Use of Hierarchical Exposure and Positive Reinforcement in Increasing Food Acceptance in Children with Autism Spectrum Disorders

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ASHA Disclosures

- Financial Disclosures
  - None
- Non-Financial Disclosures
  - None
What Makes Up a Feeding Disorder

- Medical
- Nutrition
- Behavior
- Feeding Skills
- Sensory
- Family Stress

"OK, who’s ready for some bickering?"
Avoidant/Restrictive Food Intake Disorder

A. Persistent failure to meet nutritional/energy needs with 1 (or more) of the following:
   - Weight loss, failure to maintain weight (fall off growth chart)
   - Nutritional deficiency (significant)
   - Depends on enteral feedings or oral supplements
   - Marked interference with social functioning

DSM 5 (2013)
Criteria

B. Not due to lack of food or cultural practice
C. Does not occur with Anorexia Nervosa or Bulimia Nervosa (no body image issues)
D. Not due to concurrent medical condition or mental health disorder
   - Unless, severity of feeding concerns exceeds what is typically seen with that condition
   - Warrants additional clinical attention
Behavioral Eating/Feeding Disturbance

- Lack of interest in food or eating
- Don’t seem to care about what other people eat
- Don’t show hunger
- Concerns about aversive consequences of eating
  - It might make me sick, It tastes bad
  - Avoidance based on sensory characteristics of food
  - That looks gross, It’s too sticky, It smells bad
Diagnostic Features

- Sensory Characteristics
  - Smell, texture, taste, temperature, color, shape
- Brand and Container
  - Food selectivity
  - Food refusal
  - Food neophobia
    - Anxiety
Food Selectivity in ASD

- SALTY
- BLAND
- WHITE
- CRUNCHY
- DRY
- BRAND
Feeding Problems in ASD

Lots of research on feeding problems in children with ASD.

- High-Probability demands (Gentry & Luiselli, 2008)
- Escape Extinction (Freeman & Piazza, 1998)
- Fading (Patel, et al, 2001)
- Differential Reinforcement (Levin and Carr, 2001)
- Simultaneous vs. Sequential Presentation (Piazza, et al, 2002)
- Repeated Exposures
  - Seiverling, Williams, Ward-Horner, & Sturmey 2011
# Feeding strategies

<table>
<thead>
<tr>
<th>FADING</th>
<th>SHAPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Fade a **STIMULUS</td>
<td>**Shape a **RESPONSE</td>
</tr>
<tr>
<td>Change shape or brand of food</td>
<td>Leave food same shape or brand</td>
</tr>
<tr>
<td>Require same behavioral response</td>
<td>Alter responses needed</td>
</tr>
<tr>
<td>Try McDonald’s and Wendy’s French Fries Response – Bite and swallow</td>
<td>McDonald’s French Fries Response – touch, lick, bite, swallow</td>
</tr>
</tbody>
</table>
Fading Liquids

- Patel et al (2001)
  - Fade from water to milk to eliminate G-tube
  - 3.75 ml fluid per offer
  - CIB powder into water, CIB powder into milk
  - Jaw prompting
  - Fade 5% to start, increase increments of 10%
  - At 30% strength, child switched to target liquid at 100% for both
Sequential Oral Sensory Approach

- By Kay Toomey, PhD
- Looks at the “whole child” – organ systems, muscles, development, sensory, oral motor, learning, behavior and cognition, nutrition and environment
- Increase the child’s comfort level by exploring and learning about food in playful situations without stress
Individual and group therapy

Based on Albert Bandura’s theory that children learn more from age appropriate peers who have the same behaviors.

Developmental progression – move as the child is willing/able.

Program has 32+ steps.

No experimental research.

Specific procedures only available from workshops.

