At the Intersection of the Senses: Understanding Food Related Pathologies on the Autism Spectrum

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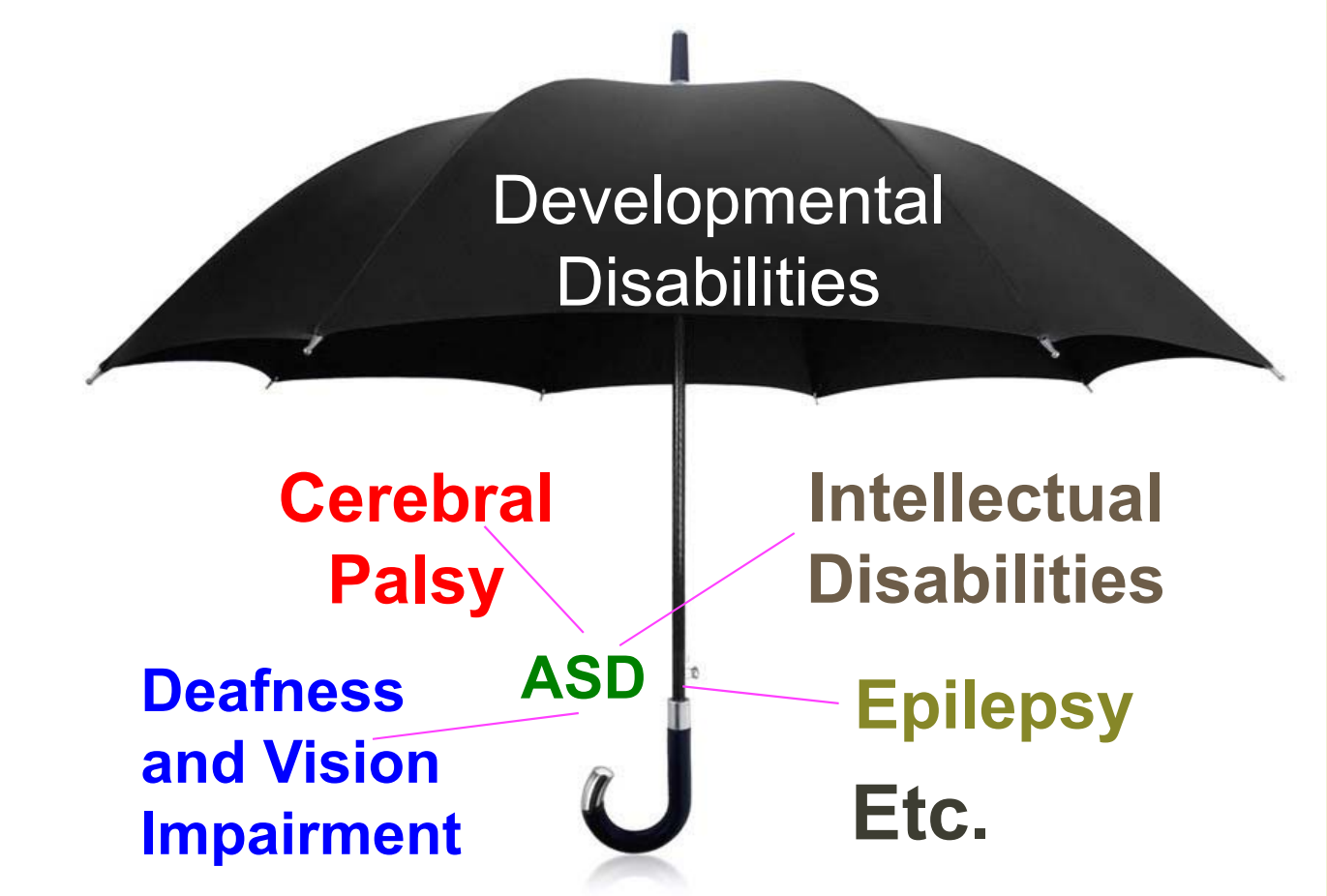
2018 MAND Conference

March 19, 2018

Overview of the Presentation:

- Introduction to Autism Spectrum Disorder (ASD)
- Nutrition-Related Trends
- Eating Disorders on the Spectrum
  - DSM-5 and Autism
- Change of Behavior and Health
- What Nutrition Professionals Can Contribute

Understanding The Relationship Of Autism, Intellectual and Developmental Disabilities



Introduction to Autism Spectrum Disorder

Autism Core Symptoms:

(1) Restrictions in social interaction;

(2) Verbal and nonverbal communication deficits;

