A Sensory Processing Approach for Young Children with an Adversity to Eating

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A SENSORY PROCESSING APPROACH
FOR YOUNG CHILDREN WITH
AN ADVERSITY TO EATING

By

Zondra S. Thompson, OTR/L

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Submitted to the Occupational Therapy Department

Of the
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This Scholarly Project Paper, submitted by Zondra S. Thompson in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Dr. Gail Bass, Ph.D. under whom the work has been done and is hereby approved.

Dr. Gail Bass, Ph.D.

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Abstract

Eating and drinking are basic to our health and survival; it is also an integral part of our social life. For parents, feeding their children is a vital part of how they care for and nurture them. It is difficult for both the parents and the child when eating becomes a stressful experience. Children with sensory processing dysfunction often approach mealtimes with apprehension and discomfort. The willingness or inability to eat may be a sensory-processing based problem, which often exhibits as a behavioral problem such as, the child refusing to eat, to try new foods, or to touch different foods.

The problem addressed in this scholarly project focused on sensory-based eating disorders incorporating a holistic approach to assessment and treatment. This project attempted to narrow the problem of sensory-based eating disorders, to children who eat a very limited diet and are extremely reluctant to eat new foods.

The methodology included a review of the professional literature including: sensory processing disorders, autism, selective eaters, parent-child interactions and environmental influences. The topic of food aversion or eating disorders is broad and there are many causes for an eating disorder such as, medical, motor, sensory, behavioral and environmental factors. This author used the Occupational Therapy Practice Framework: Domain and Process and the Ecological Model of Occupation as the outline for this project.
Based on the review of literature it was determined that eating disorders for children without medical or motor concerns are labeled as failure to thrive and the main factor contributing to this eating disorder is the infant-mother relationship; the treatment is based on behavioral intervention strategies. These children often have a sensory processing disorder which can create a hyposensitivity or hypersensitivity to tactile input affecting their oral motor skills and consequently eating. Children with food aversions need a treatment approach that considers all of the factors and treatment possibilities.

Following the review of the literature, a *Mealtime Guide for the Young Child with a Sensory-based Eating Disorder* was developed for parents/caregivers and occupational therapists to use in their assessment and treatment of children with a sensory-based eating disorder. It was the intent of this project to provide guidelines that include a sensory approach, as well as guidelines for expanding the variety of foods in a child’s diet, environmental considerations, parent-child interactions, positioning, feeding supplies and basic nutritional considerations. These guidelines are to be used by an occupational therapist in collaboration with the parents in order to provide a client-centered approach to the treatment of children with a sensory-based eating disorder.
CHAPTER I
INTRODUCTION

A primary role for a parent is to “nurture” and “nourish”; this begins as soon as their child is born. If their child has a sensory processing disorder and/or medical conditions that affect eating, the parents’ ability to nourish their child may be compromised.

Dr. A. Jean Ayres was a pioneer in the area of sensory integration and began her research in the early 1970s; this research has had a significant impact on the practice of occupational therapy. It provided a framework to understand the sensory systems and how these systems affect a person’s ability to participate in occupation. Dr. Lucy Miller refers to this same condition as sensory processing (Miller, 2006). Dr. Miller uses this term to distinguish a sensory processing disorder from its theory which is based on neurobiological function, known as sensory integration. A sensory processing disorder is defined as “the way the nervous system receives sensory messages and turns them into a response” (Miller, p.4). This disorder occurs when the sensory signals are not integrated and organized into an appropriate response. A child with a sensory processing disorder has difficulty perceiving, integrating and processing sensory input, which affects the child’s occupational performance of play, and activities of daily living.

