Janet Lintala, DC
Autism Health! Pllc
2401 S. Kanawha St Ste 106
Beckley, WV 25801

Therapeutically:

- The DSM 5 criteria are what we see, what we know, what we expect.

- Many behavioral, therapeutic, and educational approaches and interventions are based upon these descriptive criteria

Medically:
Symptoms and Behaviors are matched to Rx's

Constipation →

Sleep Disruption →

Irritability and Aggression →

Attention and Focus →

Medically:
Symptoms and Behaviors are matched to Rx's

Constipation	→	Miralax
Sleep Disruption	→	Clonidine
Irritability and Aggression	→	Risperidone, Lexapro
Attention and Focus	→	Focalin, Ritalin, Vyvanse, Strattera, etc.

Let’s use medical research to peek inside:

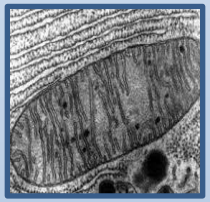
Autism Spectrum Disorder must be recognized as a spectrum of diseases, each of which may have a distinct cause and disease process.

Paula Goines, B.S., Paul Ashwood, Ph.D., and Judy Van de Water, Ph.D.

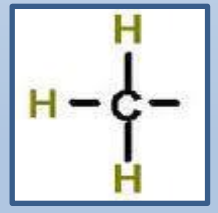
Gastrointestinal Dysfunction

Immune Dysfunction

Chronic Inflammation
Oxidative Stress



Mitochondrial Dysfunction

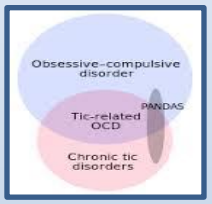


Abnormal Methylation Chemistry
Detoxification Impairments

Impaired Nutrition

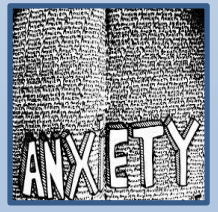
Sensory Processing Disorder

Developmental Optometry



Tics and OCD

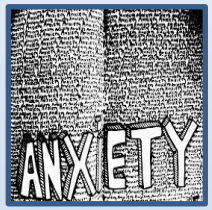
ADD/ADHD

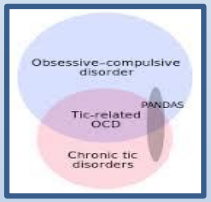


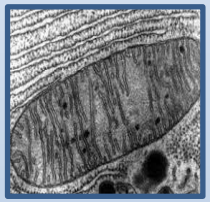
Anxiety and Psychiatric disorders

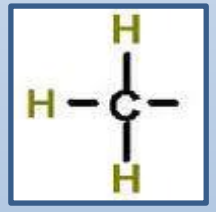
Sedation Dentistry

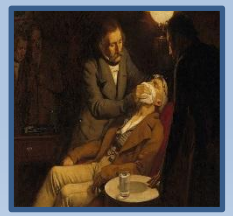
This is what you see…











This is what you get!

The invisible challenges that children with ASD may have to power through each day

I. Gastrointestinal Dysfunction

Healthy Esophageal Tissue

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

Barrett's Esophagus with salmon-colored patches

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

Nodular Esophagitis

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

When the breath smells “just like poop”… Reflux of bile and stool in the stomach

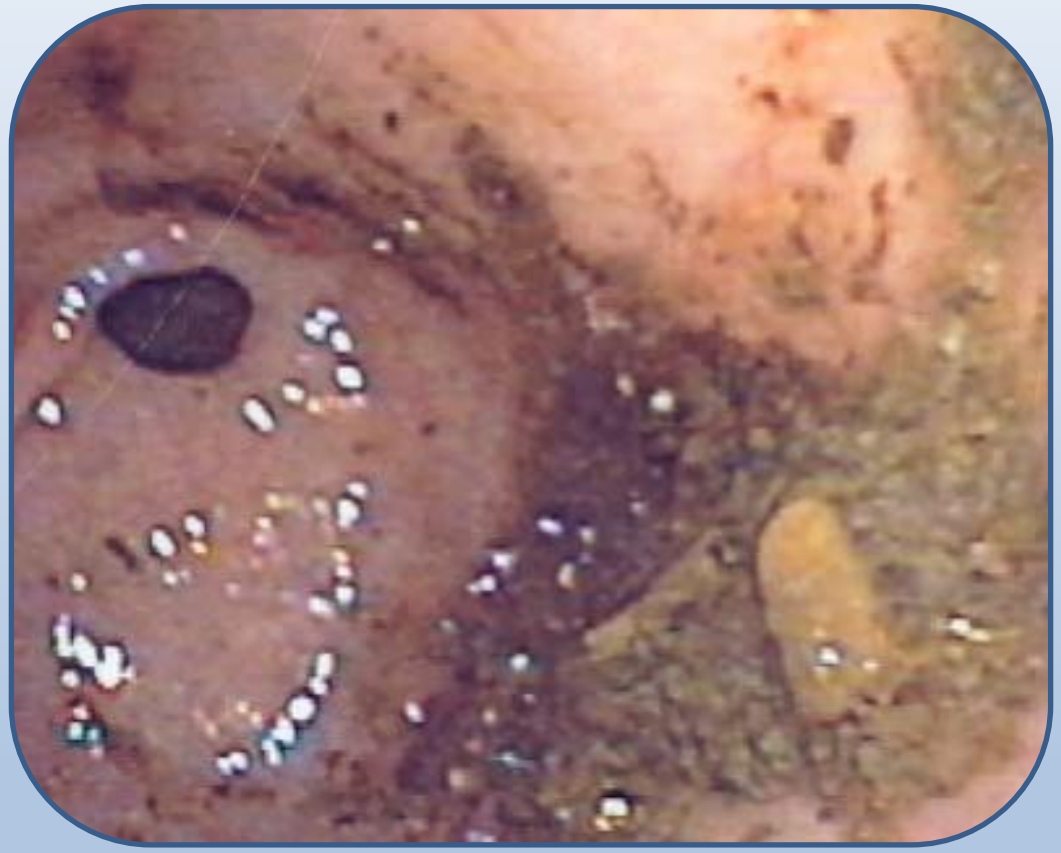


Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

Multiple duodenal aphthous ulcerations

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

Aphthous ulcers in the colon

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

Marked lymphoid hyperplasia of the duodenum

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

Dysbiosis

Children and adults with Autism Spectrum Disorder are prone to chronic candidiasis and dysbiosis

Research is revealing:

- 50 percent don’t make enough digestive enzymes
- Many don’t have enough beneficial bacteria
- They are more prone to infection and dysbiosis in the GI tract

Aggression, irritability and difficult behaviors - what is causing them?