Copyrighted.
Steps Toward Eating

- Actively smells food
- New smells in front of them
- New smells at table
- Smell food in room
- Tolerate the food on their plate
- Tolerate the food near them
- Tolerate the food on the table
- Tolerate food in the same room with new foods

- **Bite**
  - Bite and swallow
  - Bite and chew
  - Bite and hold
  - Bite a piece off
  - Hold food in teeth

- **Lick**
  - Actively licks food – tongue sweeps over food
  - Touch food to tongue
  - Lick food off lips

- **Kiss** – touch food to lips
  - Actively smells food
  - New smells in front of them
  - New smells at table

- **Smell** food in room

- **Touch** foods – with fingers as appropriate
  - Use utensils to cut and stab with knife and fork
  - Use utensils to serve themselves and others
  - Use utensils to stir or pour

- **Interact** with food preparation and/or table set up

Adapted from Toomey, 1999
Is It Effective?

- The SOS method, including The Steps to Eating are frequently used in outpatient therapy or in the schools with SLP and OT.
- Anecdotally, it is reportedly very effective
- They often don’t have opportunity to do it systematically
- Need a way to empirically evaluate it
“Using Graduated Exposures and Differential Reinforcement to Increase Food Repertoire in a Child with Autism”

Case example of a 3.5 year old boy with ASD who ate 4 specific foods.

- All 4 foods tried at the same time
  - 5 pieces of each food per session
- Asked child to choose what he/she wanted
- Relaxation
- Token Economy and Visual Supports
- Parent training/generalization
<table>
<thead>
<tr>
<th>12 Hierarchy</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tolerate food in therapy room</td>
<td>7. Lick food and throw away</td>
</tr>
<tr>
<td>2. Tolerate food on therapy table</td>
<td>8. Lick food 5 times and throw away</td>
</tr>
<tr>
<td>3. Tolerate food within 1 foot</td>
<td>9. Break food with teeth and throw away</td>
</tr>
<tr>
<td>4. Touch food and throw away</td>
<td>10. Chew food 5 times and throw away</td>
</tr>
<tr>
<td>5. Smell food and throw away</td>
<td>11. Eat a small piece</td>
</tr>
<tr>
<td>6. Kiss food and throw away</td>
<td>12. Eat an entire piece</td>
</tr>
</tbody>
</table>
Results

- 100 sessions over 9 months, gained 50+ foods
- Number of sessions needed decreased over the course of the study
- This took a very long time
- No experimental control
  - Data collected via ABC and frequency counts
- Did not do official probes to determine where to go next
- Parents were engaged in generalization
  - 27 foods
Koegel, et al, 2011

- Individualized Reinforcers and Hierarchical Exposure to Increase Food Flexibility
- Longitudinal data (22 weeks) across 48 foods for 3 children.
- MBL across participants for 5 foods
- Generated a hierarchy of behaviors the child needed to exhibit to earn reinforcement
Hierarchical Levels of Acceptance

- 0 = Refuses to try food (w or w/out disruptive behavior)
- 1 = Touches food and motions towards mouth
- 2 = Puts the food to lips
- 3 = Bites the food
- 4 = Bites and puts in mouth, refuses to swallow
- 5 = Chews the food but refuses to swallow
- 6 = Swallows the food “reluctantly”
- 7 = Accepts without any signs of displeasure or disruptive behavior
Koegel et al 2011 Results

- DV’s – number of foods accepted, spontaneous requests for new foods, verbal responses, and level of acceptance (hierarchy)
- Accepted 6, 15, 16 foods respectively at follow up
- Participant with the fewest foods went through a series of levels before acceptance.
- Others showed almost immediate acceptance at level 7
Shaping

- SOS, Hierarchies

- Want to try a strategy that could be done more efficiently in a school setting

- For lower intensity food refusal and selectivity

- For behaviors that cannot be easily obtained just by teaching, exposure, or basic prompts

- If systematic and use consistent SR+, could get better outcomes
Keys to Shaping

Differential Reinforcement

Successive Approximations
Positive Reinforcement

Positive Reinforcement (SR+)

A behavior that is followed by a positive consequence, is more likely to occur again in the future.