Yack, Sutton, & Aquilla (2004) describe the characteristics of sensory integration dysfunction as

- An inconsistent response to sensory stimulation
• Difficulty organizing and analyzing information from the senses
• Difficulty integrating the information from the senses
• Decreased ability to respond to sensory input in a meaningful way
• Hyper-sensitivity, hypo-sensitivity to sensory input
• Avoids or seeks sensory input
• Unsure of body position in space
• Poor motor planning skills
• Poor motor coordination
• Easily distracted, with poor attending skills
• High level of activity or hyper-vigilant
• Low level of activity, passive (pp. 34-35)

Children with an autism spectrum disorder may have overall sensory processing disorders which can create a sensory-based eating disorder. Children with a sensory-based eating disorder may have difficulty accepting a variety of food textures, tastes, smells or temperatures. In addition, these children may have medical conditions such as GER (gastroesophageal reflux), problems with constipation, allergies or sensitivities to certain foods. These conditions make it uncomfortable or painful to eat foods; thus, eating becomes an unpleasant or even painful experience. These medical conditions need to be evaluated and treated by the child’s pediatrician, as one of the first measures in treating a child with a sensory-based eating disorder.

Children with a sensory-based eating disorder are often referred to as a “picky eater”, a “selective eater”, or a “resistive eater”. Ernsperger et al. 2000 (p.4) describe a resistive eater as a child, who:

1. Eats a limited number of foods (10-15).
2. Eats foods from a limited food group and refuses to eat from more than one food group.
3. Becomes upset when given a new food. May gag or vomit when a new food is presented to them.
4. Has “food jags”, when a child must have the same foods at every meal.
5. Have a diagnosis, such as Autism, Pervasive Developmental Disorder-Not otherwise specified, Asperger’s Syndrome.
The Occupational Therapy Practice Framework: Domain and Process (AOTA, 2002), addresses “areas of occupation” (p.612) to include basic activities of daily living and instrumental activities of daily living (education, work, play, leisure, social participation). In identifying areas of occupation, an occupational therapist first needs to understand the performance skills and patterns, required of the occupation. Understanding the skills includes the context in which the skill is performed and the demands of the activity.

Second, performance patterns (habits, routines, and roles) are a factor in the performance of daily living skills. These are the patterns that are external to the child but influence his eating/feeding. These include the environment, cultural, social, and interaction with parents. It is important for the occupational therapist to understand the performance patterns that affect the child’s performance of his occupation, one of which is eating. Eating is defined as the “ability to keep and manipulate food/fluid in the mouth and swallow it”, and feeding is defined as” the process of setting up, arranging, and bringing food (fluids) from the plate or cup to the mouth” (AOTA, 2000, p.629). The process of providing service delivery to a family is to initially evaluate the child’s motor and sensory-processing skills in order to determine if the feeding/eating disorder is sensory-based or motor-based. Determining the performance patterns that influence the skills is a critical part of the evaluation process.

Third, the client-centered approach is used throughout the framework from evaluation to intervention. Forming a collaborative relationship with the family is critical to the success of implementing intervention strategies for the child with a sensory-based feeding disorder. To expand on this model, a family-centered approach should be used.
The family-centered approach takes into account the child’s needs as well as family needs that have a direct affect on the outcome of services.

This project is based on The Ecology of Human Performance Model (Dunn, Brown, & Youngstrom, 2003) as it provides a framework that focuses on the role context plays in task performance. Although the term occupation is not specifically used in this model, the authors state “occupation exists when the person and context factors come together to give meaning to task” (p. 225). Tasks can be viewed in the following ways: as a larger set of behaviors that lead to the completion of a goal, or as a smaller set of behaviors that lead to a sub-goal. The intervention strategies for children with an aversion to eating often need to consist of smaller steps leading to the goal of eating.

This model includes the constructs of person, context, task and performance. It is consistent with a client-centered approach, moving towards the needs of the service recipient and is directed by what the family/person wants and needs from the service provider (Dunn et al. 2003). Each child brings specific motor, sensory, cognitive skills and experiences to the task of eating. The child is also continually influenced by his surroundings that either support or inhibit the child’s abilities to practice the skills of eating. The skills and experiences of the parent(s) also influence the child’s eating behaviors.

Context is one of the core constructs of this model. According to Dunn et al. (2003), “context” provides a variety of conditions the either support or create barriers to performance. The context variables that surround a child’s eating performance are critical to the child’s performance. For example: Is there a suitable chair for the child to sit in

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when eating? Is the environment conducive to eating? Is the food presented to the child such that the child is ready to accept it?