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report

Timothy Buie, Daniel B. Campbell, George J. Fuchs III, Glenn T. Furuta, Joseph Levy, Judy VandeWater, Agnes H. Whitaker, Dan Atkins, Margaret L. Bauman, Arthur L. Beaudet, Edward G. Carr, Michael D. Gershon, Susan L. Hyman, Pipop

Statement 6

Individuals with ASDs and gastrointestinal symptoms are at risk for problem behaviors.

Sleep disturbances and the other problem behaviors mentioned above may indicate abdominal discomfort.

(emphasis mine)

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report

Timothy Buie, Daniel B. Campbell, George J. Fuchs III, Glenn T. Furuta, Joseph Levy, Judy VandeWater, Agnes H. Whitaker, Dan Atkins, Margaret L. Bauman, Arthur L. Beaudet, Edward G. Carr, Michael D. Gershon, Susan L. Hyman, Pipop

Statement 7

For a person with an ASD who presents for treatment of a problem behavior, the care provider should consider the possibility that a gastrointestinal symptom, particularly pain, is a setting event, that is, a factor that increases the likelihood that serious problem behavior (e.g. self-injury, aggression) may be exhibited.

(emphasis mine)

PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report

Timothy Buie, Daniel B. Campbell, George J. Fuchs III, Glenn T. Furuta, Joseph Levy, Judy VandeWater, Agnes H. Whitaker, Dan Atkins, Margaret L. Bauman, Arthur L. Beaudet, Edward G. Carr, Michael D. Gershon, Susan L. Hyman, Pipop Jirapinyo, Harumi Jyonouchi, Koorosh Kooros, Rafail Kushak, Pat Levitt, Susan E

Care providers should be aware that *problem behavior in patients with ASDs may be the primary or sole symptom* of the underlying medical condition, including some gastrointestinal disorders.

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report

Timothy Buie, Daniel B. Campbell, George J. Fuchs III, Glenn T. Furuta, Joseph Levy, Judy VandeWater, Agnes H. Whitaker, Dan Atkins, Margaret L. Bauman, Arthur L. Beaudet, Edward G. Carr, Michael D. Gershon, Susan L. Hyman, Pipop

Statement 7, cont'd

When abdominal pain or discomfort is a setting event, *psychotropic medications are likely to be ineffective and may even aggravate the problem if they have adverse gastrointestinal effects.*

(emphasis mine)

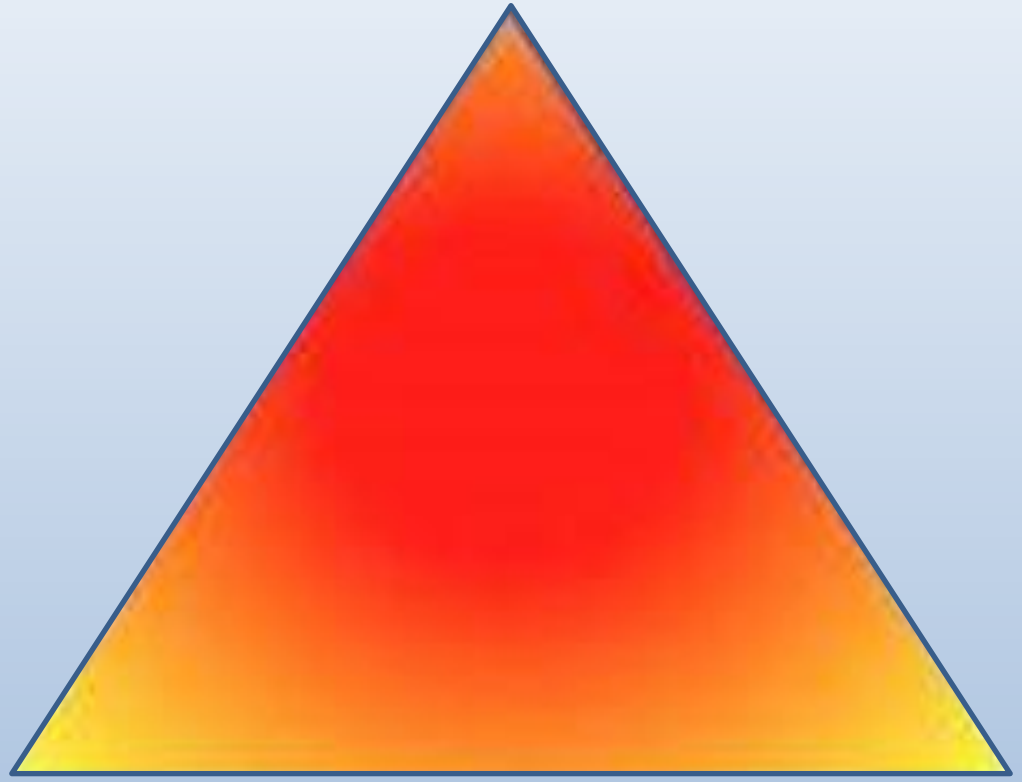
Side effects of commonly prescribed medications for ASD

- CONSTIPATION
- Nausea, stomach pain
- Anxiety
- Sleep disruption
- Systemic inflammation and oxidative stress

Common symptoms/problems in ASD patients

- CONSTIPATION
- Nausea, stomach pain
- Anxiety
- Sleep disruption
- Systemic inflammation and oxidative stress