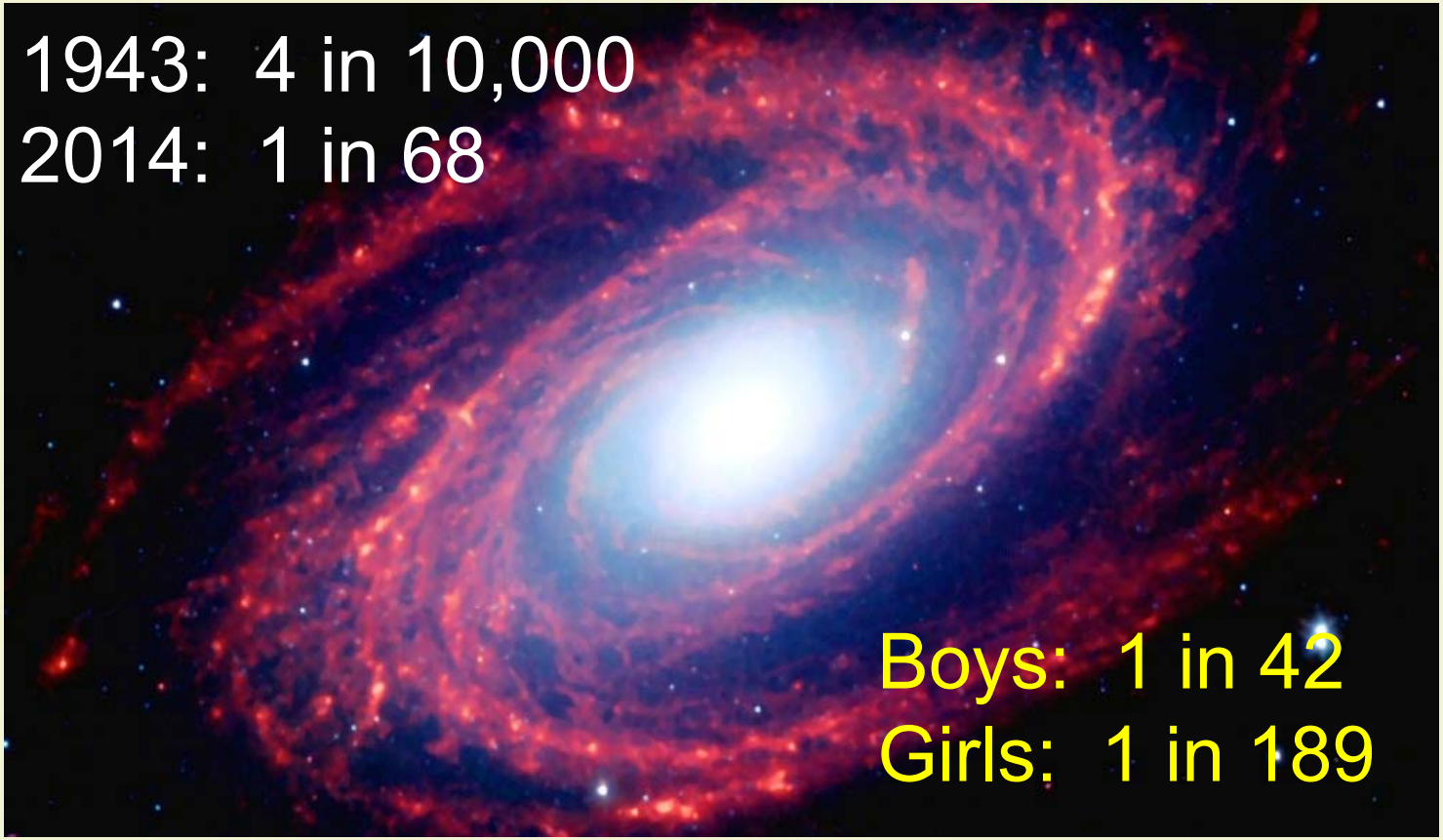
(3) Restricted range of interests and behaviors.

Autism Spectrum Disorder Symptoms:

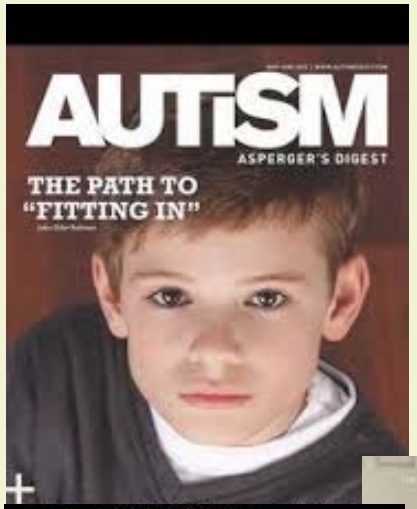
(1) Deficits in social communication and interaction

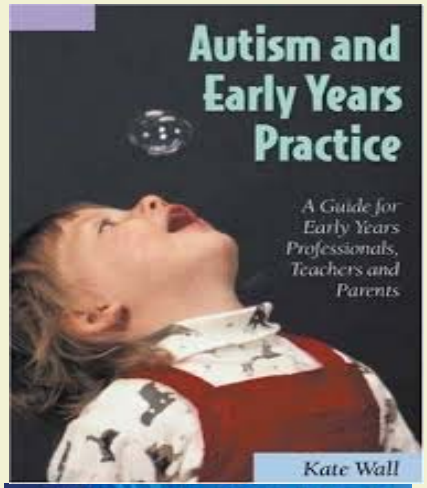
(2) Restricted and repetitive behavior patterns.

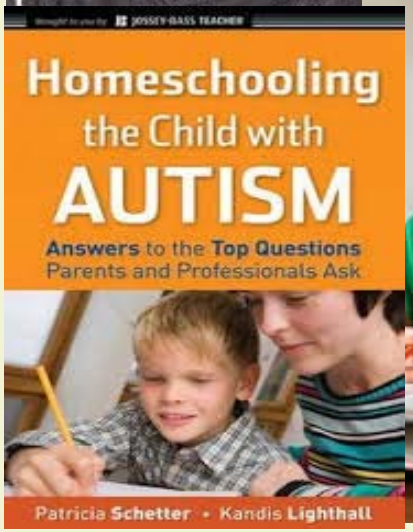
Trends in Autism Spectrum Disorder

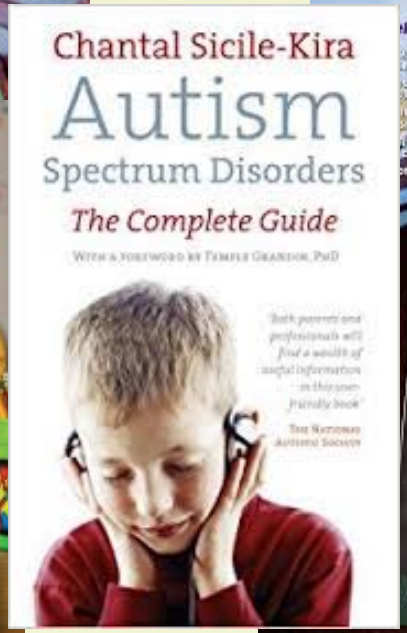


The Face Of Autism







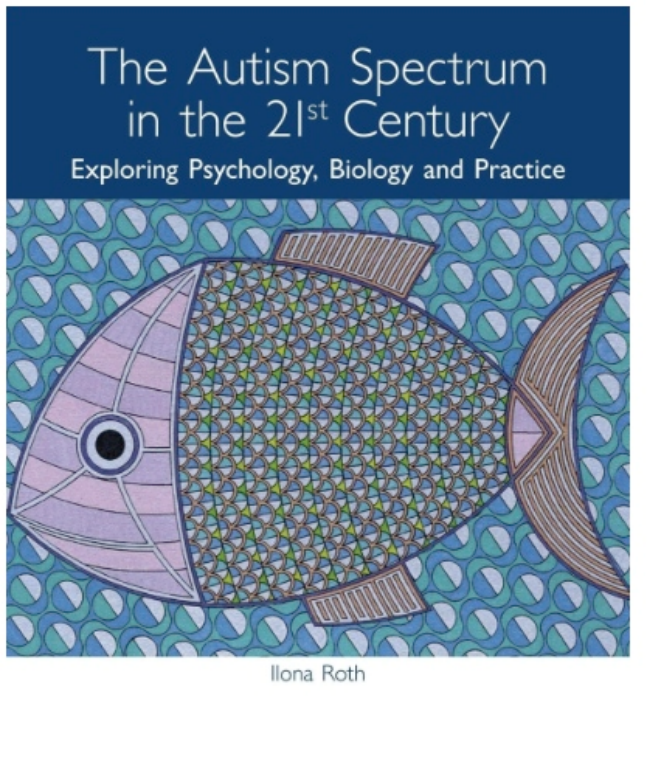


Most People With Autism Are Adults

"neglected"

