

Behavioral Feeding Assessment and Interventions Guidelines

**Southern Maine Autism Conference
March 7, 2020**

Prepared by:

**Gretchen L. Jefferson
Woodfords Family Services**

**Ph.D. SPSY-D NCSP BCBA-D
Senior Behavior Analyst**

Disclaimer Note. The procedures and protocols presented in this document are a compilation of the work conducted by practitioners and researchers in the field of basic and applied behavior analysis and should not be represented as my work. My role in the development of this document was to sequence the process of pre-assessment, assessment, and intervention procedures in protocol format to simplify implementation by parents, caregivers, therapists, and others.

The Process

Checklist for Behavioral Protocol Readiness

- _____ 1. Meet with your pediatrician.
 - a. Rule out any medical or structural reasons for the feeding problem.
 - b. Obtain guidelines on nutritional expectations including foods/fluids recommended per meal/day, amounts of food/fluids per meal/day, how many snacks/meals should be offered to meet intake expectations, and best food/fluid texture for your child given their current oral motor development and swallowing skills.
 - c. If additional consultations are recommended (occupational therapy, speech and language pathology, physical therapy, nutrition), complete these appointments and institute recommendations (i.e., specialized seating, eating or drinking equipment).
- _____ 2. Conduct a Functional Behavioral Assessment of feeding problem.
- _____ 3. Gather baseline data on acceptance, mouth clean, and refusal and disruptive behavior for 3 snacks and 3 meals.

Checklist for Behavioral Protocols

- _____ 1. Set schedule to ensure that you have plenty of structured opportunities for fluid and foods so:
 - a. You aren't tempted to offer these items throughout the day.
 - b. You can reference the schedule when your child makes requests for such items, which will reinforce that grazing is a thing of the past

Note. You can schedule as many snack and drink times as are needed.
- _____ 2. Rearrange schedule to ensure that:
 - a. Your child is not transitioning to snack/meals from a preferred activity.
 - b. A preferred activity follows each snack and meal.
- _____ 3. Designate a snack and mealtime area so that:
 - a. Quiet, few distractions, readily available
 - b. It is clear to your child that grazing is a thing of the past.
 - c. It is clear to them when "contingencies" associated with drinking and eating are in place.
- _____ 4. Conduct the preference assessment (RAISD, forced choice, free choice):
 - a. Reserve the top 5 items and items in the most preferred "class" for snacks and meals.
 - b. Set up rotation boxes so that use of items is staggered across different days to prevent satiation (i.e., Monday items, Tuesday items, etc.).
 - c. Remove similar items from the free play areas of the house (to prevent satiation).
- _____ 5. Complete the Food Preference Assessment
 - a. Generate list of preferred and nutritional non-preferred foods

SCHEDULING

Schedule

Time	Activity	Preferred	Non-preferred
7:00			
:30			
8:00			
:30			
9:00			
:30			
10:00			
:30			
11:00			
:30			
12:00			
:30			
1:00			
:30			
2:00			
:30			
3:00			
:30			
4:00			
:30			
5:00			
:30			
6:00			
:30			
7:00			
:30			

Foods and drinks are not available outside the scheduled times. You can put as many snacks/meals on the schedule as necessary to meet physical needs.

SELECTING REINFORCERS

Food Preference Inventory

Circle about how often your child eats at least a *portion* of this food (the portion is listed after the food). *No* = A portion of this food was never eaten; *Week* = a portion of this food eaten at least once per week; *Day* = Once per day; *Many* = More than once per day. If your child eats other foods not listed here, write them in the blanks below.

Food	How often is food eaten by your child?	Is this food eaten by the family?	Food	How often is food eaten by your child?	Is this food eaten by the family?
Apple	No Week Day Many	Yes	Crackers	No Week Day Many	Yes
Apple Juice	No Week Day Many	Yes	Fruit Roll-up/Snacks	No Week Day Many	Yes
Applesauce	No Week Day Many	Yes	Other Candy	No Week Day Many	Yes
Apricots	No Week Day Many	Yes	Pie	No Week Day Many	Yes
Avocado	No Week Day Many	Yes	Potato Chips	No Week Day Many	Yes
Banana	No Week Day Many	Yes	Pretzels	No Week Day Many	Yes
Banana Chips	No Week Day Many	Yes	Bacon	No Week Day Many	Yes
Berries	No Week Day Many	Yes	Baked Beans	No Week Day Many	Yes
Cantaloupe	No Week Day Many	Yes	Chicken	No Week Day Many	Yes
Cherries	No Week Day Many	Yes	Chicken Nugget	No Week Day Many	Yes
Cranberry Sauce	No Week Day Many	Yes	Chicken salad	No Week Day Many	Yes
Cranberry Juice	No Week Day Many	Yes	Clams/oysters	No Week Day Many	Yes
Fruit Cocktail	No Week Day Many	Yes	Crab/lobster	No Week Day Many	Yes
Grapefruit	No Week Day Many	Yes	Eggs	No Week Day Many	Yes
Grapefruit Juice	No Week Day Many	Yes	Fish	No Week Day Many	Yes
Grapes	No Week Day Many	Yes	Fish Stick	No Week Day Many	Yes
Grape Juice	No Week Day Many	Yes	Ham	No Week Day Many	Yes
Honeydew	No Week Day Many	Yes	Ham salad	No Week Day Many	Yes
Kiwi	No Week Day Many	Yes	Hamburger	No Week Day Many	Yes
Lemonade	No Week Day Many	Yes	Hot Dog	No Week Day Many	Yes
Mango	No Week Day Many	Yes	Lamb	No Week Day Many	Yes
Nectarine	No Week Day Many	Yes	Lentils	No Week Day Many	Yes
Oranges	No Week Day Many	Yes	Liver	No Week Day Many	Yes
Orange Juice	No Week Day Many	Yes	Lunchmeat	No Week Day Many	Yes
Peaches	No Week Day Many	Yes	Meatloaf	No Week Day Many	Yes
Pear	No Week Day Many	Yes	Other Beans	No Week Day Many	Yes
Pineapple	No Week Day Many	Yes	Other nuts/seeds	No Week Day Many	Yes
Plums	No Week Day Many	Yes	Peanut Butter	No Week Day Many	Yes
Prunes	No Week Day Many	Yes	Peanuts	No Week Day Many	Yes
Prune Juice	No Week Day Many	Yes	Popcorn	No Week Day Many	Yes
Strawberry	No Week Day Many	Yes	Pork	No Week Day Many	Yes
Raisins	No Week Day Many	Yes	Roast Beef	No Week Day Many	Yes
Watermelon	No Week Day Many	Yes	Sausage	No Week Day Many	Yes
American Cheese	No Week Day Many	Yes	Shrimp	No Week Day Many	Yes
Cheese Spread	No Week Day Many	Yes	Steak	No Week Day Many	Yes
Chocolate Milk	No Week Day Many	Yes	Tuna salad	No Week Day Many	Yes
Cottage Cheese	No Week Day Many	Yes	Turkey	No Week Day Many	Yes
Cream Cheese	No Week Day Many	Yes	Veal	No Week Day Many	Yes
Hot Chocolate	No Week Day Many	Yes	Venison	No Week Day Many	Yes
Ice Cream	No Week Day Many	Yes	Chili	No Week Day Many	Yes
Milk	No Week Day Many	Yes	Pot Pie	No Week Day Many	Yes
Milk Shake	No Week Day Many	Yes	Soup	No Week Day Many	Yes
Other Cheese(s)	No Week Day Many	Yes	Stew	No Week Day Many	Yes
Pudding	No Week Day Many	Yes	Stuffing	No Week Day Many	Yes
Sherbet	No Week Day Many	Yes	Bagel	No Week Day Many	Yes
Sour Cream	No Week Day Many	Yes	Breakfast Bars	No Week Day Many	Yes
Tofu	No Week Day Many	Yes	Cereal (cold)	No Week Day Many	Yes
Yogurt	No Week Day Many	Yes	Corn Bread	No Week Day Many	Yes