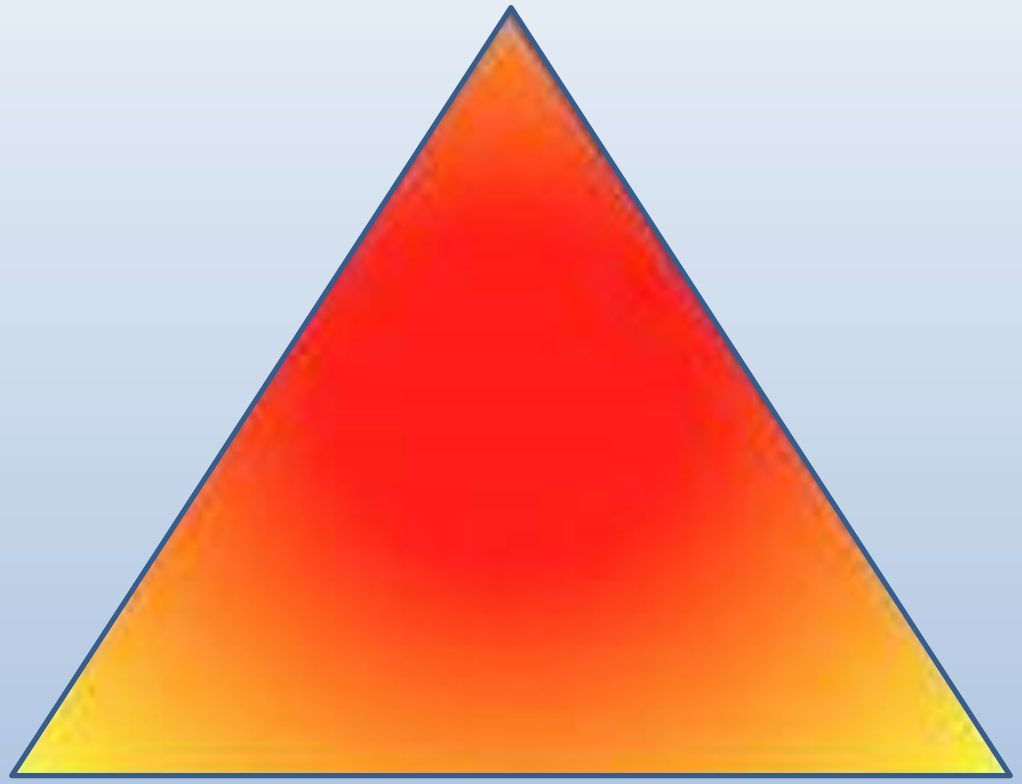
Constipation



Poor Sleep

Aggression

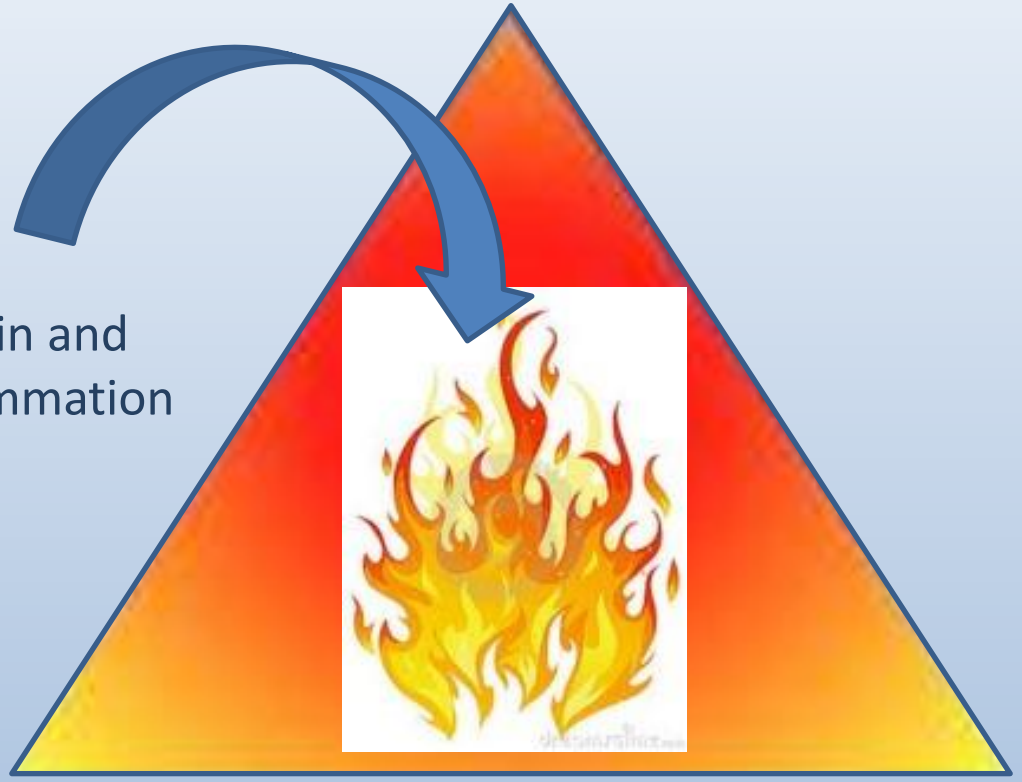
Constipation → MiraLAX



Poor Sleep → Clonidine

Aggression → Risperidone

Constipation → MiraLAX

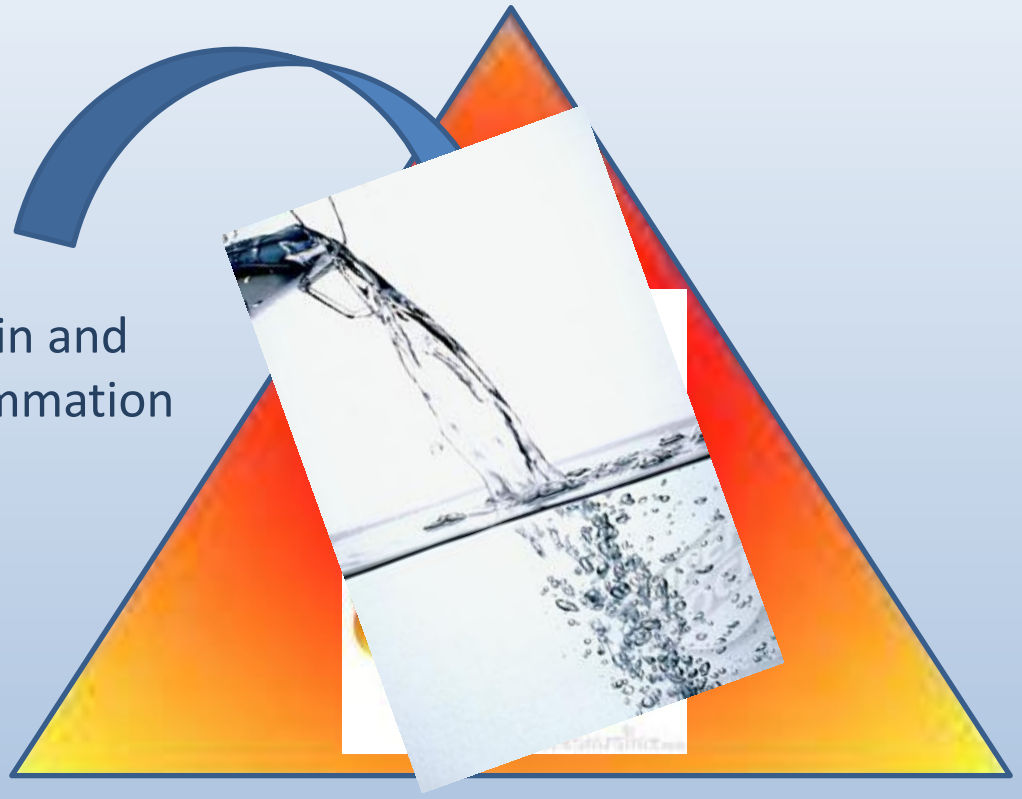


GI Pain and inflammation

Poor Sleep → Clonidine

Aggression → Risperidone

Constipation → MiraLAX



GI Pain and inflammation

Poor Sleep → Clonidine

Aggression → Risperidone

Constipation → MiraLAX

GI Pain and inflammation

Poor Sleep → Clonidine

Aggression → Risperidone

American Academy of Pediatrics:

"Medications have not been proven to correct the core deficits of ASDs and are not the primary treatment."

