Learner Outcomes

• Define the near and distant aspects of vision, smell, taste, touch, and sound that influence eating
• Describe how the sensory variables can be utilized in grading *our ask* of children
• Describe the importance of rehearsals in new food introduction
• Describe the continuum concept in feeding treatment
• Define the importance of supporting child and parent success in mealtimes

Common Pediatric Feeding Challenges

• Skill basics of sucking, swallowing and chewing
• Developmental transitions
• Texture transitions
• Sensory sensitivity
• Motor challenges
• Worry
• All have sensory influences because food is sensory!
Feeding and Mealtime Support
• We want children to be successful
• We want parents to be successful
• We want to children to feel celebrated and enjoy their mealtime!
• We want to celebrate the feeding relationship
• We want our therapy techniques to bring parent and child together not push them apart.

Positive Tilt
• A Positive Tilt, is a coming together of parent and child whether physically and emotionally that says “Yes, I want the food”.

Negative Tilt
• A Negative Tilt is a leaning away of child from the parent physically and emotionally says “Absolutely NOT!”

Offer, Pause, Adjust
• Adult offers and the child gives permission (or not). (Positive or negative tilt)
• When no permission, we must adapt.
• If the child is resisting, refusing, saying NO, we probably are pressuring or asking too big an ask.
• What do WE need to do to offer so the child is able to give permission...and eat?
Responsive Feeding
• We need to read the child’s cues, be responsive.
• “With respect to parent styles, an authoritarian style of feeding, in which feeding demands placed on the children are high and responsiveness to the child’s needs are low promotes overeating, overweight, food rejections and picky eating. (Birch, 2007)
• We can carefully calibrate our ask in our responsivity.

Grade our ASK
• Safety ask
• Developmental ask
• Motor ask
• Emotional ask
• Independence ask
• Sensory ask...so let’s look at sensory

Sensory enjoyment
• Has a lot to do with letting the food in
• Hard to work on oral motor without a trusted sensory base
• Difficult, often counter productive to work on motor without sensory permission.
• We have to eliminate the pressure
• We have to tip toe towards progress

Gastrophysics (Spence 2017)
• “Our mood is one of the most important factors influencing our dining experience so best try to optimize it.”
• We want to create a positive mood and positive food experiences
• Food scientists and feeding therapists both know this
Systematic De-Sensitization

• Classical conditioning technique used in treating phobias, fears
• Creates an anxiety hierarchy (a continuum)
• The goal of this process is for the individual to learn how to cope with, and overcome the fear in each step of the hierarchy.
• Relaxation between steps. (Wikipedia)
• Instead of pushing into the fear

Continuum of tasks

• Continuum: continuum is a continuous sequence in which the adjacent elements are not perceptibly different from each other, although the extremes are quite distinct. (Google Dictionary)

• Here

• Grading the sensory asks of foods can help
  Are we asking a BIG ask? Could it be smaller and less worrisome/more successful?
Vision Matters

- Vision can be far or near
- Children learn a lot about eating through vision.
- Vision is a part of the complex pattern of factors influencing the amount of food consumed in a meal (Linne, 2002).
- Vision influences our interest in the food and relates the food to our experience and expectations.

Oh, my!

“They lost me at the visual!”

The Look!

- Demonstrated that an attractive presentation of fruit increased intake
  (Jansen et al 2017)
The visual may not match their expectation

Smell Matters: Oro-nasal smelling
• Far sensation
• **Breathing in** through the nose past smell receptors
• External aromas from our environment allow our brains to form rich flavor expectations of what the flavor will be like and how much we will enjoy it.
• Smell is *Taste from a Distance, a taste preview*
• Smell is 80% of taste

• Sheperd (2012. *Neurogastronomy*), and Spence (2017 *Gastrophysics*).

Smell Matters: Retro-nasal Smelling
• Nearer sensation
• **Breathing out** and mixing exhaled air with food with aroma passing back up to nasal receptors past the chewing and manipulation of food in the mouth.

• Sheperd (2012) and Spence (2017)

Olfactory system
• Olfactory neuroanatomy is intertwined, via extensive reciprocal axonal connections, with primary emotion areas including the amygdala, hippocampus, and orbitofrontal cortex.
• The olfactory system has a unique intimacy with emotion with its relationship with the limbic system
• Olfactory perception is known to be dominated by emotion (Krusemark, 2013).
Olfactory Memory
- Alerting properties
- Accommodation
- Memory and memory storage
- Remember that smell?
- Really important for many sensitive or worried eaters, flight/flight?

Influence of smell on new food trying.
- Showed that the smell of a new food influences the decision of a child to try and taste the foods.
- Coulthard et al 2016

Sound matters
- Food has crunch, chewing sounds and changing sounds
- Think celery, apples, carrots, crackers, cereals
- It can enhance or disturb our chewing experience
- Far and near versions of sound

External sound
- Sound waves touching ear drum from a distance, turning wave into vibration for transmission to cochlea.
- Relationship tactile and auditory sensitivity
- When auditory input is perceived as unpleasant or noxious, affected individuals will learn to avoid auditory input, and thus curtail the learning that comes from listening to the people and world around them. (Elysa 2012).
Internal sound

- Bone conduction/bone transmission conducted through mastoid skull bones to cochlea.
- Proximity to jaw, mouth and throat
- Sounds change throughout the chewing

Touch Matters

- Hands and mouth both touch food
- If you can’t touch it, why would you eat it?

