This workshop is insufficient to prepare you to offer feeding services.
First Taste

https://www.youtube.com/watch?v=7PVVT9V2CM0&t=1s
Agenda

- Prevalence of Feeding Difficulties (especially in Autism)
- Important Screening & Assessment
- Behavioral Assessments
- Evidence Based Interventions
- Intensive therapy vs. On-going Therapy (e.g., once weekly)
- Need for data and outcomes
Typically Developing Children and Feeding Disorders

- Ranges anywhere from 5%-20%
- Nationwide Children’s statistics
Missy’s Observations

- Kindergarten
  - Is food *really* that color?
  - Does the word “fruit” make it healthy?
  - Coke?
- Grades 4-5
  - Gold fish, cupcakes, chips
- Middle School
  - Weight watching, skipping meals, cookies for a meal
Adult Eating

- How many of you eat a wide variety of foods?
- How many foods do you avoid?
- How many fruits do you eat per day?
- How many vegetables?
Other Disabilities and Feeding

- 40%-80%
- Commonly seen
  - Down syndrome
  - Cerebral palsy
  - Failure to Thrive
  - Russell Silver Syndrome
  - DiGeorge Syndrome
Autism and Eating

• Dr. Kanner’s original diagnostic criteria included aberrant eating patterns (Kanner, 1943)
  • 11 children with ASD
  • 6 children with histories of severe feeding difficulties
    • Case 1, Case 8, and Case 11 long-standing concerns with feeding
    • Case 4 and Case 7 both vomited as infants
    • Case 5 was tube fed
Prevalence and Autism

- Matson, Fodstad, & Dempsey (2009)
- Children with autism more significant feeding problems when compared to PDD and typical
- Reported common problems
  - (1) prefers food of a certain texture or smell (or temperature);
  - (2) will eat only certain foods;
  - (3) pica;
  - (4) eats to quickly; and
  - (5) eats too much
What Do We See?

- Extremely limited diet:
  - chicken nuggets, gold fish, McD french fries
  - The all white diet
  - The crunchy salty diet
- Pureed only
- Grazes all day (rather than eat while sitting)
- Cannot bite off food
- Wants to be fed by an adult
- Only eats finger foods
<table>
<thead>
<tr>
<th>Long Term Issues Associated with Feeding Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Missed meals</td>
</tr>
<tr>
<td>• Malnourishment</td>
</tr>
<tr>
<td>• Failure to thrive or stunted growth</td>
</tr>
<tr>
<td>• Tube dependence</td>
</tr>
<tr>
<td>• We see this less and less because of things like Pediasure</td>
</tr>
<tr>
<td>• Problematic mealtime behaviors</td>
</tr>
</tbody>
</table>
Long-term issues

- FAMILY STRESS!
What Do We See at ABS LLC?

- Extremely limited diet:
  - chicken nuggets, gold fish, McD french fries
  - The all white diet
  - The crunchy salty diet
- Pureed only
- Grazes all day (rather than eat while sitting)
- Cannot bite off food
- Wants to be fed by an adult
- Only eats finger foods
Side Effects of Feeding Issues

- Added family stress!
- Are you a counselor?
- REFER!
Many BACB Codes Apply

- 1.0 Responsible Conduct
- 2.0 Client Rights
- 3.0 Assessment
- 4.0 Treatment
### Types of Feeding Disorders

- Physiological (Stevenson, 1995)
- Non-Physiological (Satter, 1990)
- Combination (Ramsay, 1995)
BACB Code 3.02 Medical Consultation

• Behavior analysts recommend seeking a medical consultation if there is any reasonable possibility that a referred behavior is influenced by medical or biological variables.
THIS should scare you!