The intervention strategies for the Ecology of Human Performance framework targets four areas:

- Restoring/establishing skills by selecting activities to improve a child’s sensory processing skills, and oral motor skills.
- Altering/modify the context in which the task of eating occurs, the type of seating, utensils and foods.
- Preventing the development of further problems by changing the environment, type of food or utensils or approach to mealtimes that will prevent additional problems from occurring.
- Create situation that support optimal performance for eating, such as introducing a snack time for the child and parent to practice eating/feeding without the pressure of eating sufficient calories to maintain or gain weight (adapted from Dunn et al. 2003, pps.231-233).

Professional journals and textbooks were reviewed for information about evaluation and treatment of children with a sensory-based eating disorder. Based on the review of the literature, A Mealtime Guide for Parents, and Occupational Therapists was developed. The guide is organized in a sequential manner, beginning with two assessments; one for the parent(s) and the second for the occupational therapist. The guide provides information regarding nutrition, diet, and intervention strategies that can be incorporated into the child’s daily living routine within the context of the environment, and incorporating a family-centered approach. The guide provides some background information including sensory processing and activities to address sensory processing; oral-motor pre-feeding activities; a developmental feeding progression; and basic nutritional needs of young children. This is followed by strategies to introduce solid foods and to expand solid foods into a child’s diet, general mealtime strategies, positioning and suggested feeding materials. There is a list of references available for
parents in order to expand their understanding of sensory-processing disorders and intervention suggestions. The guide is included in its entirety in Chapter IV of this document and it is intended to be a resource for parents and occupational therapists in their journey to get their child to want to, "just try a taste or even take a bite"!

The background information had its foundation in the review of literature that makes up Chapter II of this document and the methodology for the development of the guide is described in Chapter III. Chapter IV of this document contains the findings and recommendations of this scholarly project.
CHAPTER II
REVIEW OF LITERATURE

The purpose of this project is to develop educational materials designed for parents/caregivers and educators providing a sensory processing approach for young children with an adversity to eating. Many of these children have a diagnosis of autism and/or sensory processing disorder. These materials are to be used by occupational therapists to design intervention strategies to be implemented within a child’s natural environment by the child’s caregiver. In order to have validity, the information must be based on current literature and “best practice.” This chapter is organized into the following sections: overview of Autism Spectrum Disorder (ASD), overview of Sensory Processing Disorder (SPD), definition of feeding disorders, definition of “selective eaters,” assessing feeding disorders, intervention strategies for feeding, role of the occupational therapist, and role of the parent. The review of the literature supports the project content.

Overview of Autism Spectrum Disorder (ASD)

The American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (APA, 1994) defines autism, one of the Pervasive Developmental Disorders, as a spectrum disorder which can range from severe to mild involvement. According to the manual, Pervasive Developmental Disorders consist of five categories including: Autism, Rett’s Disorder, Childhood Disintegrative Disorder, Asperger’s Disorder and Pervasive Developmental Disorder-Not otherwise specified. All
of these disorders share common traits, including poor verbal and non-verbal communication, poor social skills and stereotypic behavior (Yack, Aquilla, & Sutton, 2004, p.11).

Typically, autism occurs within the first three years of life. These children may be developing normally and then regress in their socialization and communication skills. The diagnosis of autism is usually not made prior 18 to 24 months of age (Murray-Slutsky & Paris, 2000).

According to the Center for Disease Control and Prevention, 1 in 166 American children born today will have autism. This is twice the number from 10 years ago (Wallis, 2006 p. 44). Autism, today affects approximately 1 in 500 children or 544,000 people in the United States (National Institute of Mental Health [NIMH], p.1). The prevalence of autism is expected to increase to 4 million people in the next ten years (Autism Society of America, 2006).