Behaviors that do not result in positive consequences, are less likely to occur (Extinction).

For shaping, specific behaviors will be reinforced and all others will be on extinction.

The behaviors to be reinforced will change as the previous ones are acquired.
Successive Approximations (SA)

• Start by reinforcing a response in the child’s current repertoire, that shares characteristics or are a prerequisite for the terminal behavior
• Change criterion to next closest behavior in the class and provide reinforcement for that behavior
• Used to teach complex behaviors (tooth brushing), improve tolerance to nonpreferred stimuli, increase duration of time engaged in activities
Shaping

“Touch-Smell-Kiss-Lick-Bite”

- Hierarchy
  - Touch
  - Smell
  - Kiss
  - Hold in teeth
  - Lick
  - Bite
    - Bite and expel
    - Bite hold and expel
    - Chew and expel
    - Chew and swallow
Benefits of Shaping

• Steps should always move towards terminal goal

• Focus on Reinforcement

• Punishment & other aversive are not used

• Can combine it with other procedures (chaining)
Limitations of Shaping

• Time consuming
• Progress not always linear
  ▶ May need to add in new steps, change current steps
  ▶ Go backwards
• Have to monitor progress closely
  ▶ Staying too long at a particular step may cause the child to get stuck.
  ▶ Makes it harder to get to the next step
• Inadvertently SR+ and strengthen inappropriate behavior
How to Develop a Shaping Program

1. Select a Terminal Goal
   - Pick the behavior you want the child to do independently at the end of the program
   - Make sure it is one child is capable of learning

2. Define criteria for success
   - 80-100% compliance before moving ahead
   - Over 3 consecutive trials
3. Analyze the Response Class

- Response Class - Responses function to earn the same reinforcer

- Shape across Topographies
  - Reinforce certain members of a response class and not responses outside the response class.
Response Class, ct’d

• Choose behaviors in the response class
  ► Pick behaviors already in the child’s repertoire
  ► Clear operational definitions
  ► What approximations will get reinforcement

• Sometimes the behaviors may be “approximations” or guesstimates
4. Identify First Behavior

- Choose a behavior they already do at some level
- What will be the easiest behavior for the child to emit initially?
5. Gradual Steps

- Choose your steps sequentially
- Build off each other
- Need each to complete terminal goal
- Each step should be more challenging, but attainable.
  - Gets them used to the process that the requirement will change but reinforcement remains
Limit Time at Each Step

- Limit # of approx. at each level
  - Need to know when to move forward or back
  - Slows down progress by doing too many trials at one step
  - May make behavior firmly established, difficult to extinguish
  - If they make too many mistakes or don’t exhibit the behavior, criteria may have been raised too high
Improve Efficiency

- Developmental programs wait for the child to initiate the next approximation
- Use prompts as discriminative stimulus to respond
  - Verbal
  - Model
  - Physical
Using Reinforcement

- Identify current/immediate reinforcers
- Use contingently for compliance
- Maintenance and Generalization
Additional things

- Eliminate distractions
- ID target foods
  - Used to eat foods
  - Similar foods
  - New foods
## Pryor’s 10 Laws of Shaping

<table>
<thead>
<tr>
<th>Small steps so child has good chance of contacting reinforcement</th>
<th>One trainer per behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train one behavior at a time</td>
<td>Can add as many steps in as needed</td>
</tr>
<tr>
<td>Once a behavior is acquired, put it on VR schedule before moving to next step</td>
<td>Don’t interrupt a session</td>
</tr>
<tr>
<td>At next step, relax requirements for previous one</td>
<td>Go back to kindergarten</td>
</tr>
<tr>
<td>Plan program ahead of time to you can make adjustments as needed.</td>
<td>End on a good note - Quit while you are ahead.</td>
</tr>
</tbody>
</table>
Our Study - Setting

- Stepping Stones Learning Center
  - Conducted all sessions
- University of Rochester Medical Center
  - IRB
  - Data analysis
  - Consultation
Research Population