Circle about how often your child eats at least a *portion* of this food (the portion is listed after the food). *No* = A portion of this food was never eaten; *Week* = a portion of this food eaten at least once per week; *Day* = Once per day; *Many* = More than once per day. If your child eats other foods not listed here, write them in the blanks below.

Asparagus	No	Week	Day	Many	Yes	Cream of Wheat	No	Week	Day	Many	Yes
Beets	No	Week	Day	Many	Yes	Donut/pastry	No	Week	Day	Many	Yes
Broccoli	No	Week	Day	Many	Yes	Egg Noodles	No	Week	Day	Many	Yes
Cabbage	No	Week	Day	Many	Yes	Farina	No	Week	Day	Many	Yes
Carrots	No	Week	Day	Many	Yes	French Fries	No	Week	Day	Many	Yes
Cauliflower	No	Week	Day	Many	Yes	French Toast	No	Week	Day	Many	Yes
Coleslaw	No	Week	Day	Many	Yes	Grits	No	Week	Day	Many	Yes
Celery	No	Week	Day	Many	Yes	Lasagna/ravioli	No	Week	Day	Many	Yes
Corn	No	Week	Day	Many	Yes	Macaroni	No	Week	Day	Many	Yes
Creamed Corn	No	Week	Day	Many	Yes	Muffins/rolls	No	Week	Day	Many	Yes
Cucumbers	No	Week	Day	Many	Yes	Noodles	No	Week	Day	Many	Yes
Greens	No	Week	Day	Many	Yes	Oatmeal	No	Week	Day	Many	Yes
Green or Wax Beans	No	Week	Day	Many	Yes	Pancake	No	Week	Day	Many	Yes
Lettuce (salad)	No	Week	Day	Many	Yes	Pita	No	Week	Day	Many	Yes
Lima beans	No	Week	Day	Many	Yes	Pizza	No	Week	Day	Many	Yes
Onion	No	Week	Day	Many	Yes	Poptart	No	Week	Day	Many	Yes
Peas	No	Week	Day	Many	Yes	Potato(mashed/baked)	No	Week	Day	Many	Yes
Green Pepper	No	Week	Day	Many	Yes	Potato salad	No	Week	Day	Many	Yes
Pickles	No	Week	Day	Many	Yes	Ramen Noodles	No	Week	Day	Many	Yes
Radish	No	Week	Day	Many	Yes	Rice	No	Week	Day	Many	Yes
Sauerkraut	No	Week	Day	Many	Yes	Spaghetti	No	Week	Day	Many	Yes
Spinach	No	Week	Day	Many	Yes	Spaghettios	No	Week	Day	Many	Yes
Squash	No	Week	Day	Many	Yes	Stuffing/filling	No	Week	Day	Many	Yes
Sweet Potato	No	Week	Day	Many	Yes	Taco/burrito	No	Week	Day	Many	Yes
Tomato	No	Week	Day	Many	Yes	Waffle	No	Week	Day	Many	Yes
Turnip	No	Week	Day	Many	Yes	Wheat/grain Bread	No	Week	Day	Many	Yes
Cake (any type)	No	Week	Day	Many	Yes	White Bread	No	Week	Day	Many	Yes
Cheese Puffs/Curls	No	Week	Day	Many	Yes		No	Week	Day	Many	Yes
Chocolate Candy	No	Week	Day	Many	Yes		No	Week	Day	Many	Yes
Cookies	No	Week	Day	Many	Yes		No	Week	Day	Many	Yes
Corn/tortilla Chips	No	Week	Day	Many	Yes		No	Week	Day	Many	Yes

Drinking Preference Inventory (circle or fill-in the blank; 1 cup = 8 ounces)

Does your child drink a supplement (e.g. Pediasure, Boost, etc.)? Yes No

If yes, which one? _____ How much/ day? _____

What kind of milk does your child usually drink? Whole 2% 1% Skim Soy Rice

How much/day? _____

Is your child's milk usually flavored? Yes No

If yes, what is used? Chocolate/strawberry syrup Flavored powder Instant Breakfast Ovaltine Other _____