Story of “Boost”
Screening & Assessment (Underlying Issues)

- Medical (GI or other)
- Allergic/Reactive
- Nutritional Deficiency
- Structural/Mechanical
GI Issues

• Children with autism have been shown to have GI issues (See Kanner’s original review)

• GI treatment should follow standard medical protocol

• Children with autism are eight times more likely to suffer from one or more chronic GI problems than were other (Chaidez, 2014)

• Children with autism are more than three times as prone to experience constipation and diarrhea than peers, and complain twice as much about abdominal pain compared to peers (McElhanon, McCracken, Karpen, & Sharp (2014).
GI Disease

- Crohn’s Disease
- IBD
- Inflammation
- Reflux
- Eosinophilic Esophagitis (EOE)
- Gut Dysbiosis

What is the standard medical treatment for these conditions?
Celiac Disease (celiac.org)

- Celiac Disease (CD) is a lifelong, digestive disorder affecting children and adults
- When people with CD eat foods that contain gluten, it creates an immune-mediated toxic reaction that causes damage to the small intestine and does not allow food to be properly absorbed
- Even small amounts of gluten in foods can affect those with CD and cause health problems
Celiac Disease

• Damage can occur to the small bowel even when there are no symptoms present
• Side effects of gluten damage:
  • Osteoporosis, Depression, Mania, Psoriasis, Eczema, Lymphoma
• Diet: gluten free at all times (wheat, barley, rye, oats)
Phenylketonuria (PKU) (mayoclinic.com)

- A birth defect in which a mutation occurs in a gene containing instructions for making the enzyme needed to break down the amino acid phenylalanine
PKU: Foods to Avoid

- Milk
- Eggs
- Cheese
- Nuts
- Soybeans
- Beans
- Chicken
- Steak and other beef products
- Fish
- Chocolate
- Peas
**Food Allergies/Food Reactions**

- Allergists can assist here
- Physicians can assist with MRT
- MRT Testing
  - MRT testing is helpful for food intolerance and sensitivity that is not caused by food allergies
- Reveals foods that may cause inflammation
Nutritional Assessment

- Assess for deficiencies
- Zinc
- Calcium
- Magnesium
Special Diets

- Children with ASD may be on special diets
- Special diets are for food intolerances or allergies
- Special diets may help children feel better which may help them be ready to learn
- PKU, autism, cures…..
Most Common Food Allergens
(mayoclinic.com)

- Milk
- Eggs
- Peanuts
- Tree nuts (such as almonds, cashews, walnuts)
- Fish (such as bass, cod, flounder)
- Shellfish (such as crab, lobster, shrimp)
- Soy
- Wheat
GFCF

- Gluten free and casein free
  - Proteins believed to be intolerable
  - Not limited to children with ASD
- Variations
  - Soy free
  - Corn free
  - Rice free
  - Nut free
SCD

- Specific Carbohydrate Diet
- Restricts the use of complex carbohydrates (disaccharides and polysaccharides) and eliminates refined sugar, gluten and starch from the diet
- Diet is promoted as a way of reducing the symptoms of irritable bowel syndrome, Crohn's disease, Ulcerative Colitis and autism
GAPS Diet

- The premise of the GAPS diet is that there is a correlation between the state of your intestinal flora and your brain chemistry
- Avoid foods on the do not eat list and repopulate the gut with good bacteria
- Bone broth
- Good quality fat
- Easily digested vegetables
- Boiled meats
- Fermented vegetable juice
Paleo Diet

- Grass-produced meats
- Fish/seafood
- Fresh fruits and veggies
- Eggs
- Nuts and seeds
- Healthful oils (Olive, walnut, flaxseed, macadamia, avocado, coconut)
Ketogenic Diet

- Similar to Atkins
- Previously the only treatment for seizures
- Happens to be GF, CF, SF
Case Study

- Baby Shark (13 months); no diagnosis
- Bottle dependent; couldn’t sleep through night
- Referred from hospital-based feeding clinic (SLP)
- Received *some* attempts of feeding therapy by non-qualified behavior analysts
  - This made the behavior worse!
- SCA to provide services through health insurance
- Assessment & Treatment
Structural or Mechanical Assessment

- Speech Therapists and Occupational Therapists
- Swallow study
- Oral motor assessment
- Chewing ability
- Sensory processing
Behavior Assessment

• Determine the function of the feeding behaviors by completing FBA (see Borrero et al 2016)