"invisible"

"unrecognized"



$3.2 Million to the age of 60

Adults on the spectrum: national surveys

"After these individuals leave school, most of them disappear from national data sets. They "age out" of the education system and its records and may be missing from or unidentifiable on social services rolls."

-- *U.S. Surveillance of Health of People with Intellectual Disabilities.* Centers for Disease Control and Prevention (CDC) / National Center on Birth Defects and Developmental Disabilities (NCBDDD) Health Surveillance Work Group, 2009.

Nutrition-Related Trends: Obesity and Children

Obesity and Autism

Alison Presmanes Hill, PhD[a], Katharine E. Zuckerman, MD, MPH[b], Eric Fombonne, MD[c]

abstract

OBJECTIVE: Overweight and obesity are increasingly prevalent in the general pediatric population. Evidence suggests that children with autism spectrum disorders (ASDs) may

5,053 children (2-17 years of age)
Autism Speaks Autism Treatment Network
33.6% overweight; 18% obese
Significantly greater than in the general population;
starts earlier suggesting a different trajectory of weight gain

higher among children with ASDs ages 2 to 5 years and among those of non-Hispanic white origin. Multivariate analyses revealed that older age, Hispanic or Latino ethnicity, lower parent education levels, and sleep and affective problems were all significant predictors of obesity.

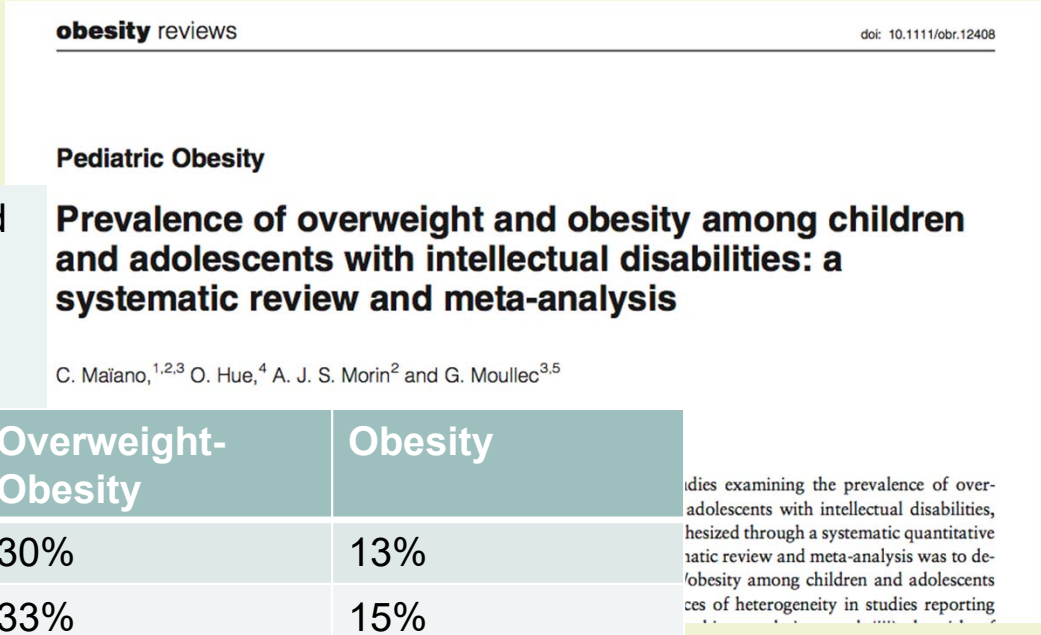
CONCLUSIONS: Our results indicate that the prevalence of unhealthy weight is significantly greater among children with ASD compared with the general population, with differences present as early as ages 2 to 5 years. Because obesity is more prevalent among older children in the general population, these findings raise the question of whether there are different trajectories of weight gain among children with ASDs, possibly beginning in early childhood.

Hill, A. P., et al. (2015). "Obesity and Autism." *Pediatrics* **136**(6): 1051-1061.

Nutrition- Related Trends: Obesity and Children

Children:

16 studies published between 1985 and 2015 found that adolescents with ID were respectively 1.54 and 1.80 times more at risk of overweight–obesity and obesity than typically developing adolescents.



obesity reviews doi: 10.1111/obr.12408

Pediatric Obesity

Prevalence of overweight and obesity among children and adolescents with intellectual disabilities: a systematic review and meta-analysis

C. Maïano,[1,2,3] O. Hue,[4] A. J. S. Morin[2] and G. Moullec[3,5]

ıdies examining the prevalence of over-
adolescents with intellectual disabilities,
hesized through a systematic quantitative
ıatic review and meta-analysis was to de-
/obesity among children and adolescents
ces of heterogeneity in studies reporting

	Overweight	Overweight-Obesity	Obesity
Children	15%	30%	13%
Adolescents	18%	33%	15%

Maiano, C., et al. (2016). "Prevalence of overweight and obesity among children and adolescents with intellectual disabilities: a systematic review and meta-analysis." *Obesity Reviews* **17**(7): 599-611

Nutrition-Related Trends: Obesity and Children

BRIEF REPORTS
EPIDEMIOLOGY

nature publishing group

Prevalence of Obesity Among Children With Chronic Conditions

46,707 individuals (10-17 years of age)
National Survey of Children's Health 2003

23.4% of children with autism were obese

study provides prevalence estimate of obesity for children and adolescents with select chronic conditions. We analyzed reported height and weight and the corresponding BMI from 46,707 subjects aged 10–17 years collected by the National Survey of Children's Health (NSCH-2003). Our main outcome measure was the prevalence of obesity (defined as ≥95th percentile of the sex-specific BMI for age growth charts), adjusted for underlying demographic

asthma was 19.7% (19.5–19.9); with a hearing/vision condition was 18.4% (18.2–18.5); with learning disability was 19.3% (19.2–19.4); with autism was 23.4% (23.2–23.6); and with attention-deficit/hyperactivity disorder was 18.9% (18.7–19.0). Our findings suggest that children 10–17 years of age with select chronic conditions were at increased risk for obesity compared to their counterparts without a chronic condition.