Does your child drink? Hot chocolate Milkshake Drinkable yogurt

How many ounces of these drinks does your child drink per day? _____ ounces

How much 100% juice does your child drink per day? _____ ounces

How much other fruit drinks (Hi-C, Kool Aid, etc.) does your child drink per day? _____ ounces

How much soda or iced tea does your child drink per day? _____ ounces

Does it usually have caffeine? Yes No What type is it usually? Regular Diet

How much water does your child drink per day? _____ ounces

Non-preferred and Preferred Foods

<u>Non-preferred Foods</u>	<u>Texture</u>	<u>Preferred Foods</u>	<u>Texture</u>
1 _____	_____	1 _____	_____
2 _____	_____	2 _____	_____
3 _____	_____	3 _____	_____
4 _____	_____	4 _____	_____
5 _____	_____	5 _____	_____
6 _____	_____	6 _____	_____
7 _____	_____	7 _____	_____
8 _____	_____	8 _____	_____
9 _____	_____	9 _____	_____
10 _____	_____	10 _____	_____

REINFORCER SURVEY

CHILD: _____ RESPONDENT: _____ DATE: _____

This structured interview is used to get specific information from the parent as to what they believe would be useful reinforcers for their child. After a list is generated for each question, get more specific information about the reinforcer and stimulus conditions under which it is most preferred (e.g., What specific TV shows are their favorite? What do they do with the mirror? Do they prefer to do this alone or with another person?).

1. Some children really enjoy looking at things such as a mirror, bright lights, shiny objects, spinning objects, TV, etc. What are the things that _____ most likes to watch?

2. Some children really enjoy different sounds such as listening to music, car sounds, whistles beeps, sirens, clapping, people singing, etc. What are the things that you think _____ most likes to listen to?

3. Some children really enjoy different smells such as perfume, flowers, coffee, pine trees, etc. What are the things you think _____ most likes to smell?

4. Some children really enjoy certain food or snacks such as ice cream, pizza, juice, graham crackers, cookies, McDonald's hamburgers, etc. What are the things you think _____ most likes to eat?

5. Some children really enjoy physical play or movement such as being tickled, wrestling, running, dancing, swinging, being pulled on a scooter board, etc. What activities do you think _____ most enjoys?

6. Some children really enjoy touching things of different temperatures, cold things like snow or an ice pack, or warm things like a hand warmer or a cup containing hot tea or coffee. What are the activities of this kind that you think _____ most enjoys?

7. Some children really enjoy feeling different sensations such as splashing water in a sink, a vibrator against the skin, or the feel of air blown at the face from a fan. What are the activities of this kind that you think _____ most enjoys?

8. Some children really enjoy it when others give them attention such as a hug, a pat on the back, clapping, saying "Good job", etc. What forms of attention do you think _____ most enjoys?

9. Some children really enjoy certain toys or objects such as puzzles, toy cars, balloons, comic books, flashlights, bubbles, etc. What are _____ favorite toys or objects?

10. What are some other items or activities that _____ most enjoys?

Comments on specific likes/dislikes: _____

Forced-Choice Reinforcer Assessment: Guidelines

The forced-choice reinforcer assessment helps determine potential reinforcers and permits ranking reinforcers in order of preference. Below are guidelines for completing a 'forced-choice' reinforcer assessment. *Note:* Be sure to view the Reinforcer Assessment Grid, which contains the main steps of this assessment process.

- 1. Organize information about your child's preferences.** Use information collected from the RAISD or other structured interview - as well as results of direct observations of your child - to create a list of reinforcers that are likely to motivate them. Possible choices might include food items, social interactions with specific people, access to toys, and preferred activities (e.g., screen time).
Note: Reinforcers are best when they are feasible, easy to supply, and help to advance your child's goals.
- 2. Prepare for the assessment survey.** Narrow your reinforcer list to no more than 6 items or activities that can easily be obtained and given out. Be sure to have these items on hand for the reinforcer assessment. Choose a time to conduct the assessment when there are no distractions in the room and you can give them your complete attention. If necessary, use two or more sessions to complete the reinforcer assessment.
- 3. Allow your child to sample reinforcers.** At the start of your assessment, give the child a brief opportunity to sample each reinforcer. If the reinforcer is:
 - A food item, your child is given a tiny taste of the food or beverage.
 - An activity such as screen time, your child has 5-10 seconds to engage in the activity.
 - Access to a preferred object (e.g., stuffed toy), your child has 5-10 seconds of access to the object.
- 4. Conduct a 'forced-choice' assessment.** Randomly pick 2 of the 6 choice-items, present them together in front of your child and allow them 5-10 seconds to select one of the two. (Depending on what is most convenient, the examiner can hold choice-items in his or her hand, or display them on a table.) *Note:* Your child may signal 'choice' by touching or picking up an item, looking fixedly at the item, pointing to the item, or engaging in any other behavior that he or she typically uses to indicate preference. If your child selects an item within the time limit, record their choice. If they fail to choose before the time expires, remove the two reinforcer choices and record that they did not choose an item. Continue to present sets of two reinforcer choices until all choices have been paired with one another. Record preferences.
- 5. Rank-order student preferences.** Analyze choices to determine most preferred and least preferred items. You can compute a 'preference percentage' for any item by: (a) number of times they selected item X, (b) divided by the total number of pairs in which item X appeared, and (c) multiplying by 100 (See Figure 1). Rank-order 'preference percentages' to determine which items are most and least preferred.

Figure 1: Formula to calculate 'preference percentage':

Item #	Offered	Selected	Offered ÷ Selected	X 100	Rank

References

Berg, W.K., Wacker, D.P., & Steege, M.W. (1995). Best practices in assessment with persons who have severe or profound handicaps. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology-III* (3rd ed., pp.805-816). Washington, DC: National Association of School Psychologists.

Forced Choice Reinforcer Assessment Grid (Wright, 2002)

1. In the section Potential Reinforcers List, list 6 preferred items or activities.
Compare each item with the others using the presentation order in the *Pairing of Reinforcer Choices: Trial Set 1* section (Section II of this Grid). *Note.* The item listed first is presented on your child's *right*.
3. Give your child 10 seconds to make their selection. If they make a selection, circle the number that corresponds to their choice. If they did not make a selection, circle 'no choice.'
4. *OPTIONAL:* Represent the items in the order listed in the (Optional) Trials Set 2 section (Section II of this Grid).
Note. The item listed first is presented on your child's *left*.
5. Summarize preferences in Section III of this Grid.