Pain Behavior or Autistic Behavior?

Child draping belly over arm of couch

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

Same child after treatment of GI tract

It was Pain Behavior!

Photo credit: Gastrointestinal Pathology in Autism: Description and Treatment
A. Krigsman/Medical Veritas 4(2007) 1522-1530

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals With ASDs: A Consensus Report

Timothy Buie, Daniel B. Campbell, George J. Fuchs III, Glenn T. Furuta, Joseph Levy, Judy VandeWater, Agnes H. Whitaker, Dan Atkins, Margaret L. Bauman, Arthur L. Beaudet, Edward G. Carr, Michael D. Gershon, Susan L. Hyman, Pipop Jirapinyo, Harumi Jyonouchi, Koorosh Kooros, Rafail Kushak, Pat Levitt, Susan E. Levy, Jeffery D. Lewis, Katherine F. Murray, Marvin R. Natowicz, Aderbal Sabra, Barry K. Wershil, Sharon C. Weston, Lonnie Zeltzer and Harland Winter

Statement 11

Anecdotal reports have suggested that there may be a subgroup of individuals with ASDs who respond to dietary intervention.

Why does the Gluten-free, Casein-free Diet benefit the children with these gastrointestinal problems?

Can the Pathophysiology of Autism be Explained by the Nature of the Discovered Urine Peptides?

Authors: Reichelt, K.L.[1]; Knivsberg, A.- M.[2]

Source: Nutritional Neuroscience, Vol
p. 19-28(10)

Publisher: Maney Publish

Opioid peptides found in Urine

A Peptide Found in Schizophrenia and Autism Causes Behavioral Changes in Rats

Zhongjie Sun

University of Florida, USA

J. Robert Cade

University of Florida, US

Opioid Peptides Cross into Brain

Abstract

In a previous study we morphin-7 (β-CM7) is taken up by brain regions relevant to schiz and autism. The present experiment was designed to find whether β-CM7 has any behavioral or analgesic effects in rats. About 65 seconds after treatment with different doses of β-CM7, rats became restless and ran violently, with teeth chattering and with rapid respiration. Seven minutes later, the rats became inactive with less walking, distancing themselves from the other rat in the same cage, and sitting in, or putting their head against, the corner of the cage. The sound response

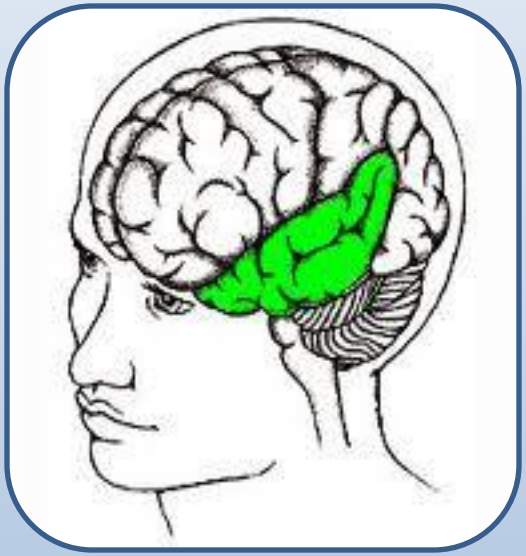
Opiates are very constipating

Neuropeptides are very addicting

Addicted to mac-n-cheese, nuggets, pizza, milk

Effects of Opioid Neuropeptides:

- Constipation
- Affect language areas of brain
- Affect behavior
- Dull cognition
- Slow processing time
- Decrease ability to feel pain
- Addictive eating habits



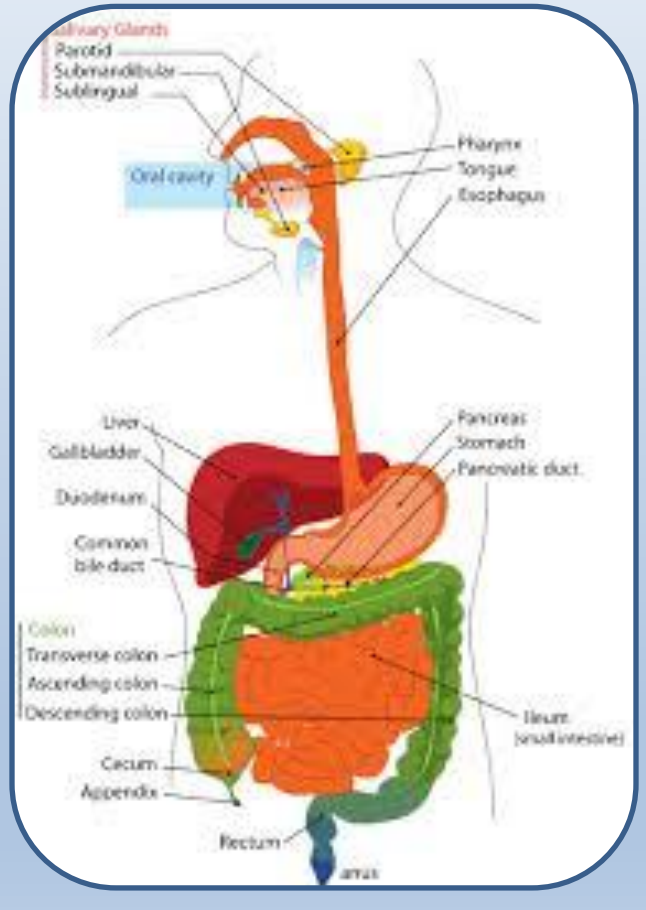
Nonprescription approach

- Heal the Gut
  - -GFCF Diet/Digestive Enzymes with DPP-IV
  - -Probiotics
  - -Antimicrobials
  - -Healing, supportive supplements
- This eliminates opiates, eliminates reflux and pain, improves sleep and bowel habits

II. Immune Dysfunction in Autism

When the gut is dysfunctional, the immune system is affected as well

70% OF IMMUNE SYSTEM IS IN THE GUT



- These children are often sick and miss a lot of school
- “Frequent Flyers” at the pediatrician and pharmacy
- Asthma, allergies and eczema are common – hard to pay attention when all stuffed up
- Prone to candida and bacterial overgrowth of the gastrointestinal tract

J Leukoc Biol. 2006 Jul;80(1):1-15. Epub 2006 May 12.