Chen, A. Y., et al. (2010). "Prevalence of obesity among children with chronic conditions." *Obesity (Silver Spring)* **18**(1): 210-213.

Meta-Analysis of Obesity Studies: Children


www.nature.com/scientificreports

SCIENTIFIC REPORTS

Received: 29 Decer
Accepted: 1 Septen
Published online: 1

ASD, the findings are inconsistent. Thus, we conducted a meta-analysis of epidemiological studies to examine the association among obesity, overweight and ASD. PubMed, Embase, and the Cochrane Library were used for literature searches to identify eligible studies published in English before November 15, 2016. Relevant studies estimating the association among obesity, overweight and ASD

Fifteen studies encompassing 49,937,078 participants and 1,045,538 individuals with ASD (mean age 2 to 29.4 ± 12.1 years).

Prevalence of obesity was significantly higher in individuals with ASD than in controls, but not overweight.

Zheng, Z., et al. (2017). "Association among obesity, overweight and autism spectrum disorder: a systematic review and meta-analysis." *Scientific Reports* **7**.

Nutrition-Related Trends: Obesity And Adults

autism

Special Issue Article

The health status of adults on the autism spectrum

Autism
2015, Vol. 19(7) 814–823

DOI: 10.1177/1362361315577517
aut.sagepub.com
SAGE

1,507 adults with ASD (ages 18 to 65+); all clients of Kaiser Permanente / California. Chart review between January 2008 and December 2012.

Obesity found at 33.9% vs 27.0% for the control group

records on at least two separate occasions. Controls (N = 15,070) were adults without any autism spectrum disorder diagnoses sampled at a 10:1 ratio and frequency matched to cases on sex and age. Adults with autism had significantly increased rates of all major psychiatric disorders including depression, anxiety, bipolar disorder, obsessive–compulsive disorder, schizophrenia, and suicide attempts. Nearly all medical conditions were significantly more common in adults with autism, including immune conditions, gastrointestinal and sleep disorders, seizure, obesity, dyslipidemia, hypertension, and diabetes. Rarer conditions, such as stroke and Parkinson's disease, were also significantly more common among adults with autism. Future research is needed to understand the social, healthcare access, and biological factors underlying these observations.

Croen, L. A., et al. (2015). "The health status of adults on the autism spectrum." Autism **19**(7): 814-823.

Nutrition-Related Trends: Obesity and Adults

Reference	Population Studied	Rate of Overweight	Rate of Obesity
Henderson et al. 2008	ID n = 100	18%	39%
Sohler et al. 2009	ID n = 291	27%	43%
Stancliffe et al. 2011	ID n = 8,911	62.2% Overweight or Obese	33.6%
Stedman et al. 2010	ID n = 98	30.6%	51%
Gravestock 2000 **Review**	ID		2-35%

Nutrition-Related Trends: Obesity and Adults

Research in Developmental Disabilities 33 (2012) 398–405

Contents lists available at SciVerse ScienceDirect

Research in Developmental Disabilities

Overweight and obesity in older people with intellectual disability☆

C.F. de Winter [a,b,*], L.P. Bastiaanse [a,c], T.I.M. Hilgenkamp [a,d], H.M. Evenhuis [a], M.A. Echteld [a]

[a] Intellectual Disability Medicine, Erasmus Medical Center Rotterdam, Department of General Practice, Rotterdam, The Netherlands
[b] Reinaerde, Den Dolder, The Netherlands
[c] Ipse de Bruggen, Zwammerdam, The Netherlands
[d] Abrona, Huis ter Heide, The Netherlands

1050 individuals (age >50) with ID

Healthy Ageing in Intellectual Disability (HA-ID) study found that prevalence of obesity (measured via BMI) was higher than in the general population with high rates of abdominal obesity.

de Winter, C. F., et al. (2012). "Overweight and obesity in older people with intellectual disability." *Research in Developmental Disabilities* **33**(2): 398-405.

Nutrition-Related Trends: Obesity and Adults

- Obesity associated with…
  - living independently
  - medication use
  - level of disability
  - physical inactivity
  - gender

Weight Management:

Spanos *et al. Nutrition Journal* 2013, **12**:132
http://www.nutritionj.com/content/12/1/132

NUTRITION JOURNAL

REVIEW Open Access

Weight management interventions in adults with intellectual disabilities and obesity: a systematic review of the evidence

Methodological concerns related to sample size, design and analysis leading to insufficient evidence to support the effectiveness of any particular intervention

studies met the inclusion criteria. The interventions were classified according to inclusion of the following components: behaviour change alone, behaviour change plus physical activity, dietary advice or physical activity alone, dietary plus physical activity advice and multi-component (all three components). The majority of the studies had the same methodological limitations: no sample size justification, small heterogeneous samples, no information on randomisation methodologies. Eight studies were classified as multi-component interventions, of which one study used a 600 kilocalorie (2510 kilojoule) daily energy deficit diet. Study durations were mostly below the

Spanos, D., et al. (2013). "Weight management interventions in adults with intellectual disabilities and obesity: a systematic review of the evidence." Nutrition Journal **12**.

Nutrition-Related Trends: T2DM and Children /Adolescents

6,122 adolescent and young adults in the Taiwan National Health Insurance Research Database against 24,488 age- and sex-matched control subjects between 2002 and 2009 and monitored them until the end of 2011.