Number of Participants

- 3-6 participants targeted
- 4 total: 1 Pilot, 3 Study
Research Population

- Gender of Participants
  - 3 male, 1 female
Research Population

Age of Participants

- Males: 4, 5
- Female: 5
Research Population

Racial and Ethnic Origins

No enrollment restrictions based on race or ethnic origins

- (1) Eastern Indian, (2) Caucasian, (1) Asian
Research Population

Inclusion Criteria

- Age 2-6 years old
- Confirmed diagnosis of ASD
- Self-Limited, restricted diet as reported by parent/caregiver
Research Population

Exclusion Criteria

- Prior feeding therapy using same model
- Active medical/oral motor issues, including but not limited to: problems with chewing and swallowing, aspiration, and reflux
- Medications that directly or indirectly suppress or stimulate the appetite
Methods and Procedures

- Research Design
  - Changing criterion design to assess shaping techniques for changing behaviors (increased food acceptance)
Methods and Procedures

- **Research Design**
  - **Multiple Probe** will be used to evaluate the potential carryover effects of intervention on “Food #1” to “Food #2”, and as a result of said effects establishing a new baseline.
  
  - Useful in evaluating the effect of instruction on skill sequences when it is unlikely that the subject will master the later steps without instruction.
Methods and Procedures

Research Design

- Continuous data collection during baseline (no treatment) condition, followed by intervention condition, until participant meets a pre-determined criterion for progress.
- Last accomplished phase becomes the baseline and new criterion is set.
- Repeated until final criterion is met.
Methods and Procedures

**Changing criterion** – used to evaluate the effects of a treatment on the gradual or stepwise improvement of a behavior already in the child’s repertoire
Methods and Procedures

Steps in the study were behaviors that the child could demonstrate in getting closer to the terminal response of eating.

For example: Touch, Smell, Kiss, Lick

Each step gets the child closer to the terminal goal of Accepting and Swallowing a food, but each step is not required to complete the terminal physical goal of eating.

Shaping vs Chaining – *Shaping* involves using each step as a successive approximation that will bring us closer to the end goal.

*Chaining* involves putting together the actual steps that the end goal requires for completion.
Methods and Procedures

Treatment Procedure

- Parents/caregivers complete a checklist to select foods they would like their child to eat.
- Foods also chosen based on foods the child already gets.
Methods and Procedures

Treatment Procedure

During baseline and intervention probes, feeding team will present the participant with foods selected from the list provided by parents/caregiver.
Methods and Procedures

Treatment Procedure

Intervention involves Hierarchical Exposure – desensitizing the participant to a novel food by starting with low levels of contact with the food and then gradually and systematically increasing the level of exposure.
Methods and Procedures

Treatment Procedure

- A baseline probe will be administered with each new food introduced in order to assess where in the treatment hierarchy to begin.
Methods and Procedures

- **Treatment Procedures:** **PROBE PROCEDURE**
  - **Initial Probes:** During the initial session with each new food the researcher will offer one food across each set of hierarchical steps from “touch” to “swallow” in order to obtain a baseline.
Methods and Procedures

Treatments Procedures: **PROBE PROCEDURE**

- Each step will be presented 5 times in a row and compliance will be recorded.
- If the participant does not respond within 10 seconds the researcher will move to the next instruction.
- The researcher will continue through the entire process regardless of the participant responses (correct or not at all)
Methods and Procedures

Treatment Procedures: **PROBE PROCEDURE**

Additional Points

- We may explain the steps to the participant prior to beginning. (Ex: We are going to kiss the cracker 5 times)
- Visuals are acceptable tools to augment the participant’s understanding of the process.
Methods and Procedures

- Treatment Procedures: **PROBE PROCEDURE**

- Additional Points
  - At this baseline no prompting or reinforcement will be given
  - Treatment will begin either
    - No Criterion was met
    - Following the last step completed at 80% or better
Methods and Procedures

Treatment Procedures: **PROBE PROCEDURE**

Subsequent Probes

- Once 80% has been achieved during the **TREATMENT** phase, doing each step 5 times, across three trials, another probe session will be conducted to determine what the next baseline will be.