Hand Mouth Connections

- Increased sensory receptors
- Sensitivity fingers vs palm
- Far (hands) to near (mouth) sensation
- Finger/palm feel helps rehearse food texture for mouth!!

Taste the feeling or feel the tasting

- Tactile exposure promotes food acceptance.
- Two ways to help kids increase getting comfortable with texture is exposure and gradual increase in texture (a continuum).
- The results imply that feeling the texture of the food with hands increases the acceptance of food with the same texture (Nederkoorn, 2008).
Play with your food!

- Sensory play is associated with tasting of fruits and vegetables.
- Concluded that taking part in a sensory activity with fruits and vegetables actually encourages tasting.
- Tasks using real fruits and vegetables are more effective than general sensory play tasks (Coulthard and Sealy 2016).

Enjoyment of food play

- Enjoyment of tactile play is related to preschoolers level of food neophobia.
- The findings strengthen the idea that tactile processing may be associated with the acceptance of food variety (Coulthard and Thakker 2015).

Did you know?

Austria - 102

Japan - 408

US - 78

How about these words???

- Puree, mashed, ground or chopped, solids
- Think about the texture differences, subtleties? a continuum?
- Smooth, coarse, dry, moist, wet, solid, slippery, grainy, rubbery, viscous, thin thick, chewy, scattery, crunchy, soft, runny, crispy, hard, juicy, springy, lumpy, chunky, stiff, rough, gritty, hot/cold, lukewarm, sticky, crumbly, light, airy, meltable...
- We can grade the sensory ask.
- Ex. All purees are not created equal!
**Touch Temperature matters**

- Cold
- Far to near sensation
- Touch fingers/palms
- Feel the warmth?
- Touch Lips
- Tongue carefully

**Taste Matters**

- A near sensation on the tongue
- Sweet, sour, bitter, salty and umami, savory, meat-like tastes
- If you did not like the taste, would you eat more?


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**Taste Buds**

- “7 Things You Didn’t Know about Taste Buds”
- (Linda Bartoshuk, PhD Human Research Univ Florida Center Smell and Taste)


**What is our experience with taste?**

- We are looking for what tastes children love!
- Typical clinic foods?
- Change it up!!
- Tube fed or inexperienced children
Taste

• Taste has a large influence over trying foods, with sweet having a profound influence
• Monell Center Advancing Discovery in Taste and Smell (Mennella & Bobowski 2015)

By understanding taste

• Intensity of taste - Strength of the taste
• Taste threshold - The lower limit at which it can be detected. Intensity (concentration)
• We can grade our offers to children

Mouthfeel

• Difficult to separate taste and texture enjoyment
• Kinesthesia is linked to mouthfeel through the motions of the tongue as it explores and identifies size, shape and texture of food while chewing. Nerve endings in teeth pick up info on hardness, crunchy or elastic and hardness
• (Mourtisen, 2017)

Consider Flavors of foods vs. Tastes

• Flavors......for our therapy purposes includes NO textures
• Tastes....Begin to introduce textures
• Worried children may need the taste and texture separated out.
Rehearsals

- A **rehearsal** is a practice, an introduction to the activity so the child KNOWS what is coming.
- Trying new can be scary, worrisome
- Watch try others
- Take turns
- Have choices
- Be a partner
- Participate...Make the crumbs

Provide Sensory Rehearsals

- **Sight**: Watch others eat or interact with them
- **Sounds**: Hear others crunch it
- **Smell**: Smell is taste from a distance
- **Feel it**: in the hand is a rehearsal or preview of the texture to imagine the mouthfeel

Sensory Continua

- **Visual**: Far ➔ Near
- **Sound**: External far ➔ Internal near
- **Smell**: Far ➔ Near, Oronasal ➔ retronasal
- **Touch**: Palm ➔ lips ➔ mouth
- **Taste**: Dilute ➔ concentrated ➔ Bland ➔ Spicy/Tasty

Ex. Texture Continua

- Thin Liquids ➔ Purees
- Puree ➔ Mashed foods
- Puree ➔ Puree
- Crumbs ➔ Solids ➔ There
- Here ➔ There
Taste Continuum

- Start farther, start safe
- Smell it
- Finger flavor on lip
- Chapstick flavor on lip
- Tongue Flavor with finger then food
- Taste with lip (self first)
- Taste with tongue (self first)
- Texture continua

Texture continuum

Crumbs are small

- Small visual
- Small size
- Small smell
- Small sound
- Small flavor
- Small texture
- Grade the crumb ask
Start with familiar and tip toe

Circle of Sensitivity

The Art of Sensory Choice

- Understand the near and distance sensory properties
- Trust. No sensory surprises
- Rehearsals
- Continuum of options starting with SAFE!
- Start safe and Stretch, adjusting as needed
- Teach parent for in-home success!

Check out the Grasshopper Story

- www.mealtimenotions.com
- www.nourishaz.org
Resources


