills in high school. I did building projects that other people appreciated

Before



After



Jobs for Middle School and High School Kids

- Walking dogs
- Maintaining computers
- Making PowerPoint presentations
- Selling artwork or crafts
- Working on church or neighborhood website
- Working in a farmer's market

Educational Resources

- Community Colleges
- Technical Schools
- On-line Learning
- University Courses



Science Websites

- U.S. National Science Digital Library Project
- Khanacademy.org
- Udacity.com
- Free courses – Stanford and MIT
- Physics Education Technology PhET
- Open Course Ware Consortium
- Wolfram Mathematica

Show Kids Interesting Things



**The Guys Have Fun with
Stuff the Mechanical Cow
on the HBO Movie Site**







**Avoid Interviews
Find the Back Door**



**I was wearing my portfolio.
People respect ability.**


Jobs for Visual Thinkers

- Industrial design
- Computer network specialist
- Graphic arts
- Drafting
- Auto mechanic
- Computer repair
- Handcrafts
- Convention AV technician
- Photographer
- Animal trainer
- Architect
- Veterinary technician





Jobs for Music and Math Thinkers

Math teacher
Scientific researcher
Electronics technician
Music teacher
Chemist




Computer programmer
Engineer
Physicist
Musician/composer
Statistician



Jobs for Verbal Thinkers




Stocks and bonds analyst
Journalist
Translator
Librarian
Copy editor
Accountant



Specialty Retail
Bookkeeper & record keeper
Budget analyst
Special education teacher
Book indexer
Speech therapist
Inventory control specialist
Legal researcher
Stage actor

Bad Jobs for People with Autism

Require lots of short term working memory and fast processing information

-  My working memory is terrible
-  Cannot remember more than three steps
-  Cashier in a busy restaurant would be very difficult

Jobs for People with Poor Verbal Skills or Non-Verbal



Shelve Library Books

Factory Assembly Work

Fast Food Restaurant Work

Data Entry

Lawn and Garden Work

Recycling Plant/Warehouse



Stocking Shelves

Inventory Control

Handcrafts









Evaluation of Treatments

- Risk versus Benefit
- Cost versus Benefit
- Evidence of Effectiveness






SSRI' S Antidepressants

Work really well for anxiety and panic attacks

	Prozac	(fluoxetine)	
	Zoloft	(sertraline)	
	Celexa	(citalopram)	
	Lexapro	(escitalopram)	
	Paxil	(paroxetine)	

Atypical Anti-Psychotics

May have severe side effects

	Risperdal	(risperdone)	
	Geodon	(ziprasidone)	
	Zyprexa	(olanzapine)	
	Abilify	(aripiprazole)	
	Seroquel	(quetiapine)	

Low Dose Principle

Some individuals on the autism spectrum need only ¼ to ½ of the normal starting dose of drugs in these 3 classes:

- SSRI Antidepressants
- Tricyclic Antidepressants
- Atypical Antipsychotics



Too much causes insomnia, agitation and irritability. Other drugs usually require normal doses. If used in small children, micro doses – 1/10 of mg of Rispordal.

Principles of Using Medication

- √ Try one thing at a time
- √ A medication should have an obvious beneficial effect
- √ Withdraw a medication slowly, if a person has been on it a long time
- √ Be careful switching brands
- √ Don't expect 100% control of a symptom

Blood Pressure Medications Reduce Anxiety and Are Used as Sleep Aids

Much Safer than Atypicals

- Beta blocker propranolol
- Clonidine

Anti-Convulsant Drugs for Aggression and Mood Stabilization







- Depakote
- Lamitel (lamotrigine)
- Topamax (topiramate)

ADHD Drugs and Autism

- Stimulants tend to make classical autism worse
- Stimulants sometimes help individuals with mild Asperger's

Look Up All Drug Interactions

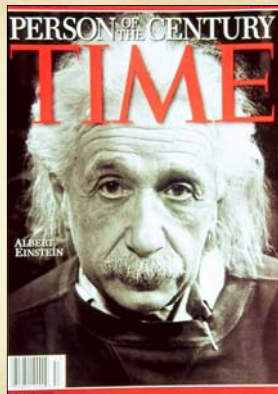
- Prescription drugs
- Non-prescription drugs
- Herbal supplements

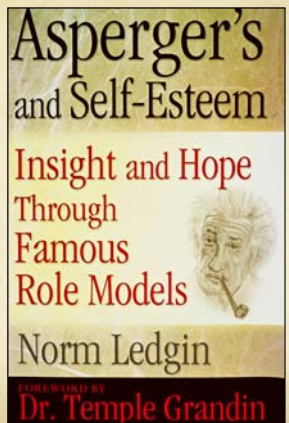
-  Special diets work for some individuals
-  Vitamins and supplements B6 and Magnesium
-  Vigorous exercise for calming
-  Weighted blanket or vest for calming
-  Omega 3 supplements help the brain
-  Poor diet – more depression

Traits in Close Relatives

Four Generations of Bankers
MIT-Trained Engineer/Co-Inventor Auto Pilot
Anxiety
Depression
Visual Thinking Skills – Artist, Home Decorators
Food Allergies
Intellectual Giftedness – Writing English Literature
Asperger Traits

Einstein had many autistic traits





Autism.org
800-3-AUTISM
grandin.com
Future Horizons
<http://www.fhautism.com/>
Autism Asperger Publishing

Books by Temple Grandin

Thinking in Pictures
Developing Talents
Animals in Translation
Unwritten Social Rules
Emergence Labeled Autistic
The Way I See It, 2nd Edition
Animals Make Us Human