A Nationwide Longitudinal Study

Wen-Han Chang, Tzeng-Ji Chen, and Ya-Mei Bai[1,2]

Diabetes Care 2016;39:788–793 | DOI: 10.2337/dc15-1807

Adolescents and young adults with ASD were more likely to develop type 2 DM during follow-up. In addition, those with ASD using atypical antipsychotics (short- and long-term use) exhibited a high risk.

and dyslipidemia. However, the association between ASD and type 2 DM re-

- Chen, M. H., et al. (2016). "Risk of Developing Type 2 Diabetes in Adolescents and Young Adults With Autism Spectrum Disorder: A Nationwide Longitudinal Study." *Diabetes Care* **39**(5): 788-793.

Nutrition-Related Trends: T2DM and Adults

1. McDermott S, Moran R, Pla ... with disabilities in primary care. *Journal of Developmental and*
2. Shireman TI, Reichard A, N ... s with developmental disabilities. *Disability and Health Journal*
3. Lunsky Y, Lin E, Balogh R ... persons with serious mental illness and developmental disability.
4. Reichard A, Stolzle H (201 ... Compared to Individuals With No Cognitive Disabilities. *Intellec*
5. de Winter CF, Bastiaannse ... l.A. (2012) Cardiovascular Risk Factors in Older Adults with In ... *bilities* **33**, 1722-1731.
6. Sohler N, Lubetkin E, Levy ... Coronary Heart Disease in People with Intellectual Disabilities. *Social Work in Health Care* **48**, 76-89.

4.5% to 19.4%

6. Croen LA, Zerbo O, Qian YG, et al. The health status of adults on the autism spectrum. *Autism : the international journal of research and practice.* 2015;19(7):814-823.

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Nutrition-Related Trends: Underdiagnosis and Lack of Screening

980 individuals with ID were assessed. Health Ageing in Intellectual Disabilities Study – Netherlands

In some instances twice as many missed diagnoses when compared to the general population

Condition	% Not Previously Diagnosed
Cardiovascular risk factors	45-50%
Metabolic Syndrome	94%
T2 Diabetes	45%
Hypertension	50%
Hypercholesterolemia	46%

de Winter CF, Bastiaannse, L.P., Hilgenkamp, T.I.M., Evenhuis, H.M., Echteld, M.A. (2012) Cardiovascular Risk Factors in Older Adults with Intellectual Disability. *Research in Developmental Disabilities* **33**, 1722-1731.

Nutrition-Related Trends for Adults with ASD

Diagnostic Overshadowing

Nutrition-Related Trends: Nutritional Deficiencies -- Children

- A range of research has found that children with autism were deficient in:
  - Folic Acid
  - Niacin
  - Vitamin B6
  - Vitamin C
  - Vitamin D
  - Vitamin K
  - Iron
  - Zinc
  - Calcium
  - Amino Acids

Nutritition-Related Trends: Intake & Nutritional Deficiencies -- Children

NIH Public Access
Author Manuscript
Res Autism Spectr Disord. Author manuscript; available in PMC 2013 January 01.

Published in final edited form as:
Res Autism Spectr Disord. 2012 ; 6(1): 399–405. doi:10.1016/j.rasd.2011.06.014.

Among 53 children with autism spectrum disorders (ASD) and 58 typically developing children, ages 3 to 11, children with ASD were found to consume significantly more daily servings of sweetened beverages and snack foods and significantly fewer daily servings of fruits and vegetables than typically developing children. Further, children with ASD consume more energy-dense foods than typically developing children.

[a]Eunice Kennedy Shriver Center, University of Massachusetts Medical School, 200 Trapelo Road, Waltham, MA 02452

[e]Department of Health Sciences, Boston University, 635 Commonwealth Ave, Boston, MA, 02215

Abstract

To determine whether dietary patterns (juice and sweetened non-dairy beverages, fruits, vegetables, fruits & vegetables, snack foods, and kid's meals) and associations between dietary patterns and body mass index (BMI) differed between 53 children with autism spectrum disorders

Evans, E. W., et al. (2012). "Dietary patterns and body mass index in children with autism and typically developing children." *Research in Autism Spectrum Disorders* **6**(1): 399-405.

Nutrition-Related Trend: Intake & Nutritional Deficiencies: Adults

J Dev Phys Disabil (2013) 25:625–636
DOI 10.1007/s10882-013-9339-z

ORIGINAL ARTICLE

Diet Quality of Overweight and Obese Adults with Intellectual and Developmental Disabilities as Measured by the Healthy Eating Index-2005

70 subjects (28 male, 42 female; mean age 33.9±11.5 years) with IDD

Study concurred with previous findings that the diet of individuals with ID is high in saturated fat and refined carbohydrates and low in vitamin A, fiber, folate and iron. Likewise this sample did not consume sufficient amounts of fruits and vegetables.

and obese adults with intellectual and developmental disabilities (IDD) in the United States. The purpose of this study was to determine diet quality, as measured by the Healthy Eating Index-2005 (HEI-2005), of overweight and obese adults with IDD. Data were obtained from community-dwelling overweight individuals. 3-day food records were administered and completed with assistance by staff or family members and then reviewed by a dietitian. All records were analyzed and HEI-2005 was

Ptomey, L., et al. (2013). "Diet Quality of Overweight and Obese Adults with Intellectual and Developmental Disabilities as Measured by the Healthy Eating Index-2005." *Journal of Developmental and Physical Disabilities* **25**(6): 625-636.

Nutrition-Related Trends: Intake & Nutritional Deficiencies: Adults

Article

Food choice by people with intellectual disabilities at day centres: A qualitative study

Qualitative Study in Scotland, primarily focused on caregivers and support staff (n = 42).

Despite stating that they understood healthy choices, many individuals chose poor-quality foods because they were available. Impulsivity was common.

Stressed the importance of the “social environment”

Date accepted: 14 November 2014

Cartwright, L., et al. (2015). "Food choice by people with intellectual disabilities at day centres: A qualitative study*." Journal of Intellectual Disabilities* **19**(2): 103-115.

Nutritional Deficiencies: Adults

Evidence for deficiencies related to Pica

Iron deficiency

Elevated prevalence of mitochondrial dysfunction in ASD

Nutritional deficiencies contribute to epilepsy in both cause and consequence

No validated method for dietary intake assessment for adults

Nutrition-Related Trends: GI Problems

PEDIATRICS®

No specific cause of the GI problems in Autism found and it is not considered diagnostic.