I. Potential Reinforcers List

Item 1: _____

Item 2: _____

Item 3: _____

Item 4: _____

Item 5: _____

Item 6: _____

II. Pairing of Reinforcer Choices

Trial Set 1: First item on child's *right*

Trial Set 2: First item on child's *left* (*OPTIONAL*)

Pairing of items

Child Choice

Item 3 & 6 3.....6.....No Choice

Item 2 & 4 2.....4.....No Choice

Item 4 & 6 4.....6.....No Choice

Item 1 & 3 1.....3.....No Choice

Item 2 & 5 2.....5.....No Choice

Item 3 & 4 3.....4.....No Choice

Item 1 & 5 1.....5.....No Choice

Item 2 & 3 3.....6.....No Choice

Item 1 & 2 1.....2.....No Choice

Item 5 & 6 5.....6.....No Choice

Item 3 & 5 3.....5.....No Choice

Item 1 & 6 1.....6.....No Choice

Item 1 & 4 1.....4.....No Choice

Item 4 & 5 4.....5.....No Choice

Item 2 & 6 2.....6.....No Choice

Pairing of items

Child Choice

Item 2 & 6 2.....6.....No Choice

Item 4 & 5 4.....5.....No Choice

Item 1 & 4 1.....4.....No Choice

Item 1 & 6 1.....6.....No Choice

Item 3 & 5 3.....5.....No Choice

Item 5 & 6 5.....6.....No Choice

Item 1 & 2 1.....2.....No Choice

Item 2 & 3 2.....3.....No Choice

Item 1 & 5 1.....5.....No Choice

Item 3 & 4 3.....4.....No Choice

Item 2 & 5 2.....5.....No Choice

Item 1 & 3 1.....3.....No Choice

Item 4 & 6 4.....6.....No Choice

Item 2 & 4 2.....4.....No Choice

Item 3 & 6 3.....6.....No Choice

Section III: Calculating Preference Percentage

Item	Offered	Selected	Offered ÷ Selected	X 100	Rank
1					
2					
3					
4					
5					
6					

Prioritizing Reinforcers and Problematic Activities

1. List then categorize daily activities as:

High probability: Never a problem

Moderate probability: Sometimes a problem or

Low probability: $\geq 50\%$ of the time, there's a problem

Note that over time, different activities may fall into different categories.

2. List then categorize reinforcers as:

Low interest: OK, will do it if more preferred is not available

Moderate interest: Usually wants to do this

High interest: Always wants to do this

Note that over time, different reinforcers may fall into different categories.

3. Match up the High Interest reinforcers with the Low Probability activities until no resistance to following directions or completing requested activities is observed in these activities.

Probability Level	Activity	Preference Level	Reinforcer

1. Highlight Low Probability (Lo-P) in orange, Moderate Probability (ModP) in yellow and High Probability (Hi-P) in Green
2. Highlight Low preference in orange, moderate preference in yellow, and high preference in green.

Target Behavior Definitions

Acceptance: Opens mouth, allows entire bite in mouth within 5 seconds of the request to, “Open,” “Take a bite.”

Expulsion: Any pea-sized amount of food outside the mouth after swallowing.

Mouth clean: All food swallowed within 30 seconds of acceptance

Combined Interfering Behaviors: Turns head away from presented spoon, disruption (pushing utensils, plate or your arms/hands/elbow during presentation).

Signs of Discomfort: Gagging, retching, vomiting

Feeding goal sequence

Acceptance w/o interfering behaviors or discomfort → mouth clean w/o interfering behaviors or discomfort

Spoon Presentation Procedures

I. Non Self-Feeder

1. Present spoon at lower lip every 30 seconds
2. Use separate spoon for each different food type (to prevent crossover of flavors).
3. Give a directive such as “Open” or “Take a Bite.”
4. Use the same directive for all snacks/meals.

II. Self-Feeder

1. Prepare the bite of food on the spoon
2. Give a directive such as “Open” or “Take a Bite.”
3. Use the same directive for all snacks/meals.

Feeding Phases

I. Baseline

1. Present spoon as above.
2. If any interfering behaviors occur, allow escape from taking a bite:
Remove the spoon with the statement, “That’s ok, you don’t have to” Intervention
3. Present 10 bites in this format.
Note. One major benefit of doing a baseline in this manner is that you can “reboot” the feeding process, which may be less disruptive than the current experience.

II. Intervention

1. Select the appropriate texture.
Empty spoon, juice, baby, table puree, minced, ground, solid, mixed.
2. Select the appropriate bite size.
Empty spoon, juice dipped, food dipped, 2-pea, level, rounded bolus.
3. If selectivity is an issue, select 2 preferred and 1 nonpreferred food to be presented.
4. Select reinforcers.
5. Determine criteria for ending the meal.
Number of bites (few at start), time limit (no foods/drink until next scheduled snack/meal).
6. Select intervention based on target behaviors, tolerance for disruption.
 - a. EE:NCA - Escape Extinction: Noncontingent Access
Likely to see much disruption.
 - b. EE:DR – Escape Extinction: Differential Reinforcement
Likely to see much disruption.
 - c. DR – Differential Reinforcement.
Likely to have less disruption, progress may be slower.

Selection of Foods, Texture and Bite Size

Goal 1: Consistent acceptance of presented spoon.

Goal 2: Consistent mouth clean with accepted foods.

Goal 3: Consistent absence of interfering and discomfort behaviors.

If acceptance is inconsistent, begin with preferred foods only.

If acceptance of preferred foods is consistent, select 1 non-preferred food to incorporate into the meal.