While the specific cause of autism is unknown, its features support a neurobiological basis including seizures, cognitive delays, and sensory motor deficits. Williams, Dalrymple, and Neal (2000) noted that these children often have food selectivity to taste, temperature and/or texture. According to Murray-Slutsky and Paris (2000, pp.8-10), additional characteristics that are often associated with Autism are

- Avoidance of eye contact with others
- Difficulty transitioning from one activity to another
- Hyper-focusing on parts of objects, especially moveable objects
- Repetitive motor movements such as hand clapping, rocking, jumping
- Difficulty engaging in imaginative or pretend play
- No interest in engaging their peers in social interaction
- Mild to severe communication delays (verbal and non-verbal)
- Sensory impairments impact ability to perceive sensory input
- Slow to respond to simple verbal requests, including their name
Areas of occupational performance for these children need to be addressed in the treatment of this disability by professionals and parents. One of the basic areas of occupational performance is activities of daily living (ADL’S), which includes independence in feeding and eating (American Occupational Therapy Association [AOTA], 2002).

Children with autism frequently have restricted eating behaviors, in which they will only eat foods of certain food textures, color, shapes, and tastes. These eating behaviors have a significant impact on the entire family. (Williams, et al. 2000).

Quinn (1995) in her review of nutritional concerns for autistic children, reported that “parents frequently report that their children are very picky eaters, and will eat only a small range of foods” (p.2). It was also reported by Quinn (1995) that 70% of children with autism, become selective about the foods they will eat over time, and that parents become concerned as the number of foods their child will eat decreases to a limited number.

Quinn (1995) defined some of the most common feeding concerns for children with autism:

- Difficulty transitioning to new foods, especially textures
- Increased sensitivity to sensory input
- Restricted intake
- Limited food selection
- Difficulty with any change in the context of their mealtime
- Difficulty in giving vitamin supplements (p.3)

This information suggests that autism spectrum disorders and sensory processing disorders go hand in hand. Sensory processing disorders are one component, which affect a child’s occupational performance. Understanding sensory processing and sensory
processing disorders and their relationship to feeding is important in the successful outcome of treatment.

Overview of Sensory Processing Disorder

Dr. A. Jean Ayres in her 1972 book, *Sensory Integration and Learning Disabilities* explored the association between sensory processing and learning disorders in children. Dr. Ayres (1980) defined sensory integration as “the organization of sensory input for use “(p.5). Ayres (1980) used the term “sensory processing machine” to refer to the brain and how it helps an individual process sensory input so that it is meaningful (p. 7). Dr. Ayres also used the term “sensory integration dysfunction” to describe a disorder in how the brain integrates sensory input.

According to Miller (2006), Dr. Ayres’ work in the area of sensory integration has formed the foundation for study on Sensory Processing Disorder (SPD). Sensory processing disorder has evolved from sensory integration dysfunction however, these two terms are often used interchangeably by occupational therapists. The term sensory processing disorder was developed to distinguish the disorder from sensory integration theory. Sensory processing disorder and the terminology associated with it has been formally recognized in the book *Diagnostic Manual for Infancy and Early Childhood* (Interdisciplinary Council on Development and Learning Disorders [ICDL], 2005).

Miller (2006) described sensory processing as “the way the nervous system receives sensory messages and turns them into response” (p.4). These sensory messages are both external and internal to our nervous system. The five senses of sight, sound, touch, taste and smell are the most obvious senses. In addition, there are two less familiar or hidden senses, the proprioceptive and vestibular senses.
The proprioception system provides an individual with an unconscious awareness of his/her body in space. It tells us the position of our body parts in relation to one another and gives us information as to the amount of energy our muscles must exert to grade our movements (Yack, et al., 2004). This system gives us an awareness of our body (body scheme).

The vestibular system provides information about movement, gravity and position change. It tells us if we are moving or standing still, as well as the direction and speed of our movements. Ayres (1980) stated that the vestibular system plays an important role in the modulation of all of our other sensory systems. It has a direct influence on our posture, balance, motor planning and calming. The vestibular system and auditory system influence each other, both systems respond to vibration and change in position of the body.