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

Pediatrics 2010;125;S1

DOI: 10.1542/peds.2009-1878C

Buie, T., et al. (2010). "Evaluation, diagnosis, and treatment of gastrointestinal disorders in individuals with ASDs: a consensus report." *Pediatrics* **125 Suppl 1**: S1-18

Nutrition-Related Trends: GI Problems

Normative constipation, often with co-occurring diarrhea

restrictive or limited diets

No physical activity/sedentary lifestyle

physical causes

interaction of factors

hydration

polypharmacy

glhw#brz #q#lehu

Nutrition-Related Trends: Allergies and the Immune Response

Contents lists available at SciVerse ScienceDirect

Research in Autism Spectrum Disorders

Journal homepage: http://ees.elsevier.com/RASD/default.asp

Comorbidity of allergic and autoimmune diseases in patients with autism

Elevated levels of inflammatory proteins

Asthma 35% more common

Food Related Allergies:

- Dermatological
- Respiratory
- Behavioral

association between ASDs and allergic diseases, and autoimmune comorbidities (type 1 diabetes and Crohn's disease). Further basic study is required to elucidate the possible underlying mechanisms and roles of allergy immunity and autoimmunity in the etiology of ASDs.

Chen, M. H., et al. (2013). "Comorbidity of allergic and autoimmune diseases in patients with autism spectrum disorder: A nationwide population-based study." *Research in Autism Spectrum Disorders* **7**(2): 205-212.

Nutrition-Related Trends: Polypharmacy

Stortz JN, Lake JK, Cobigo V, Ouellette-Kuntz HMJ, Lunsky Y. Lessons Learned From Our Elders: How to Study Polypharmacy in Populations With Intellectual and Developmental Disabilities. *Intellectual and Developmental Disabilities.* Feb 2014;52(1):60-77.

Wagemans, A. M., et al. (1998). "Osteoporosis and intellectual disability: is there any relation?" *Journal of Intellectual Disability Research* **42 (Pt 5)**: 370-374.

Dietary Interventions and ASD

- Mari-Bauset S, Zazpe I, Mari-Sanchis A, Liopis-Gonzalez A, Morales-Suarez-Varela M. Evidence of the Gluten-Free and Casein-Free Diet in Autism Spectrum Disorders: A Systematic Review. *Journal of Child Neurology.* Dec 2014;29(12):1718-1727.

- van De Sande, M. M. H., et al. (2014). "Autism and nutrition: the role of the gut-brain axis." *Nutrition Research Reviews* **27**(2): 199-214.

- Adams JB, Audhya T, McDonough-Means S, et al. (2011) Effect of a vitamin/mineral supplement on children and adults with autism. *BMC Pediatrics* 11, 111.

- Napoli, E., et al. (2014). "Potential therapeutic use of the ketogenic diet in autism spectrum disorders." *Frontiers in Pediatrics* **2**: 69.

Eating Disorders Rates On the Autism Spectrum

Children: 90%

Volkert VM, Vaz PC. Recent studies on feeding problems in children with autism. *Journal of Applied Behavior Analysis.* 2010;43(1):155-9.

Eating Disorders: Adults with ASD

CURRENT OPINION

Autism spectrum disorder: outcomes in adulthood

Patricia Howlin[a,b] *and Iliana Magiati*[c]

Purpose of review
Until recently, there has been little systematic study of adult life among individuals with autism spectrum disorder (ASD) but recognition of the high psychological and social costs of ASD has led to an increase in

6-17% of adults on the spectrum have Eating Disorders

and

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particular dearth of research on older individuals with ASD.

Summary
The very variable findings reported in this review reflect the problems of conducting research into lifetime outcomes for individuals with a condition as heterogeneous as ASD. Much more systematic research is needed to delineate different patterns of development in adulthood and to determine the factors influencing these trajectories.

Keywords
adulthood, aging, autism, autism spectrum disorder, developmental trajectories, outcome

Howlin, P. and I. Magiati (2017). "Autism spectrum disorder: outcomes in adulthood." *Current Opinion in Psychiatry* **30**(2): 69-76.

Eating Disorders: Adults with ASD

VOLUME 109, NUMBER 6: 501–506 | NOVEMBER 2004 AMERICAN JOURNAL ON MENTAL RETARDATION

Prevalence of Eating Disorders in Adults With Mental Retardation Living in the Community

Oddbjørn Hove
Helse Fonna HF, P

27% of 311 adults with DD had an eating disorder

Abstract
The prevalence of eating disorders among 311 adults with mental retardation living in the West Coast of Norway was investigated. Reports stemming from a questionnaire completed by health workers were the data source. Diagnostic criteria adapted for persons with mental retardation were used. The main finding was that 27% of cases showed indices of an eating disorder. Among the eating disorders, binge-eating was the most prevalent. Incidence of anorexia nervosa was higher than that of the general population. Findings suggest that eating disorders are more prevalent in this population than in the general population.

Hove, O. (2004). "Prevalence of eating disorders in adults with mental retardation living in the community." *American Journal on Mental Retardation* **109**(6): 501-506.

Eating Disorders and ASD

Eating Disorders and ASD
Group 1: Food Rigidity

Avoidant/restrictive food intake disorder (ARFID)

Thomas, J. J., et al. (2017). "Avoidant/Restrictive Food Intake Disorder: a Three-Dimensional Model: Neurobiology with Implications for Etiology and Treatment." *Current Psychiatry Reports* **19**(8).

Volkert VM, Vaz PC. Recent studies on feeding problems in children with autism. *Journal of applied behavior analysis.* 2010;43(1):155-9.

Eating Disorders and ASD Group 2: Sensory Based

- Specificity in presentation
- Specificity in temperature
- Specificity in color
- Specificity in texture

Elwin, M., et al. (2012). "Autobiographical Accounts of Sensing in Asperger Syndrome and High-Functioning Autism." *Archives of Psychiatric Nursing* **26**(5): 420-429.

Eating Disorders and ASD

Group 3: High Risk Challenging Behaviors

✔ **Rumination** ✔ **Pica**

Falcomata TS, Roane HS, Pabico RR. Unintentional stimulus control during the treatment of pica displayed by a young man with autism. *Research in autism spectrum disorders*. 2007 Oct-Dec;1(4):350-9.