• Most often:
  1. Escape non-preferred
  2. Obtain preferred
  3. Obtain attention

• Complete at least one Preference Assessment; we recommend non-edible; edible; drinks
ABS Feeding FBA

1. Initial consult by phone
2. Record Review
3. Intake and Meal Observations
4. Tangible Preference Assessment
5. Edible Preference Assessment
iEAT App

- Collaboration
  - Marcus Autism Center
  - Georgia Tech Research Institute
- Clinical Trial
  - Participants showed significant improvement in acceptance and consumption
- **iEAT app extends feeding therapy for children**
Evidence-Based Interventions

• Antecedent Modifications
• Target Behaviors
• Instructional Techniques
• Modifying Consequences
Antecedent Modifications

1. Prepare for Difficult Times
2. Positive Feeding Environment
3. Clear Meal Time Rules
4. Novel foods are presented in small portions using Discrete Trial Training (DTT)
5. Establishing Operations
1. Prepare for Difficult Times

- Family Stress
  - Identify reinforcers for family
  - Prepare families for what is to come
- Child Stress
  - Depending on age of child, prepare child
- Therapist Training
  - CPR
  - Challenging Behavior
  - Prepare for stress
2. Positive Feeding Environment

- Appropriate Seating
3. Clear Meal Time Rules

- Sitting for all meals
- Appropriate table manners
  - Use utensils
  - Use napkin
  - No eating off table
  - No licking dishes
- Done is done
4. Novel Food Presentation

- Diskrete Trial Training
  - Antecedent, Behavior, Consequence
  - Take a bite, child eats bite, child receives reinforcement
5. Motivating Operations

- Hunger Inducement
  - Consistent meal time
  - Limit food
    - When and why?
  - Limit liquid consumption
- Reinforcer Deprivation
  - Why?
  - How much?
Target Behaviors

- Accepting novel foods
- Eating with a ______
- Drinking from a ______
- Sitting during meal time
- Coming to table when called
Instructional Techniques

- Shaping
- Modeling
- Prompting and prompt fading
- Size fading
Shape Acceptance of New Food

- This intervention is a well-established intervention in the feeding literature (Kerwin, 1999)
- Introduce new food one bite at a time
  - Variations of “acceptance”
Model

- Live model of each shaping step
- Yes, model how to appropriately spit food out
- Use trash can as an S^D for spitting
**Prompt**

- Physically prompt child to pick up utensil
- Physically prompt to move bite towards mouth
Prompt Fading

- Fade physical prompts
  - Touch wrist
  - Tap utensil
  - Open mouth
  - Tap plate
  - Point to plate
Size Fading

• Regular child size bite
  • Touch lip
  • Touch tongue
  • In mouth and spit

• Microscopic bite (one green pea or smaller)
  • Chew and spit
  • Chew and swallow
Kerwin, Ahearn, Eicher, & Burd (1995)

- Size fading
- Participants presented with varying amount of food on a spoon
  - Empty
  - Dipped
  - ¼
  - ½
  - Full

- Treatment was effective in increasing acceptance.
Texture Fading

- Puree
- Finely chopped
- Chopped
- Bite Size
ABS Criteria for Fading

- Successful target behavior with no challenging behavior and with no gagging or emesis
- Gradually increase bites to child size—no larger
- Initially:
  - Remove skin from fruit and other difficult food particles
  - Single plain foods initially
  - Add skin and mix foods as soon as possible
Modify Consequences

• Reinforce food acceptance using shaping protocol
  1. DRA
  2. Sequential reinforcement
  3. Simultaneous reinforcement
  4. Negative reinforcement

• Escape Extinction
DRA: Note

- Easier to use reinforcer that:
  - May be accessed at the table
  - Has an easy stop and start
  - Is controlled by an adult (e.g., remote)

- Great success with iPhone and iPad
  - Cupcakes, pizza, toast
  - Wheels on the bus, Itsy Bitsy Spider
  - Wooden puzzles
  - You Tube
  - Other movies
Attention as a Reinforcer