- Probes occur after each step has been successfully completed, as it is anticipated that after competing a few of the steps, some participants may be able to skip steps and create a new baseline further along the hierarchy.
Methods and Procedures

- Treatment Procedure
  - Begins after treatment probe has been completed and the starting level of exposure has been determined.
  - Begins with the first step the child was unable to successfully complete during the probe.
Methods and Procedures

Treatment Procedures

- A verbal instruction will signal the start of the intervention session.
- Social reinforcement will be used, except during a probe, to motivate the child and to strengthen cooperation with the task.
<table>
<thead>
<tr>
<th>Level of Acceptance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Touch</td>
<td>Food will be placed in front of the participant. The participant will be instructed to “Touch (food)”. The participant touches food with a finger</td>
</tr>
<tr>
<td>2 - Smell</td>
<td>Participant is instructed to “Smell (food)”. The participant smells food from a distance of no greater than 6 inches</td>
</tr>
<tr>
<td>3 – Kiss</td>
<td>Participant is instructed to “Kiss (food)”. The participant touches food to lips. Puckering of the lips is not necessary.</td>
</tr>
<tr>
<td>4 – Lick</td>
<td>Participant is instructed to “Lick (food)”. The participant touches tongue to food.</td>
</tr>
<tr>
<td>5 – Hold in teeth</td>
<td>Participant is instructed to “Hold (food) in your teeth”. The researcher will then count to 5 aloud. The participant must hold a solid food between his/her teeth for 5 seconds, and then may expel it onto a plate or napkin.</td>
</tr>
<tr>
<td>Level of Acceptance</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>6 – Bite and Expel</td>
<td>Participant is instructed to “Take a bite of (food)”. An accepted bite must be bigger than a cheerio or pea. The participant does not necessarily have to place his/her teeth into the food, but must at least place the food in his/her mouth for the entire 5 seconds. They may then expel the food.</td>
</tr>
<tr>
<td>7 – Bite and Hold</td>
<td>Participant is instructed to “Take a bite of (food) and hold it”. The researcher will then count to 5 aloud. The participant must hold the food in his/her mouth for the entire 5 seconds, and then may expel it.</td>
</tr>
<tr>
<td>8 – Chew and Expel</td>
<td>Participant is instructed to “Take a bite of (food) and chew it”. The participant must complete a minimum of 5 chews and then may expel it.</td>
</tr>
<tr>
<td>9 – Accepts and Swallows</td>
<td>Participant is instructed to “Eat the (food)”. The participant must take a bite of the food (greater in size than a cheerio or pea), chew the food and swallow it.</td>
</tr>
</tbody>
</table>
Methods and Procedures

- Treatment Procedures
  - If the participant complies with the instruction given, verbal praise is offered and the participant will be given another trial.
Methods and Procedures

Treatment Procedures

- If the participant does not comply with the initial instruction, a demonstration model prompt may be given and the instruction repeated.
- If the participant still does not comply with the instruction, a physical prompt may be offered and the instruction repeated.
Methods and Procedures

- Treatment Procedures
  - Each level of acceptance must be done in 3 sets of 5 trials
  - A break may be given between sets
  - Criteria for moving onto the next level of acceptance is 12/15 (80%) successful trials
Methods and Procedures

- Treatment Procedures
  - Water will be made available for sipping throughout all work with food.
  - Visuals may be used to augment the child's understanding of instructions.
  - Corrective feedback will not be given.
Participants

- Participant #1: Jack
  - Ethnicity: Eastern Indian
  - Age: 4 years old
  - Verbal Ability: Non-verbal, low receptive ability
  - ABA for 2.0 years
Intervention

Parents completed the **Food Preference Checklist**

- Ate mostly starches (bread, crackers, mac and cheese...)
- Ate most fruit
- Did not eat any vegetables or protein
Intervention