Matson JL, Belva B, Hattier MA, Matson ML. Pica in persons with developmental disabilities: Characteristics, diagnosis, and assessment. *Research in autism spectrum disorders*. 2011 Oct-Dec;5(4):1459-64.

Stiegler L. Understanding Pica Behavior: A Review for Clinical and Education Professionals. *Focus on Autism and Other Developmental Disabilities*. 2005;20:27-38.

Call NA, Simmons CA, Mevers JEL, Alvarez JP. Clinical Outcomes of Behavioral Treatments for Pica in Children with Developmental Disabilities. *Journal of Autism and Developmental Disorders*. 2015 Jul;45(7):2105-14.

Eating Disorders and ASD
Group 3: Pica

Pica: General Population	Pica: Autism Spectrum Disorder
Discriminant	Indiscriminant
Pregnant women, culturally specific, medical conditions, children, dementia	Increasing Pica with increasing severity of Intellectual Disability
• Dirt or clay • Starch • Ice	Dirt, chalk, cigarettes, plastics, foam rubber, string, paper, paper clips, rubber bands, clothes, or cloth, grass, metal, buttons, hair, feces, vomit, rocks, glass, broken light bulbs, insects, paint chips, pencils, trash, toiletries, cleaning products, sewing needles, tar, vinyl or rubber gloves, carpet, foam padding, toilet bowl fresheners, spoiled food, mothballs, plastic tubing, tea bags, keys, crayons, twigs, alkaline batteries, soap, sealed snack bags, wood chips, jewelry, styrofoam, coffee grounds, aftershave lotion, toilet water, and dead animals

Eating Disorders and ASD
Group 4: Binge Eating

Adults:

Less Food Selectivity

Rapid Eating → Binge Eating Disorder

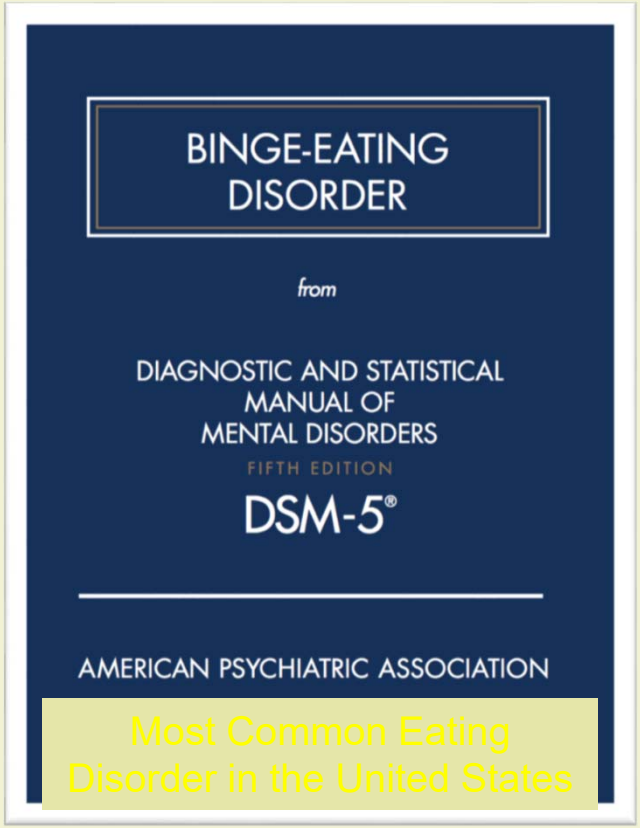
Eating Disorders and ASD
Binge Eating Disorder and the DSM-5

Distress regarding this behavior

No compensatory behaviors

Not co-occurring with AN or BN

Many obesity related complications



At least once a week for 3 months

No known cause:
* genetics
* dieting history
* depression
* weight stigma
* sexual or other trauma
* family or relation-ship problems
* addictions

Eating Disorders and ASD
Group 4: Binge Eating

#1 Eating more rapidly than is normal.

Eating Whenever Food is Available

Eating Too Much

~~#4 Feelings of disgust, depression or guilt post-consumption.~~

Stealing Food

Eating more rapidly than is normal:

Risks of Rapid Eating

- Aspiration
- Social Unacceptable → Social Isolation
- Indigestion
- In failure to reach satiety, weight gain

  Study among Japanese College Students found a significant correlation between high body fat ratio and rapid eating and hypothesized a relationship due to insulin resistance

Yaguchi-Tanaka, Y., et al. (2013). "Cross-Sectional Study of Possible Association between Rapid Eating and High Body Fat Rates among Female Japanese College Students." Journal of Nutritional Science and Vitaminology **59**(3): 243-249.

Change of Behavior

Box 4 Common medical causes of a change in behavior or function
Constipation
Dental problems
Dysphagia
Esophageal reflux
Headaches
Hearing changes
Hypothyroidism
Kidney stones
Seizures
Side effects of medications
Trauma
Urinary obstruction or retention or new incontinence
Urinary tract infections
Vision changes

Nicolaidis, C., et al. (2014). "Primary care for adults on the autism spectrum." *Medical Clinics of North America* **98**(5): 1169-1191.

Change of Behavior: The Pain Response

Barriers to Care

What Happened to Paul? Manifestation of Abnormal Pain Response for Individuals With Autism Spectrum Disorder

Qualitative Health Research
2017, Vol. 27(8) 1133–1145

DOI: 10.1177/1049732316644415
journals.sagepub.com/home/qhr
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Abstract
During the progression of a pilot nutrition intervention designed to teach cooking skills to young adults with autism spectrum disorder (ASD), one participant—Paul—fell in the parking lot. Prior to the accident, Paul had been making significant gains in the program and had communicated in a number of ways his enthusiasm. After his accident, which resulted in broken and dislocated bones in his ankle, his demeanor was dramatically altered, program gains were lost, and staff noted the appearance of many new challenging behaviors. This article analyzes Paul's behavior in reference to the pain response in autism. For some time, it was believed that many individuals with ASD did not experience pain based on anecdotal reports of how individuals responded to injury with seeming indifference. This view has given way of late to a Messages nced understanding of how atypical sensory processing and stimulus over-selectivity spill

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How Can Nutrition Professionals Contribute?