Texture Selection

Texture Sequence

Empty spoon → Juice dipped → Baby food → Table puree → Minced → Chopped → Mixed

1. If expulsion and/or mouth clean are inconsistent, begin with the next lower texture than you currently serve.
2. If expulsion and mouth clean problems resolve, continue with current texture.
3. If problems persist, consult an OT to determine current oral motor skill level and whether skill development is needed.

Bite Size Selection

Bite Size Sequence

Empty spoon → Juice dipped → Food dipped → 2-pea size → Level → Rounded bolus

1. If expulsion and/or mouth clean are inconsistent, begin with the next smaller bite size than you currently serve.
2. If expulsion and mouth clean problems resolve, continue with new bite size.
3. If problems persist, consult an OT to determine current oral motor skill level and whether skill development is needed.

Reinforcement Procedures

Finding Reinforcers

1. Identify potential reinforcers through questionnaire then forced choice preference assessment
2. Pick the top 3 preferences and reserve these for use at snacks and meals only.
3. Place them in the designated snack/meal reinforcer bin.
4. Alternate among the items within and across meals.

Using Reinforcers

Noncontingent Access at Snacks and Meals (NCA)

1. Place identified reinforcers within child's reach.
2. They may access them at any time during the snack or meal.

Contingent Access at Snacks and Meals (CA)

1. Have a visual "array" of the identified snack/meal reinforcers available to remind your child of what they can earn for engaging in the target behavior.
2. Keep them out of reach of your child until they engage in the target behavior.
3. If the snack/meal is continuing, either remove the reinforcer or block access to it as you present the next bite.
4. Allow access as soon as they engage in the target behavior.
5. If the meal is ended, allow access for a maximum of 15 minutes after the session.
6. Retrieve the reinforcer and return it to the snack/meal reinforcer bin.

Differential Reinforcement (DR)

1. Similar to Contingent Access above, but specifically means that you would provide the reinforcer for some behaviors and not others.
2. For example, if accepting the spoon is not a problem but holding food in the mouth is, spoon acceptance would not result in getting the reinforcer, but swallowing the bite would.
3. Follow the steps for CA above for the selected target behavior only.

Tips and Tricks

Reinforcer priming

It may be helpful to allow 60 seconds of play with the reinforcer before beginning the session.

If the session is not going well, take out the reinforcer and play with it yourself. When your child shows interest,

Mystery Reinforcer

Some children respond well to being surprised about what they will earn. You can still work from an array and pick one of the items at random or have a separate "mystery box" of which your child is unaware and pick from that.

Reinforcer Classes

Determine from your assessment whether your child prefers visual (sight), auditory (sound), tactile (touch), olfactory (smell), or gustatory (taste) reinforcers. If they show a clear preference, gather items that provide their preferred input, even if these specific items were not tested in your forced-choice preference assessment.

The reinforcer "cover up"

When you get really good at presenting bites quickly, consider moving to the reinforcer cover up move. As you are bringing the bite to the mouth, inconspicuously cover the reinforcer with your forearm, present the bite, remove arm if reinforcer is earned. If reinforcer not earned on that bite, maintain arm until bite is taken.

Tips and Tricks (all interventions)

The “Chaser”

Used as part of any intervention for packing, to obtain a “mouth clean,” to make eating more comfortable.

1. Select a liquid or thin food (i.e., baby puree fruit) that the child consumes and swallows readily
2. Select target foods of appropriate texture.
3. Determine appropriate bite size for these foods.
4. Present target foods at lower lip, “Open.”
5. Maintain bite until accepted.
6. Immediately present chaser upon acceptance regardless of latency to acceptance.
7. Praise accepted within 5 seconds of presentation.
8. Reinforce accepted or mouth clean, whichever is your target behavior.
9. Chaser rules:
 - ✓ Chasers are presented in small portions so their consumption does not interfere with acceptance and swallowing of target foods.
 - ✓ The chaser is presented once only.

Upright and Flipped Spoon

The flipped spoon method can be used in combination with any of the intervention methods in this manual for the targeting of expulsion and mouth clean.

1. Select appropriate texture, volume for target foods.
2. Present upright spoon at lower lip, “Open.”
3. Maintain spoon at lower lip until accepted, blocking disruption, aggression, etc.
4. When mouth is open, place spoon in center of tongue, flip spoon, press gently down on tongue, and slide spoon out of the mouth.
5. Replace expelled foods.
6. Praise for acceptance, reinforcer for mouth clean.

In conjunction with OT with feeding experience, determine when oral motor skills are sufficient to begin

Data Collection

(Yes, I said data)

Food 1 _____										
Food 2 _____										
Food 3 _____										
Food 4 _____										

Date _____ Meal: B L D S1 S2 S3 S4 S5 Time Started _____ Time Ended _____

Bite #	ACCEPT (≤ 5 seconds)	DELAYED ACCEPT (> 5 seconds)	EXPEL	MOUTH CLEAN	INTERFERING BEHAVIORS	DISCOMFORT BEHAVIORS
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Acceptance: Opens mouth, allows entire bite in mouth within 5 seconds of the request to, "Open," "Take a bite."
 Expulsion: Any pea-sized amount of food outside the mouth after swallowing.
 Mouth clean: All food swallowed within 30 seconds of acceptance
 Combined Interfering Behaviors: Turns head away from spoon, pushing utensils, plate or your arms, hands, elbow during presentation.
 Signs of Discomfort: Gagging, retching, vomiting

Percent Accept	_____ (accepts)	÷	_____ (bites)	X	100	=	_____
Percent Delayed Accept	_____ (delayed accepts)	÷	_____ (bites)	X	100	=	_____
Percent Expel	_____ (expels)	÷	_____ (bites)	X	100	=	_____
Percent Mouth Clean	_____ (mouth cleans)	÷	_____ (bites)	X	100	=	_____
Percent Interfering Behaviors	_____ (interfering behaviors)	÷	_____ (bites)	X	100	=	_____
Percent Discomfort Behaviors	_____ (discomfort behaviors)	÷	_____ (bites)	X	100	=	_____

SESSION PROTOCOLS

- 1. General intervention parameters**
- 2. Definitions and meal parameters**
- 3. Reinforcement Procedures**
- 4. Tips and Tricks**
- 5. Protocols I-VIII for**
 - a. Desensitization,**
 - b. Acceptance,**
 - c. Selectivity,**
 - d. Texture Advancement**

Intervention I: Desensitization

Used for complete refusal of the snack/meal area

Goal: Arrives to and remains in feeding area without interfering behaviors.