Miller (2006) pointed out that we are born with the ability to receive sensory messages/input, and organize these messages into appropriate behavioral and physiological responses. Sensory processing disorder occurs when the sensory messages are not correctly organized by the nervous system. This may cause an inappropriate response to the sensory information. Miller (2006) stated that children with sensory processing disorders present with sensory difficulties that are chronic and disrupt their life. Daily activities such as dressing, eating, bathing, playing with toys and other children can be difficult for the child to engage in. Miller (2006, p.13) classified Sensory
Processing Disorders into three subtypes:

1. Sensory Modulation Disorder:
   - Sensory over-responsivity
   - Sensory under-responsivity
   - Sensory seeking/craving
2. Sensory-Based Motor Disorder
   - Dyspraxia
   - Postural Disorder
3. Sensory Discrimination Disorder
   - Vision
   - Hearing
   - Touch
   - Taste/smell
   - Position/Movement

Dunn (2004) described Sensory Modulation Disorder as the inability to control the volume of the experiences that we have as we interact in our world. Difficulties occur when a child is over or under responsive to the input from one or more of the senses. It becomes a problem for the child to adjust to the input and to regulate the response to the input. The child may be over or under responsive to the sensory input. Smith and Gouze (2004) described how there can be modulation difficulties in all of the sensory systems. For example, a child with sensory modulation difficulties in the tactile system may have difficulty with dressing, bathing, tooth-brushing and nail clipping. This child may also demonstrate definite food preferences for texture, temperature or tastes.

Sensory-based motor disorder is when a child has problems with planning, sequencing and implementing movements in response to sensory input. This is referred to as dyspraxia. Dyspraxia can affect gross motor, fine motor and language skills. Dyspraxia also has an ideational/conceptual component. This involves one’s ability to mentally plan activities, such as planning daily activities or getting organizing a project.
Executive functioning is the ability to organize, plan and execute action as related to an idea. This is the most complex level of praxia, motor planning (Smith & Gouze, 2004). Smith & Gouze (2004) defined sensory discrimination as the inability to recognize differences in sensory information. Children with sensory discrimination disorders have problems interpreting the meaning of sensation. They may react to the slightest sensory input or they may need additional sensory input for them to accurately interpret the input. Miller (2006) described sensory discrimination disorder “as a problem with sensing similarities and differences between sensations” (p.12). For example, a child who is overly responsive to sensory input (sensory defensiveness) may reject food textures that are lumpy, or dislike having his/her teeth brushed. Emsperger and Stegen-Hanson (2004) listed several characteristics of children, who are oversensitive to touch input. These children dislike messy activities and prefer certain food temperatures, textures, and/or tastes.

According to Morris and Klein (2000), feeding programs need to go “beyond the mouth” (p. 277). It is important for the occupational therapist to look at eating in the context of the child’s day. There are multiple sensory experiences and variables that occur before and during the meal. All of these sensory systems are involved in mealtime and affect how and what the child eats.

Case-Smith & Bryan (1999) researched the use of sensory integration techniques with five preschool children who were diagnosed with autism. Each child received direct occupational therapy using a sensory integrative framework; each session was thirty minutes in length. In addition, consultative services were provided to the preschool teachers recommending sensory motor activities that could be implemented within the
classroom. After 10 weeks of intervention, the children demonstrated improvement in their play skills.

Sensory processing disorders affect the way a child receives, interprets and responds to sensory input. This disorder can range from mild to severe. When this disorder is chronic, it can affect and disrupt a child's occupational performance in adaptive skills (eating, dressing, bathing), motor skills, social skills, language skills and behavioral/emotional skills.

Definition of a Resistive Eater

When a child has a sensory processing disorder, it often affects the child's ability to eat a variety of foods. These children are described as "picky eaters", "resistive eaters", "fussy eaters" or "selective eaters" (Ernsperger et al., 2004; Smith, 2004).

