Responsive Feeding: Understanding when and how to develop a feeding relationship with infants.

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Dr. Susan Johnson, PhD

Dr. Johnson is a tenured Professor of Pediatrics and Associate Director of the Leadership for Innovative Team Science (LITeS) Program at the University of Colorado Anschutz Medical Campus.

Dr. Johnson is an internationally recognized expert in early childhood nutrition, specifically the impact of the environment on the development of children’s eating behaviors and growth.
Why children eat the way they do: Environmental and developmental influences on children’s food preferences

Susan L Johnson, PhD
Professor, Department of Pediatrics
Section of Nutrition
Learning Objectives

By the end of the event you will be able to:

• Describe the four fundamental principles of responsive feeding.
• Recognize and describe the specific attributes and behaviors that constitute responsive feeding.
• Apply evidence-based knowledge of the benefits of responsive feeding to inform their practice with children and families.
What is developmental readiness in relation to eating and feeding?

1. Expand child's overall capacity to eat effectively
2. Set the stage for a more well-rounded eating experience

Kleinman, 2015
### DEVELOPMENTAL READINESS PRINCIPLES

<table>
<thead>
<tr>
<th></th>
<th>Developmental Maturity (Not Age)</th>
<th>Growth Rate &amp; Physical Activity</th>
<th>Satiety Cues &amp; Feeding Regulation</th>
<th>Solids at ~4-6 Mo</th>
<th>Multiple Exposures</th>
<th>Diet Quality (Not Calories)</th>
<th>Responsive Feeding</th>
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What is developmental readiness when considering eating and feeding?

Focuses broadly on:
- expanding child's overall capacity to be effective
- developing a more well-rounded eating experience

Remember—it is the nexus of Nutrient Needs, Child Development and Caregiver Feeding Practices
Developmental milestones of feeding—what are the signals?

- Breastfeeding & Milk consumption
  - Rooting (prenatally)
  - Sucking (mid 2nd trimester)
  - Extrusor (can be mistaken for refusal)
  - Swallowing (late 1st trimester), Gag (early 3rd trimester),
  - Phasic bite (early 3rd trimester)

Rooting reflex

Sucking reflex

Extrusor reflex
Developmental milestones of feeding—what are the signals?

- Complementary feeding
  - Head and neck control (protecting the airway)
Developmental milestones of feeding—what are the signals?

- Table foods
  - Self feeding—palmar & pincer grasp

![Palmar grasp](image1)
![Pincer grasp](image2)
![Self-feeding w/ spoon](image3)
What are signals of developmental readiness for introduction of complementary foods?

- Mouthing of objects and bringing hand to mouth
- Ability to take food into mouth instead of expelling it (the disappearance of the extrusor reflex)
- Interest in self-feeding (finger foods and holding spoon)
What are some critical points where developmental readiness is challenged?

- Breastfed infant: exclusive breastfeeding 5 – 6 months;
- Transition to pureed table foods
- Promoting of self-feeding or participating in feeding
- Drinking from a cup (vs. a sippy cup
What are your experiences?

- What do clients say about these transitions?
  - Maintaining BF
  - Concerns about when and what to offer during complementary feeding
  - Challenges with self-feeding
  - Transitioning to drinking from a cup

Which challenges come from the child and which are more life challenges or competing demands?
Responsive Feeding developed in the context of global nutrition issues... has been applied to child feeding and outcomes for developed countries.
How do parent beliefs/expectations relate to *how* they feed their children?

- **Responsive feeding**
  - Respond to the child’s internal cues and developmental stage
  - Child centered

- **Goal driven feeding**
  - Need child to eat
  - Adult centered and constrained by environment and SES
Responsive parenting (Black & Aboud, 2011)

Caregiver behaviors are responsive if:

– they follow a child’s behavior promptly
– are emotionally supportive of the child’s needs
– show change, indicating they are dependent on child’s signal (contingent)
– and are related conceptually to child’s prior action (developmentally appropriate, not intrusive or controlling)
Responsive feeding (Black & Aboud)

1) Pleasant feeding context with few distractions;
   - child seated comfortably, ideally facing others;
   - expectations communicated clearly;
   - Healthy & tasty food; developmentally appropriate; offered on predictable schedule;

2) encouraging & attending to child’s hunger/satiety signals;

3) responding to child in a prompt, emotionally supportive, contingent, and developmentally appropriate manner.
What makes an eating environment pleasant?