1. Identify a neutral location that is not associated with feeding that will become the feeding area.
2. Engage in play in this area with highly preferred toys for the duration of the feeding session during scheduled feeding times.
3. After 3 consecutive days of meeting the above goal, introduce some feeding materials into the area (spoons, plates, bowls, etc.). Do not engage in “feeding play” with these, just have them around.
4. After 1 day of meeting the above goal with feeding items present, introduce the feeding seat to the area. Do not reference it or engage in play with it, just have it present. Ideally, the feeding seating arrangement would have some type of tabletop on which to place toys.
5. After 1 day of meeting the above goal with the feeding seat present, place the most highly preferred toys on the seating tabletop, within reach of your child. Play with these items while they are on the tabletop but do not invite your child to join you – let them approach the toys on their own.
6. When your child consistently approach the toys and play with them, nonchalantly put your child in the seat while continuing to play with the toy. This play should be the best, no holds barred play ever – pull out all your stops.
7. After 3 consecutive days of allowing you to place them in the seat without interfering behaviors, restrict certain toys to “feeding seat only” status. When your child requests these toys, place them in the feeding seat and allow immediate access to the toy. If they leave the area, the toy remains with the feeding seat. From this point forward, these toys are not available at any other time.
8. Limit play to 5 minutes, place child in feeding seat, continue play for 5 minutes, end session. After 1 day with no interfering behaviors, conduct 1 feeding trial per whichever protocol you’ve selected. Continue until bite/drink accepted or 30 minutes, whichever comes first. If accepted, praise, fun play, immediate termination of session. If not accepted, ignore disruptive and discomfort behaviors, transition to next scheduled activity, toys remain in feeding area and are only accessible while child is in feeding seat.
9. Continue step 8, follow next steps of your selected protocol

Intervention II. High-Probability and Low-Probability Variations

Progressive High-P Sequence

1. Determine preferred and a rotation of target foods.
2. Select 4 target foods for the session. The preferred foods are reserved as reinforcers and are not included in the rotation with target foods.
3. Allow 10 seconds of noncontingent access to High-P food.
4. Using the hierarchy below, determine the lowest point of probable compliance on the hierarchy for your child. Give this prompt and the 2 prompts above it on the hierarchy for each Low-P food presentation (in sequence from most to least likely):
 - ✓ Touch the food
 - ✓ Kiss the Food
 - ✓ Lick the food
 - ✓ Balance the food on your tongue
 - ✓ Bite the food into 2 pieces
 - ✓ Eat 1 of the pieces
 - ✓ Chew the food into little pieces
 - ✓ Swallow the food
5. Present each bite 3 times, using a verbal request simultaneous with physical modeling of the action.
6. Praise compliance with the initial 2 demands
7. Praise and 2 bites of preferred food for compliance with the 3rd demand (Low-P demand)
8. When 100% acceptance with the current Low-P and High-P requests and referencing your hierarchy for your child, drop the initial High-P request and introduce the next Low-P request.
9. Continue this process until 100% accept and swallow across 3 consecutive sessions is attained.
10. Increase to 6 bites of each target food and rely exclusively on the verbal prompt, "Take a bite."

High-Probability – Low-Probability Food Presentation Sequence

1. Select appropriate texture and bite volume.
2. Determine preferred and nonpreferred (target) foods.
3. Present 3 bites of preferred foods in a row, "Take a bite," followed by immediate presentation of a target food, "Take a bite."
4. Praise accepts.
5. Ignore expulsions.
6. Follow this sequence for 10 trials (total of 40 bites per session)
7. When acceptance of target foods is 80% across 3 consecutive sessions, reduce presentation of preferred food by 1 bite. Continue reducing these presentations for subsequent 80% acceptance across 3 consecutive sessions until only target foods are presented.

Intervention III. Escape Extinction

Goal: Consistent acceptance of the spoon

Escape extinction (EE) means that refusal of the presented bite is not an option, refusal has been put on extinction. Two versions of EE are used as behavioral feeding techniques: Non-removal of spoon (NRS) and physical prompting (PP). All interfering behaviors are blocked as they occur while the spoon is maintained at your child's lower lip.

This procedure may result in a "burst" of interfering behaviors which you must work through in order for the procedure to be effective.

1. If you are ending the meal after a certain time, use an audible or visual timer to signal the end of the meal so that your child associates end of meal with the sound of the timer/passage of time, not their interfering behavior.
2. If you are ending the meal after a bite is taken, do so immediately upon acceptance.

Non-removal of the Spoon (NRS) - Non Self-feeder Protocol

- I. Escape extinction and noncontingent access to preferred activities
 1. Ensure that no "bootleg" snacks or fluids have been available at least 1 hour prior to the scheduled snack/meal.
If they have had access, wait until 1 hour has passed since your child last ate/drank.
 2. Determine number of bites expected during this snack/meal.
If this is the first 3 snacks/meals, end on 1 successful bite.
 3. Have all foods and reinforcers ready to go in the snack/meal area.
 4. Direct/take child to the snack/meal area.
 5. Place preferred activity in front of them (noncontingent access).
 6. Prepare first bite of food, place the spoon on the lower lip, and say, "*Open or Take a bite*"
Maintain spoon at lower lip until bite is taken.
 7. When taken, provide praise, allow chewing and swallow time (30 seconds), present next bite (if applicable) or provide access to preferred snack/meal foods for the duration of the snack/meal time.
 8. Data collection
If taken within 5 seconds of presentation at lower lip, score a '+' in the ACCEPT cell
If taken after 5 seconds of presentation, score a '+' in the DELAYED ACCEPT cell.
Note time snack/meal started and time that ACCEPT or DELAYED ACCEPT is scored.
- II. Escape extinction and contingent access to preferred activities
 1. Follow steps 1-4 above.
 2. Prepare first bite of food on the plate and say, "*Take a bite*"
Your child should not need to scoop anything, just lift the spoon to their lips and place the bite themselves.
 3. If they make no attempt to lift the spoon, place the spoon on the lower lip, and say, "*Open or Take a bite*"
Maintain spoon at lower lip until bite is taken.
 4. Follow steps 7-8 above.