The immune response in autism: a new frontier for autism research.

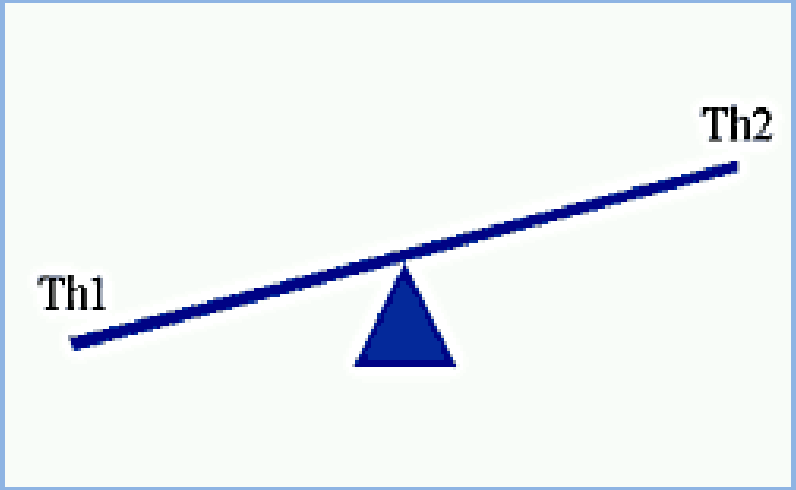
Ashwood P, Wills S, Van de Water J.

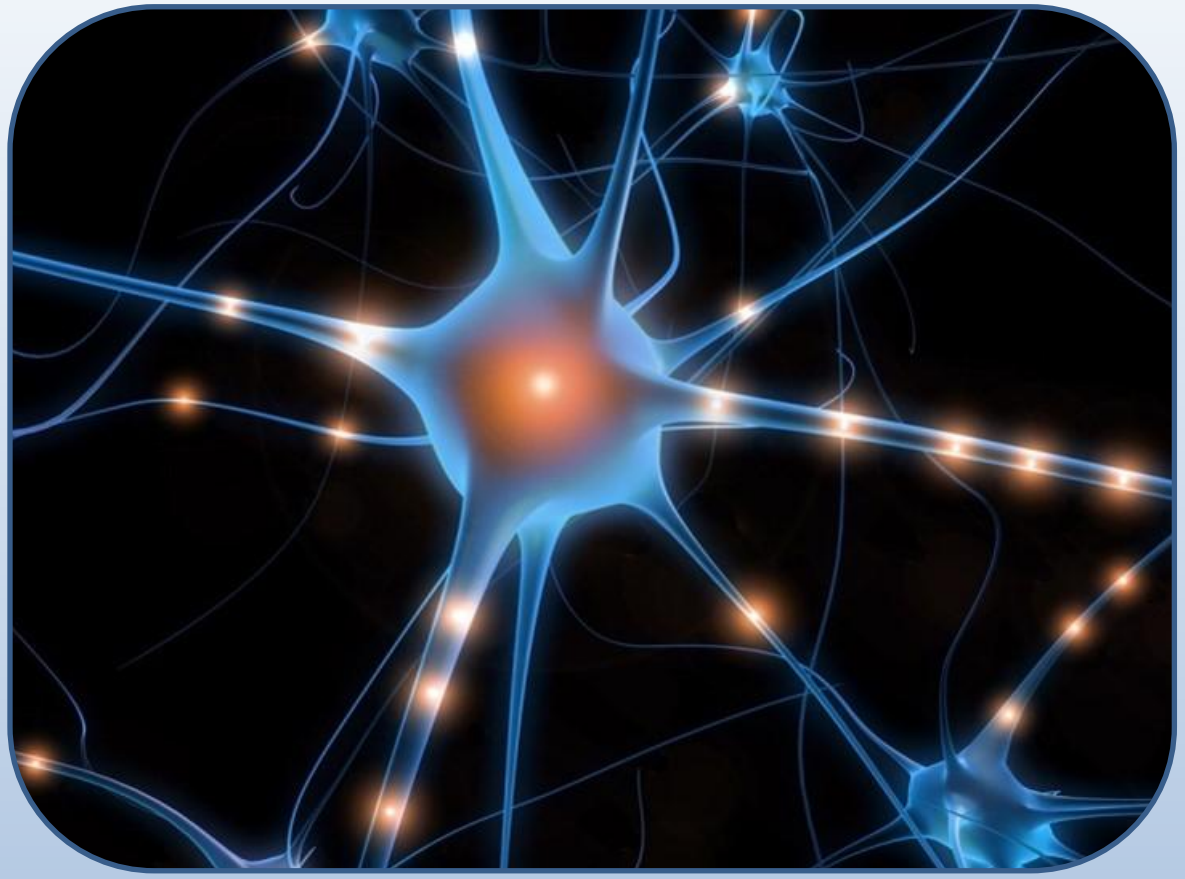
Medical Microbiology and Immunology and the M.I.N.D. Institute, University of California Davis, Sacramento, CA 95817, USA.
pashwood@ucdavis.edu

Abstract

Autism spectrum disorders (ASD) are part of a broad spectrum of neurodevelopmental disorders known as pervasive developmental disorders, which occur in childhood. They are characterized by impairments in social interaction, verbal and nonverbal communication and the presence of restricted and repetitive stereotyped behaviors. At the present time, the etiology of ASD is largely unknown, but genetic, environmental, immunological, and neurological factors are thought to play a role in the development of ASD. Recently, increasing re us system, including i during embryoge ntingent upon a n une response r cell type 1 (T(H)1)/T , and the imbalanc nd an associati ment C4 alleles de periods of neurodev SD. This

Th1 to Th2 shift in Autism Spectrum Disorders(ASD's)





Autoimmunity to Central Nervous System tissues

Several studies have demonstrated the presence of autoantibodies specific to CNS tissues in subjects with autism…

Physiological Abnormalities in Autism

III. Chronic Inflammation

↓

High levels of Oxidative Stress

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

"…preliminary evidence suggests that some immunohistochemical features ***(of the GI tract)*** may [illegible] ation

GI Inflammation

ANNALS of Neurology

THE OFFICIAL JOURNAL OF THE AMERICAN NEUROLOGICAL ASSOCIATION AND THE CHILD NEUROLOGY SOCIETY

Original Article

Neuroglial activation and neuroinflammation in the brain of patients with autism

Diana L. Vargas MD[1,2], Caterina Nascimbene MD[1,2,3], Chitra Krishnan MHS[1], Andrew W. Zimmerman MD[1,4], Carlos A. Pardo MD[1,2,5,*]

Article first published online: 15 NOV 2004

DOI: 10.1002/ana.20315

Issue

Annals of Neurology

Volume 57, Issue 1, pages 67–81, January 2005

Neuroinflammation

My question: Does it impair cognition, language and social skills?