• Often easier to detail what makes it unpleasant?
• Offer some concrete examples of modifiable environmental factors that make eating more pleasant?
Caregiver actions associated with responsive feeding

• In breastfeeding, mothers learn to interpret their child’s signals of hunger and satiety and to feed or stop accordingly
• Respond to child's signals; increase variety, texture, and tastes
• Respond positively to child's attempts to self-feed
• It’s a DANCE....but
• Sometimes the cues are confusing
<table>
<thead>
<tr>
<th>First Author</th>
<th>Journal/Year</th>
<th>Findings</th>
<th>Details</th>
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</table>
| Aboud        | J Nutr; 2009 | + self-feeding  
• No fx on intake or growth | Bangladesh; education intervention; @ 8-20 mo; n=214; growth |
| Aboud        | Pediatrics; 2011 | + for dev. Outcomes & parenting;  
+ by self-report  
• No fx for BMI | Bangladesh; education intervention; @ 8-20 mo; n=302; 1 = info sessions; 2 = 1+ coaching; 3 = nutritional powder; growth |
| Daniels      | Pediatrics; 2013 | + by self-report  
• No fx for BMI | Australia; @6 mo - 2 y; n=698; 1 = usual care; 2 = interactive sessions; obesity prevention |
| Vazir        | Mat & Child Nutr; 2013 | + for dev outcomes | India; @3 – 15 mo; n=600; 1 = regular care; 2 = CF; 3 = CF + RF; growth & development |
| Kavanaugh    | JNEB; 2008 | - for formula  
• - for growth | US; n=61; bottle feeders; education on being responsive to cues; CF; Formula intake & wgt gain |
Innovative Pilot RCT testing FX of RF
Ledoux, et al. *Health Education & Behavior*, 2017

- Teach parents about responsive feeding (RF)
- Vicarious learning video (*Happier Meals*)
- High income/education
- RF knowledge and positive beliefs increased

**Key points:**
- healthy food environments,
- trust children’s choices within a healthy environment,
- ask children to help prepare food,
- model healthy eating,
- offer new foods

[https://www.youtube.com/watch?v=FUwf3GEVcrc](https://www.youtube.com/watch?v=FUwf3GEVcrc)
What makes for a healthy home food environment?

• What foods? Drinks? Child-oriented foods?

• What policies help to support healthy home environments?

• How do feeding strategies support or exacerbate the presence of healthy and less healthy foods?

• Are there any risks/consequences to having “pristine” food environments?
Responsive feeding teaches children:

• Caregiver will respond and meet his/her needs
• To begin to self-feed
• To experience new tastes and textures
• That eating and mealtimes are fun
• To try new foods
• To do things for his/herself
• To ask for help
• To trust that caregivers will respond to requests

These are not the outcomes we usually measure
Early eating is formative

- New foods more likely to be accepted early (<3 y old)
- Food preferences formed during the first years of life (loosely) predict what’s actually eaten
- Dietary patterns track from early to later childhood

Grimm et al., 2014; Birch, 1994
Resnicow et al., 1998
Skinner et al., 2002;
Cooke et al., 2004;
Nicklaus et al., 2004;
Pearson et al., 2011
Mikkila et al., 2004, 2005, 2007
“Picky” Eaters & “Good” Eaters

**Expectations**
Eat all – Eat *something*

**Influencers**
- Previous consumption
- Child’s preferences
- Knowing their child

**Feeding Goals**
Child is full & satisfied

**Maternal emotions**

**Maternal feeding strategies**

**Meal Outcomes**
- Balanced nutrition
- Healthy growth
- Little waste

Getting my child to eat the right amount: Mothers’ considerations
Johnson et al., 2014

Mothers decide what and how much to offer their preschooler based upon child’s likes and eating characteristics

Licensed by J Chilek from AdobeStock
Effective ways to decrease children’s food acceptance

– Offering foods as rewards—relates to consumption of poorer quality foods Kiefner-Burmeister et al., 2014

– Pressure to eat Gregory, 2011; Galloway 2006; Fisher 2002

– Permissive feeding style—lowest FV intake Murashima, 2012

– Catering Blissett, 2011
Positive & responsive influences on preschoolers’ food intake

Positive parenting practices

– Encouragement, praise, monitoring
– Child centered feeding practices
– Feeding style of high demand and expectations
– Modeling
– Structure & rules
– Appropriate reward

Vereecken & Maes, 2010
Patrick & Nicklas, 2005
Goldman, 2012
Gregory, 2011
Coulthard, 2009
Baranowski 2013
Wyse, 2011
Pearson, 2009
Why children eat the way they do

• Evolution has shaped the type of foods initially preferred or rejected by children. (Steiner et al. 2001)

• CHILDREN LEARN. Chemical senses interact with early life experiences. (Mennella, 2007; Pepino & Mennella, 2005)

• Mothers feed their children the foods that they like and enjoy. Mothers want children to enjoy eating.

• Responsive Feeding helps children learn to eat well.

• Best parenting is responsive to child’s developmental stage as well as nutrient demands
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https://www.linkedin.com/groups/8409844
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Nutrition and Wellness CA
Upcoming Event

Gut-Microbiota-Brain Axis

• Date: Thursday, July 27, 2017
• Time: 11:00 am – 12:00 pm Eastern
• Location: https://learn.extension.org/events/3055

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