Jack

- Based on the Food Preference Checklist of foods Jack currently eats, he used to eat, and the foods his parents would like him to eat the following foods were selected to target:
  1) Bologna
  2) Pudding
  3) Dry Cereal
Participant #2: Jena

- **Ethnicity:** Caucasian
- **Age:** 5
- **Verbal Ability:** minimally verbal
  - SCERTS program for 2 years
  - Attendance issues
Intervention

- Parent completed *The Food Preference Checklist*
  - Mostly ate starches and fruits
  - No vegetables
  - No protein except peanut butter
Intervention

Based on the Food Preference Checklist of foods Jena currently eats, she used to eat, and the foods her mom would like her to eat the following foods were selected to target:

1) Pretzels
2) Yogurt
3) Chicken
Participants

- Participant #3: **Brian**
  - **Ethnicity:** Caucasian
  - **Age:** 5
  - **Verbal Ability:** highly verbal
  - ABA program for 2+ years
Intervention

- Parent completed *The Food Preference Checklist*
  - Mostly ate starches and some fruits
  - No vegetables
  - No protein except pepperoni occasionally
Intervention

Based on the Food Preference Checklist of foods Brian currently eats, he used to eat, and the foods his parents would like him to eat the following foods were selected to target:

1) Raisin
2) Cheese stick
3) Apple
Discussion

- Shaping is a viable treatment intervention for children with food selectivity and food refusal.
- Multiple Probe design enabled you to make evidence based decisions to move children through the hierarchy.
- Shaping allows you to start with a step that it is likely the child can comply with.
- As you gain compliance they become more likely to move forward towards the goal of eating.
<table>
<thead>
<tr>
<th>Child</th>
<th># of foods gained</th>
<th>Average # of probes</th>
<th>Average Tx sessions</th>
<th>Total # of steps skipped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jack</td>
<td>3/4</td>
<td>3</td>
<td>20* (for bologna) 9</td>
<td>Bologna – 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vanilla Pudding – 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Banana Pudding - 3</td>
</tr>
<tr>
<td>Jena</td>
<td>3/3</td>
<td>2</td>
<td>6</td>
<td>Pretzels – 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yogurt - 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Chicken - 4</td>
</tr>
<tr>
<td>Brian</td>
<td>3/3</td>
<td>1</td>
<td>5</td>
<td>Apple – 6 (all)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Raisins – 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cheese - 5</td>
</tr>
</tbody>
</table>
## Summary Totals

<table>
<thead>
<tr>
<th>Child</th>
<th>Foods</th>
<th># of Probes Per food</th>
<th># of Tx Sessions per food</th>
<th>Total # of steps skipped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jack</td>
<td>Bologna</td>
<td>6</td>
<td>42</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Van Pudding</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Cereal</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Banana Pudding</td>
<td>3</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Jena</td>
<td>Pretzel</td>
<td>1</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Yogurt</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Chicken</td>
<td>1</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Brian</td>
<td>Apple</td>
<td>1</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Raisin</td>
<td>1</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Cheese</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>
Benefits of Shaping

- Able to use in a school setting
- Without escape extinction
- Identifying food preferences
- Reinforcement
  - Children enjoyed social praise
  - Escape was allowed and did not interfere
Limitations

- Did not obtain Interobserver Agreement
  - Train more therapists, Video tape sessions
- Didn’t collect any data on disruptive mealtime behaviors
- Didn’t address parent training
  - Parent training offered, but declined
  - Grant – Treatment of Feeding Problems in Children with Autism Spectrum Disorders
    - Manualized training programs for parents
    - Shaping is one of the sessions
Goals for Independence

- Compliance
  - Reducing the demand
  - Reinforcement
- Tasting and Trying
  - Shaping
- Volume
  - Maintenance
- Mealtimes
  - Generalization
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| Stepping Stones Learning Center | University of Rochester Medical Center |
|--------------------------------|--|---|
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