The second form of escape extinction is physical prompting, contingent on non-acceptance. The physical prompting procedure is not described here and should only be conducted under the supervision of a trained, certified professional (occupational therapist, speech and language pathologist, board certified behavior analyst, licensed psychologist, or licensed medical professional) with feeding experience.

Intervention IV. Simultaneous and/or Sequential Presentation of Preferred and Non-Preferred

Caution: This procedure creates a stimulus pairing between non-preferred and preferred tastes, which may result in refusal of previously accepted foods. If intake is not an issue, this protocol is an option.

Goal: Increase acceptance of non-preferred foods

I. Simultaneous

1. Identify 8 non-preferred foods (across food groups if possible) and 8 preferred foods.
2. Present the non-preferred food on the spoon **WITH** the preferred food.
3. Follow Escape Extinction protocol (NRS) with Non-contingent Access (NCA) to preferred activities, progress to contingent access if acceptance of preferred foods or mouth cleans is low.
4. Present 1 non-preferred food per meal, remaining presentations are preferred foods.
5. When acceptance and mouth clean of this initial non-preferred food is consistently high for 3 snacks/meals per day across 3 days, follow the same procedure with a second non-preferred food (1 non-preferred food per snack/meal).
6. When acceptance and mouth clean of this second food is consistently high for 3 snacks/meals per day across 3 days, include the two non-preferred foods into the snack/meal with 2 preferred foods.
7. When acceptance and mouth clean of both non-preferred foods is consistently high for 3 snacks/meals per day across 3 days, progress to sequential presentation: Immediately follow the non-preferred food with the preferred food for both foods (*Hint*. Have both spoons prepared and in view at presentation).
8. When acceptance and mouth clean of both foods is consistently high for 3 snacks/meals per day across 3 days, progress to sequential presentation of other non-preferred foods.
9. Introduce other novel or non-preferred foods when the initial 8 non-preferred foods are accepted and swallowed without simultaneous presentation.
10. *Note*. Preferred condiments may replace preferred foods.

III. Sequential Presentation

1. Follow the above procedures, but have 2 spoons at presentation.
2. The first spoon is of the non-preferred, the second of the preferred.
3. Spoons should be in close proximity.
4. Preferred bite is given immediately upon acceptance of non-preferred bite.
5. Continue until acceptance and mouth clean of non-preferred food is high.
6. Increase the latency between non-preferred acceptance and presentation of preferred.
7. When non-preferred is accepted and swallowed consistently, introduce additional non-preferred foods using the sequential format.
8. When 8 non-preferred foods are consistently accepted and swallowed without the second spoon present, introduce other non-preferred and novel foods.
9. *Hints*. Priming with the preferred food may be helpful. Immediate reinforcement with the preferred food (no greater than 2-3 seconds after acceptance of non-preferred) will help increase acceptance.

Intervention V. Food Blending

Caution: This procedure creates a stimulus pairing between non-preferred and preferred tastes, which may result in refusal of previously accepted foods. If intake is not an issue, this protocol is an option.

Goal: Increase acceptance of non-preferred foods

1. Identify 8 non-preferred foods (across food groups if possible) and 8 preferred foods for blending.
2. Mix non-preferred and preferred food in a 10% non-preferred/90% preferred ratio.
3. Follow Escape Extinction protocol (NRS) with Non-contingent Access (NCA) to preferred activities, progress to contingent access if acceptance of preferred foods or mouth cleans is low.
4. Present 1 blended nonpreferred food per meal, remaining presentations are preferred foods.
5. When acceptance and mouth clean of this initial mixed food is consistently high for 3 snacks/meals per day across 3 days, follow the same procedure with a second blended non-preferred food (1 blended non-preferred food per snack/meal).
6. When acceptance and mouth clean of this second mixed food is consistently high for 3 snacks/meals per day across 3 days, include the two blended non-preferred foods into the snack/meal with 2 preferred foods.
7. When acceptance and mouth clean of this both blended foods is consistently high for 3 snacks/meals per day across 3 days, decrease the non-preferred/preferred ratio to 20% _{n-pref}/80% _{pref}. Continue to increase this ratio until the non-preferred foods are consistently eaten and swallowed without blending.
8. Follow this same procedure until you have blended and unblended all 8 non-preferred foods.
9. Introduce other novel or non-preferred foods when the initial 8 non-preferred foods are accepted and swallowed without blending.

Intervention VI. Fading Textures – Solids

Goal: Advance to more difficult to chew/swallow textures as much as possible to safely approximate or reach age- or developmentally-appropriate level.

1. Start with the texture that currently is consistently accepted and cleanly (and safely) swallowed.
2. If baby food or puree:
Either thicken to a slightly higher texture or use puree or table puree, respectively.
3. If moving up from table puree to minced or wet ground:
Select easily mashed or chewed items (i.e., don't go for pulled pork as a meat, go for roasted chicken breast, etc.)
4. Collect data on gagging, coughing, and retching.
If these behaviors occur across all food types, return to the previous texture and consult an OT and/or SLP with feeding knowledge and experience.
If these behaviors occur on more traditionally difficult to chew items like meat or stringy vegetables, reduce texture for those items, maintain texture for items for which these behaviors do not occur, and consult an OT about teaching chewing skills.
5. By increasing texture, you've increased the response effort for eating.
Increase the density of reinforcement when you introduce new textures.

Note. Assess choking risk with professional and plan phases and responses accordingly.

Tips

1. Instead of moving up textures in all food groups, you can begin with more easily mashed/chewed items like fruits and non-stringy or non-shelled vegetables. Add food groups as your child tolerates the first group.
2. When presenting foods, follow more challenging textures with easy/chaser foods (i.e., fruit, meat, fruit).
3. If your child has good oral motor skills, swallows proficiently, and is accepting and having mouth cleans without any signs of discomfort, consider a "probe" of a higher texture for preferred foods. If the probe is successful, continue with that texture for that food in future meals.