Immunobiology

Volume 216, Issues 1–2, January–February 2011, Pages 80–85

Expression of inflammatory cytokines, Bcl2 and cathepsin D are altered in lymphoblasts of autistic subjects

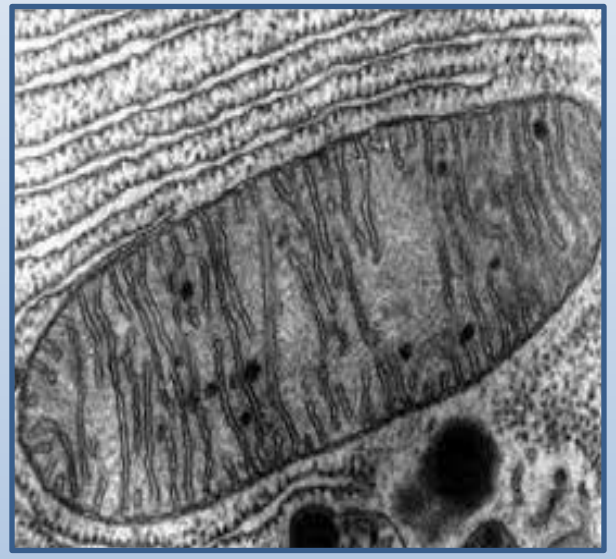
Mazhar Malik, Ashfaq M. Sheikh, Guang Wen, Warren Spivack, William T. Brown, Xiaohong Li

Department of M ... ill Road, Staten Island, New Y

Increased levels of pro-inflammatory cytokines …
and *decreased levels of anti-inflammatory* cytokines…
have been observed in children with ASD.

Imbalanced levels of these cytokines can augment
inflammation and cause excess damage to tissues.
(oxidative stress)

Physiologic Abnormalities in Autism



IV. Mitochondrial Dysfunction

Mitochondrial Dysfunction in Autism

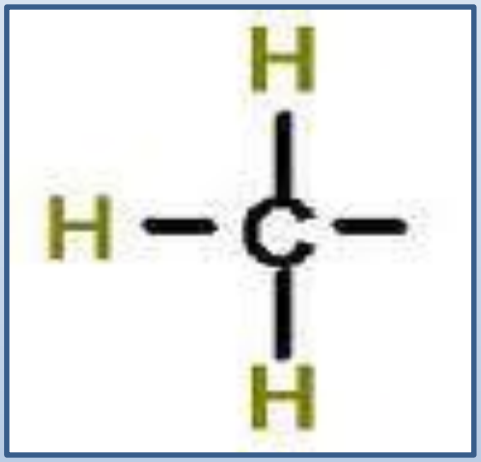
- Inflammation generates free radicals and oxidative stress and can result in damage to mitochondria

- Mitochondrial dysfunction is common in children with autism. May be as high as 60%.

In Class

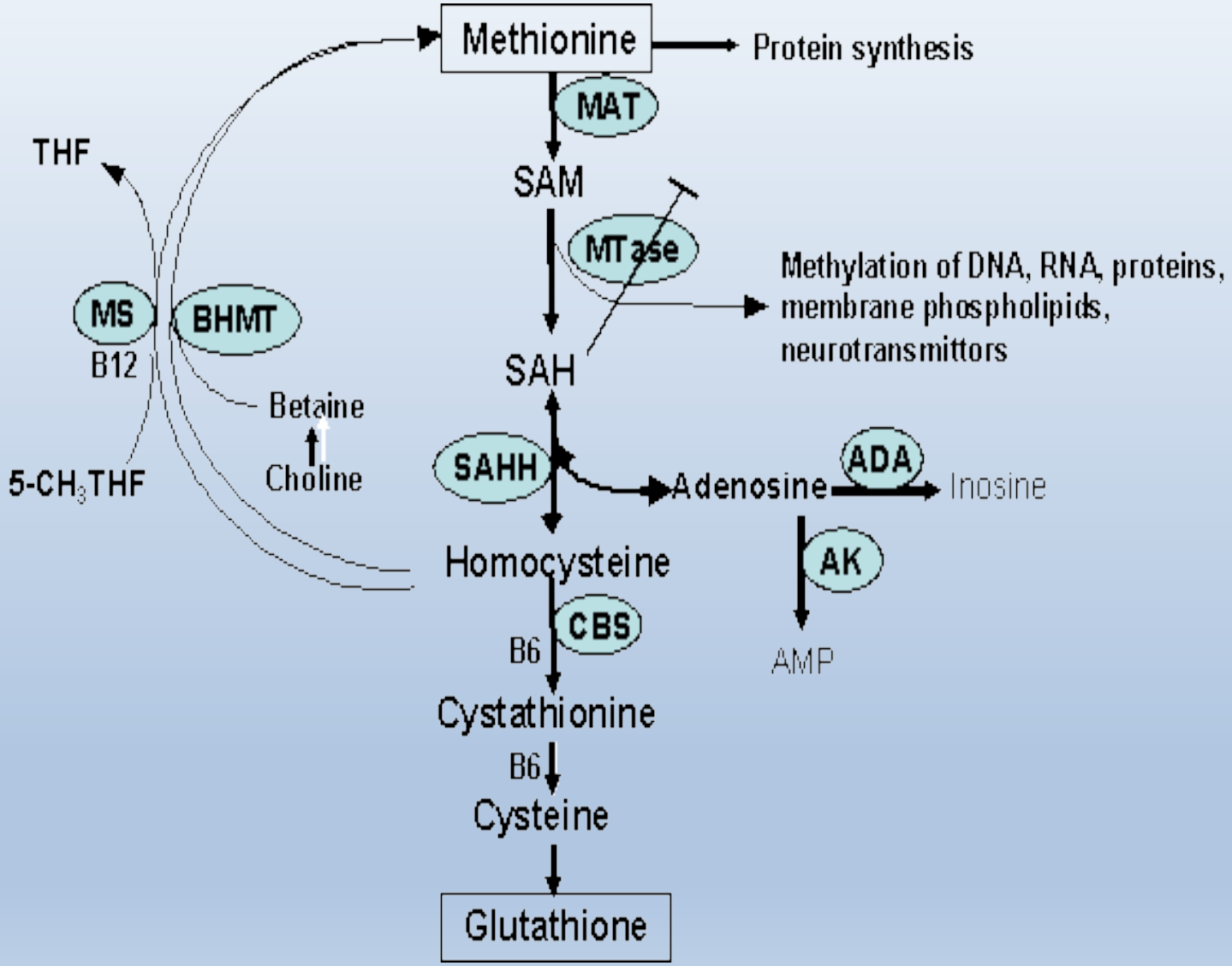
- Easily fatigued
- Poor fine motor skills
- Low muscle tone