The Way Forward:

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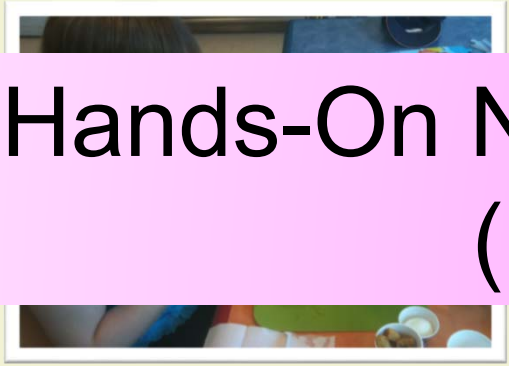
Active Engagement: The Therapeutic Value of Cooking



Hands-On Nutrition Education (HONE)

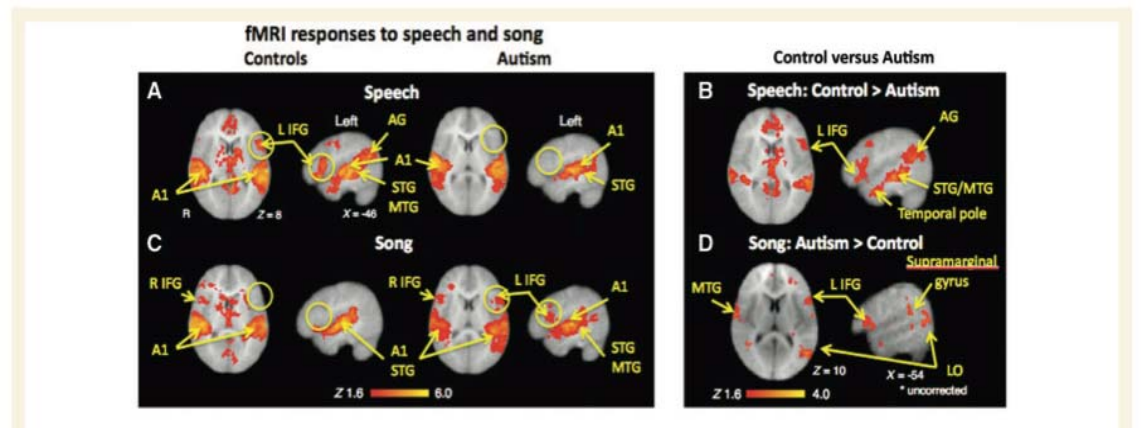
Conceptual Framework emphasizing:

-- Autonomy
–- Self-Efficacy
-- Socialization
-- Preference

Emphasis on *Choice* and *Individualization*

Goldschmidt, J., Song, H.J. (2016). "Development of Cooking Skills as Nutrition Intervention for Adults with Autism and Other Developmental Disabilities." *Journal of the Academy of Nutrition and Dietetics* **117**(5): 671-679.

Treatment Modalities: Environmental Controls



Lai G, Pantazatos SP, Schneider H, Hirsch J. Neural systems for speech and song in autism. *Brain* 2012;135:961-75. doi: 10.1093/brain/awr335.

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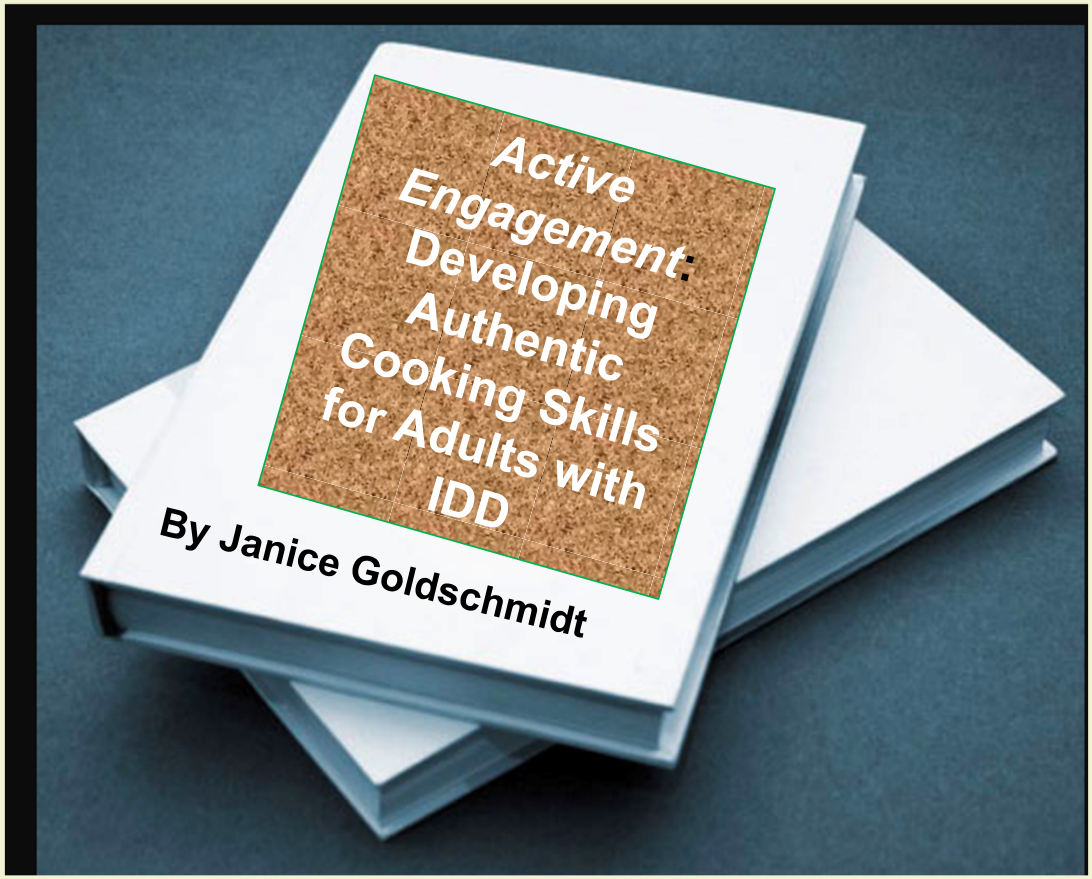

Questions?

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