Intervention VII. Thinning to Liquid

Goal: Advance to more difficult to swallow textures (usually thinner) as much as possible to safely approximate or reach age- or developmentally-appropriate level.

1. Start with the texture currently accepted and cleanly swallowed consistently.
2. Gradually add a compatible liquid to the drink (consider flavor and the base of the drink [water, milk]
Add in increments of 1/8 teaspoon or cc's (not ounces).
3. Collect data on discomfort Behaviors
If these behaviors occur across all cup presentations, return to the previous texture and consult an OT or SLP with feeding knowledge and experience.

Note. Assess aspiration risk with professional and plan phases and responses accordingly.

Intervention VIII. The Meal of Fortune - Self-Feeder Protocol

(Gentry & Luiselli, 2008)

Materials

1. Mystery Motivator Spinner: The Mystery Motivator is an 8-section spinner (laminated or dry erase). A number is placed 7 of the sections, representing the number of bites that must be taken from each portion of the plate. A question mark is in the 8th spot and represents a preferred toy from a gift box that (hidden from your child) that is given immediately when the arrow lands on the question mark.
2. Reinforcer Array (follow the reinforcement rules...no bootlegging).
3. Highly preferred toys that are not typically available and that can be played with at the table. Your child should not know which toy is going to be given. Toys should change at each snack/meal.

I. Baseline

1. List preferred and non-preferred items
2. Present 1 non-preferred food on a plate while your child is seated at the table
3. State, "Try this."
4. Keep the plate on the table for 5 minutes.
5. Ignore problem behaviors, including leaving the table.
6. Note how many bites were taken and how many interfering behaviors occurred.

II. Intervention I

1. Prepare plate of 2 preferred and 1 non-preferred food, divided into 3 sections on the plate.
2. Have your child spin the Mystery Motivator.
3. If the spinner lands on a number:
Have your child (or you) write the # of bites needed on a chart that says, "*I need to eat ____ bites of food.*"
State, "*You have spun the number _____. That means you can eat ____ bites from this section, ____ bites from this section, and _____ bites from this section, then you can eat whatever you like.*"
Show your child the reinforcer array and have them select their preferred play activity, in which they can engage after the meal if they eat all their bites.
Suggest they take their first bites from each of the preferred foods on the plate to "get them going."
4. Once required number of bites are eaten from each section of the plate, provide praise and remind your child that now they can eat whatever they like.
At this point, your child can keep eating, have more food or leave the table to play with reinforcer.
5. If required number of bites are not eaten, have your child remain at the table for 5 min, do not provide praise, then formally excuse them from the table to the next scheduled activity (not the reinforcer activity).
6. If the spinner lands on the question mark
Immediately give your child the Mystery Motivator toy and allow them to play with the toy at the table.
Provide only preferred foods on the plate for this meal (unless they request non-preferred foods!).
7. When bites consistently eaten across meals w/o interfering behavior, increase spinner numbers gradually.
8. When number of bites consistently consumed approximate adequate portions of food for growth and health, reduce number of bites on the plate, fade spinner, and request that your child, "*Clear your plate.*"
When the plate is cleared without interfering behaviors, gradually increase the portions until you reach adequate portions for growth and nutrition.

Select References

1. Ahearn, W. (2003). Using Simultaneous Presentation to Increase Vegetable Consumption in a Mildly Selective Child with Autism. *Journal of Applied Behavior Analysis*, 36(3), 361–365.
2. Allison, J., Wilder, D.A., Chong, I., Lugo, A., Pike, J., & Rudy, N. (2012). A Comparison of Differential Reinforcement and Noncontingent Reinforcement to Treat Food Selectivity in a Child with Autism. *Journal of Applied Behavior Analysis*, 45(3), 613-617.
3. Bachmeyer, M.H. (2009). Treatment of Selective and Inadequate Food Intake in Children: A Review and Practical Guide. *Behavior Analysis in Practice*, 2(1), 43-50.
4. Hillman, H.L. (2006). Functional Analysis and Food Refusal: A Brief Review. *The Behavior Analyst Today*, 7(1), 48-55.
5. Kerwin, M.E. (2003). Pediatric Feeding Problems: A Behavior Analytic Approach to Assessment and Treatment. *The Behavior Analyst Today* 4(2), 162-176.
6. Meier, A.E., Fryling, M.J., & Wallace, M. (2012). Using High Probability Foods to Increase the Acceptance of Low-Probability Foods. *Journal of Applied Behavior Analysis*, 45(1), 149-153.
7. Penrod, B., Gardella, L., & Fernand, J. (2012). An Evaluation of a Progressive High-Probability Instructional Sequence Combined with Low-Probability Demand Fading in the Treatment of Food Selectivity. *Journal of Applied Behavior Analysis*, 45(3), 527–537.
8. Petula, C.M. Piazza, C., Stewart, V., Volkert, V.M., & Groff, R.A. (2012). Using a Chaser to Decrease Packing in Children with Feeding Disorders. *Journal of Applied Behavior Analysis* 45(1), 97–105.
9. Piazza, C.C., Patel, M.R., Bachmeyer, M.H., Rivas, K.M., Milnes, S.M., & Oddo, J. (2012). A Comparison of Sensory Integrative and Behavioral Therapies as Treatment for Pediatric Feeding Disorders. *Journal of Applied Behavior Analysis*, 45(3), 455-471.
10. Piazza, C.C., Patel, M.R., Santana, C.M., Goh, H-L., Delia, M.D., & Lancaster, B.M. (2002). An Evaluation of Simultaneous and Sequential Presentation of Preferred and Nonpreferred Food to Treat Food Selectivity. *Journal of Applied Behavior Analysis*, 35(3), 259–270.
11. Sharp, W.G., Odom, A., & Jaquess, D.L. (2012). Comparison of Upright and Flipped Spoon Presentations to Guide Treatment of Food Refusal. *Journal of Applied Behavior Analysis*, 45(1), 83-96.