Physiological Abnormalities in Autism



V. Abnormal Methylation Chemistry Detoxification Impairments

Overview of the Methionine Transsulfuration Pathway



Main *et al. Nutrition & Metabolism* 2012, **9**:35
http://www.nutritionandmetabolism.com/content/9/1/35

Nutrition&Metabolism

RESEARCH Open Access

The potential role of the antioxidant and detoxification properties of glutathione in autism spectrum disorders: a systematic review and meta-analysis

Penel

Ab

Bac
the
tha
role

Implications of Reduced Glutathione Status in Autism
Reduced ability to detoxify environmental toxicants and heavy metals:

Neurotoxicity

Physiological Abnormalities in Autism

VI. Nutritional Deficiencies

Attention and Focus

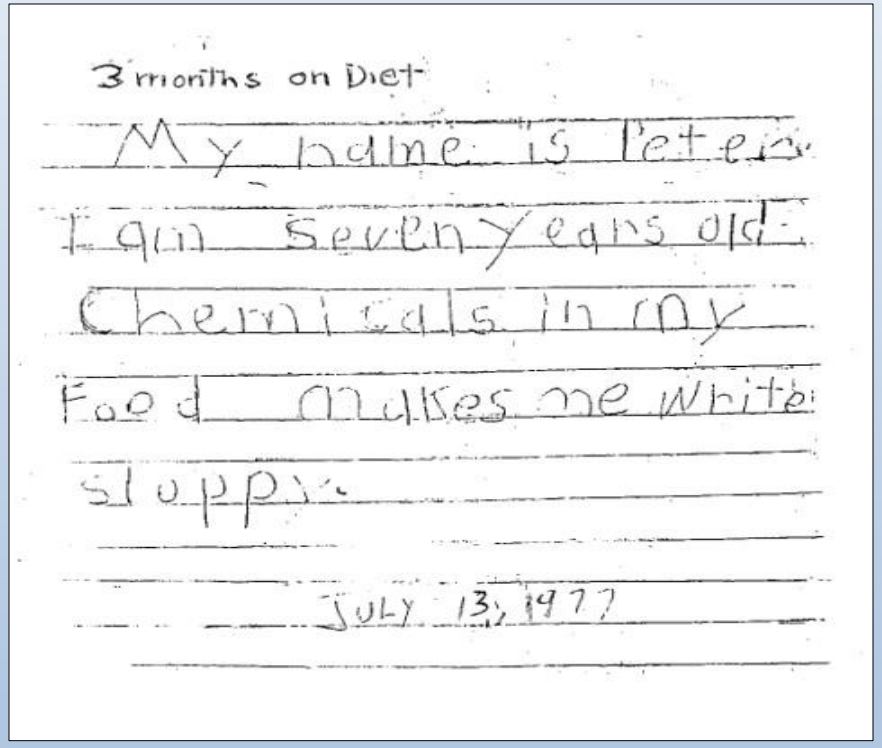
The role of food sensitivities

- Sensitivity – IgG (acquired)
- Allergy – IgE (hard-wired)
- Intolerance
- Psychosis

The Role of the Feingold Diet

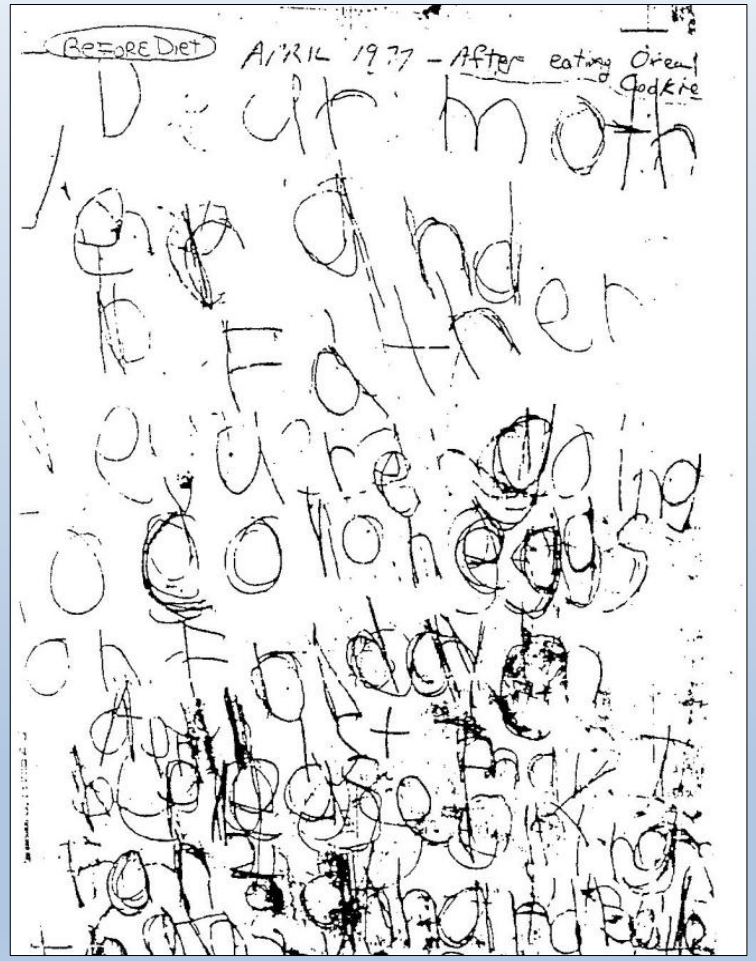
- Learning
- Mood
- Hyperactivity
- Behavior
- Handwriting

Feingold Diet


3 months on Diet

My name is Peter.
I am seven years old.
Chemicals in my
Food makes me white
slippy.