• This intervention is well established in the feeding literature (Kerwin, 1999)
  • Food intake increases, weight gain observed, and results maintain
• When child accepts food, positive attention is given
  • Yay! You took a bite!
  • Yummy bananas!
  • Big girl eating peas!
Sequential Reinforcement

- When child engages in desired feeding behavior, provide access to highly preferred food
- Quickly modify the schedule of reinforcement
  - Require more bites of non-preferred
  - Provide smaller bites of preferred
Simultaneous Reinforcement

- Mix preferred food with non-preferred foods
- Do not hide food
- Examples:
  - Raw veggies (non-preferred) dipped in hummus (highly preferred)
  - Veggies (non-preferred) on pizza (highly preferred)
  - Chips (highly preferred) dipped in guacamole (non-preferred)
Negative Reinforcement

- Allow 30 second break from the table contingent on bite acceptance
- Usually difficult to get child back
Escape Extinction

- Child does not get out of trying new food
- Non-removal of the spoon/fork/utensil
- Well established intervention
Data Collection

• Total Bites Presented
• Independent Bites (accepted within 5 seconds)
• Prompted Bites
• Consumed Bites
• Expelled Bites
• Type of food
• Challenging Behavior
  • Gag, Emesis, Aggression, Disruption, SIB, Cry, Verbal, Vocal, Other delay
<table>
<thead>
<tr>
<th>BITE #</th>
<th>FOOD</th>
<th>ACCEPT</th>
<th>CONSUME</th>
<th>EXPEL</th>
<th>GAG</th>
<th>EMESIS</th>
<th>SIB</th>
<th>CRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Egg</td>
<td>P</td>
<td></td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>8</td>
<td>+</td>
</tr>
<tr>
<td>2.</td>
<td>Bacon</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>+</td>
</tr>
<tr>
<td>3.</td>
<td>Grape</td>
<td>P</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>+</td>
</tr>
<tr>
<td>4.</td>
<td>toast</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>-</td>
</tr>
</tbody>
</table>
Ethical Issues Regarding Assessment & Treatment of Feeding

Total Inappropriate Behavior

Number

Breakfast  Lunch  Dinner  Breakfast  Lunch  Dinner  Breakfast  Lunch  Dinner  Breakfast  Lunch  Dinner  Breakfast  Lunch  Dinner  Breakfast  Lunch  Dinner  Breakfast  Lunch  Dinner

99

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<table>
<thead>
<tr>
<th></th>
<th>On-Going Therapy</th>
<th>Intensive Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>6-12 Months</td>
<td>5 Consecutive Days</td>
</tr>
<tr>
<td>Schedule</td>
<td>1-2 sessions per week</td>
<td>3 sessions per day</td>
</tr>
<tr>
<td>Novel Foods/Session</td>
<td>2-4</td>
<td>4</td>
</tr>
<tr>
<td>Novel Foods</td>
<td>8-16 in 6-12 months</td>
<td>60 in 5 days</td>
</tr>
</tbody>
</table>
On-Going Therapy

- If you treat within an on-going ABA program
  - Child already responds to ABA
  - Child has positive experience with team
  - Can be a program just like putting on shoes
- Advantages
  - Much less stressful for everyone
  - Baby steps are achieved
  - Can work on it every day (or every therapy session)
On-Going Therapy

- Disadvantages
  - Baby steps
  - Slow progress
  - What if child has weight issue?
Intensive Therapy

- Requires
  - Planning
  - Preparation
- Advantages
  - Extremely effective
  - Very quick results
  - Parents see effectiveness
  - Long-term maintenance
Intensive Therapy

- Disadvantages
  - Extremely stressful
  - Extremely difficult behaviors
  - Severe food withdrawals in a few situations
  - A parent withdrew once
  - One parent wanted to quit
  - Does not work if parents are not on board
  - Does not work if parents are not behavioral or if they don’t want to hear their child cry
Summary

- Rule out underlying issues
- Assess function of behavior
- Modify antecedents (prepare and plan)
- Reinforce acceptance combined with shaping
- Intensity matters