July 13, 1977


Before Diet April 1977 - After eating Oreo Cookie

VII. Sensory Issues on the Autism Spectrum

"Sensory processing (SP) difficulties have been reported in as many as 95% of children with autism

Journal of Autism and Developmental Disorders
May 2008, Volume 38, Issue 5, pp 867-875

The Relationship Between Sensory Processing Patterns and Behavioural Responsiveness in Autistic Disorder: A Pilot Study

Amy E. Z. Baker, Alison Lane, Manya T. Angley, Robyn L. Young

Abstract

Sensory processing (SP) difficulties have been reported in as many as 95% of children with autism, however, empirical research examining the existence of specific patterns of SP difficulties within this population is scarce. Furthermore, little attention has been given to examining the relationship between SP and either the core symptoms or secondary manifestations of autism. In the current study, SP patterns in children with autistic disorder (AD) were investigated via a caregiver questionnaire and findings were correlated with the social, emotional and behavioural responsiveness of participants. Results indicated the presence of specific SP patterns in this sample of children with AD and several significant relationships were found between SP and social, emotional and behavioural function.

VIII. Developmental Optometry

Have you ever heard things like:

- He knows how to do it, he just doesn't want to
- He'll only do it if he feels like it
- Oh, he's smart but he's lazy

VIII. Developmental Optometry

- The brain doesn't always coordinate sensory input well.
- Vision is one of the five senses
- Two eyes = duplicate sensory input to an overloaded brain
- ASD patients often have double vision and other issues that are unsuspected

Child Psychiatry and Human Development
September 1998, Volume 29, Issue 1, pp 65-76

Behavioral Changes in Autistic Individuals as a Result of Wearing Ambient Transitional Prism Lenses

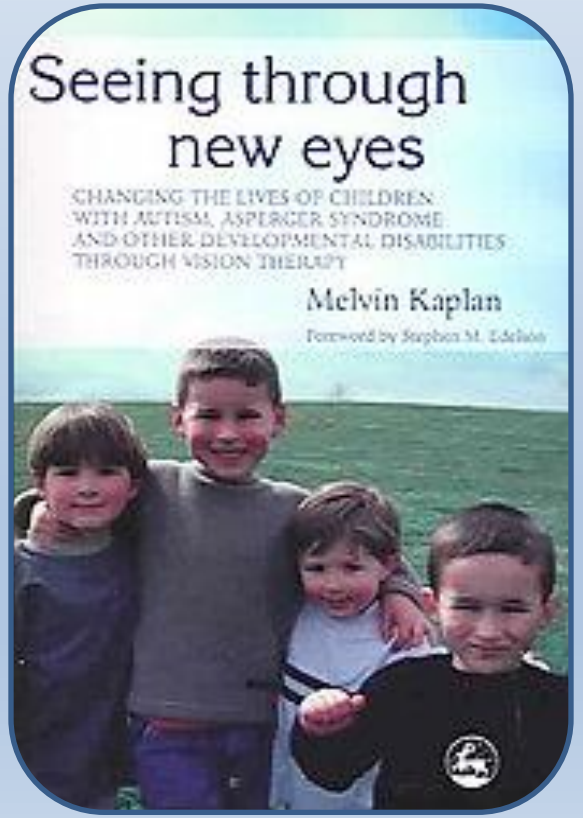
Melvin Kaplan, Stephen M. Edelson, Jo-Anne Lydia Seip

Abstract

A double-blind crossover design was used to assess the efficacy of wearing ambient lenses to reduce the behavioral symptoms of autism. Eighteen autistic individuals, ranging in age from 7 to 18 years, participated in the study. Behavior, attention, and orientation were evaluated at 1 1/2 months, 2 months, 3 months, and 4 months. Compared to the placebo condition, the results showed a decrease in behavior problems at the 1 1/2 and 2 month assessment periods and a slight loss of these benefits at the 3 and 4 month assessment periods. These findings support the prediction that ambient lenses, worn without engaging in visual-motor exercises, have positive effects on autistic individuals.

Recommended Book on Developmental Optometry

About 25% of my patients have unsuspected visual abnormalities, such as seeing double, that are undetected by a regular eye exam. They need an evaluation by a Developmental Optometrist and corrective prism lenses.



Appropriate referral

- Developmental Optometrist

X. Anxiety

Autism **June 2000** vol. 4 no. 2 **117-132 doi: 10.1177/1362361300004002002**

The Prevalence of Anxiety and Mood Problems among Children with Autism and Asperger Syndrome

Joseph A. Kim, Peter Szatmari, Susan E. Bryson, David L. Streiner, Freda J. Wilson

Abstract

The objective of this study was to report on the prevalence and correlates of anxiety and mood problems among 9- to 14- year-old children with Asperger syndrome (AS) and high-functioning autism. Children who received a diagnosis of autism (*n* 40) or AS (*n* 19) on a diag tic interview when they were 4 to 6 years of age were administered a battery of oural measures. Families were contacted roughly 6 years later for evidence of psychiatric problems includi mple of 1751 community chi nd depression problems. The here were, however, no differences between the AS and autistic children within this high ber of psychiatric problems was not correlated with early autistic sympto predicted to a small extent by early verbal/non-verbal IQ discrepancy scores. These data indicate that high-functioning PDD children are at greater risk for mood and anxiety problems than the general population but the correlates and risk factors for these comorbid problems remain unclear.

About 95% have anxiety

XI. Sedation Dentistry

ASDC J Dent Child. 1979 Sep-Oct;46(5):404-7.

Sedation of the autistic patient for dental procedures.

Braff MH, Nealon L.

Abstract

It would be wrong to draw firm conclusions in this paper, because the methodology was highly subjective. However, the authors are of the opinion that certain conclusions can be drawn: Autistic individuals, even those with wildly aberrant behavior, can frequently receive dental treatment in a routine manner, if adequately sedated. Various sedative drugs may be effective. Combinations of drugs may be successful, where individual drugs have failed. The authors found the combination of Nisentil and Phenergan, supplemented with Vistaril when needed, to be especially effective. N2O-O2 analgesia appears to be beneficial, either alone or as an adjunct to other medications.

Dental support strategies:

- Xylitol oral care products
- Xylitol gum and candy
- Probiotic toothpastes and mouth rinses
- Reducing/eliminating use of juices, sugary drinks and sports drinks
- Dental sealants

The brain is under silent attack in Autism Spectrum Disorder

- Opiate neuro-peptides
- Toxins from dysbiosis in the gut
- Neuroinflammation
- Neuro-toxicity
- Autoimmunity to various brain tissues
- Oxidative stress
- Nutritional deficiencies
- Tics
- Seizures
- Double Vision from poor sensory integration

On the “radar screen”

- Nutrigenomics
- Epigenomics
- MTHFR/Methylation pathways
- TMS – Transcranial Magnetic Stimulation
- Cannabis
- Hemp oil
- Fecal Transplants