Ernsperger et al. (2004, p.4) defined a "resistive eater" as someone, "who exhibits one or more of the following characteristics:

1. Limited food selection (10-15 foods or less)
2. Limited food group (eats only one food group)
3. Becomes anxious or has a tantrum when a new food is presented
4. Experiences food jags (requires one or more foods to be present at every meal)
5. Diagnosed with a developmental delay such as Autism Spectrum Disorder

Smith et al. (2004) defined a fussy eater "as the unwillingness to try novel foods, eating only a limited range of foods and eating insufficient quantities of food for adequate nutrition" (p.15). Smith et al. conducted a study that consisted of 62 boys and girls, between 3 and 10 years of age. Twenty nine of the children were diagnosed as tactiley defensive, compared to 33 children in a control group. The Dunn Sensory Profile was used to identify tactile defensive children. This profile provides a standard method for occupational therapists to measure a child's sensory processing abilities. The results of
this study confirmed a significant difference in the eating behaviors of tactile defensive children when compared to non-tactile defensive children. The tactile defensive children ate a limited diet and had a definite aversion to certain food textures. These children did not like extreme food temperatures and would only eat foods at room temperature. The authors stated that a picky eater should be evaluated for tactile defensiveness and that by applying intervention strategies, from a multidisciplinary team, it may help in solving some of the oral defensiveness problems.

Morris and Klein (2000) reported that the child with autism compensates by limiting the amount of sensory input, therefore, it is easier for the child to avoid any “sensory surprises” during mealtimes by eating foods that are familiar (p.673). As infants, they limit the flavors and textures of foods they will eat, and refuse to eat novel foods that have a new appearance, smell, taste or texture. Because this “pickiness” goes beyond what is typically seen in a toddler, the typical strategies for adding new foods into their diet are not as successful as for typically developing children.

Overview of Feeding Disorders

Feeding develops sequentially along with the other developmental milestones; it is accomplished within the context of overall development. Therefore, it is important to understand the patterns of normal development as they affect feeding. In their work, Morris and Klein (2000) have included factors influencing normal motor development. These factors include: stability and mobility, separation of movement, rotation, midline development, sensory input, rhythmicity, and culture influences. The normal development of a child’s sensory systems is also extremely important to a child’s development, including oral motor/feeding skills. It is not this author’s purpose to review
It is vital that a pediatric occupational therapist be knowledgeable about normal development in order to assess and treat children with feeding disorders.

Finney (1986) focused on the prevention of feeding problems. In the paper, *Preventing Common Feeding Problems in Infants and Young Children*, Finney proposed that early intervention is dependent on the early detection of feeding problems. When parents express excessive concerns regarding their child’s diet, weight gain, and mealtime behaviors, their child often requires monitoring in order to prevent the development of feeding problems. Typically, children go through a phase in which there is a fear of new and novel foods (neophobia). This is recognized as a normal developmental stage for children between the ages of two and three years of age. Neophobia diminishes around the age of five. Some children become rigid, get “stuck” and do not outgrow this fear (Ernsperger & Stegen-Hanson, 2004). Because most parents are unaware of this fear, the parents often remove the food from the child’s diet. The children who remain in this stage may have cognitive and developmental delays. If untreated, this becomes a feeding disorder that can last throughout the child’s life (Ernsperger et al. 2004). The prevention of potential feeding problems should be one of the first intervention considerations for therapists. Feeding problems can be defined as the inability or refusal to eat certain foods due to a motor, sensory, behavioral/emotional dysfunction.

Cloud (2004) stated that feeding disorders can be classified into oral motor, positioning, and/or behavioral problem groupings. It is common for children with special
needs to have problems with eating due to oral motor delays and/or positioning issues, which can become a behavioral problem, depending on how the situation is handled.

Feeding problems may affect food intake which puts the child at a risk for slow growth, poor weight gain, anemia, disturbances in immune function, disturbances in feeding development and the acceptance of food textures (Cloud, 2004). In addition, there are many medical and physical problems that contribute to feeding disorders, such as respiratory compromise, cardiac problems, gastrointestinal problems and chronic ear infections.

Failure to thrive syndrome is one feeding disorder that is seen in children within the first three years of life. Failure to thrive is diagnosed in infants who exhibit weight gain below the third percentile, a rapid decrease in weight gain or a deceleration of weight gain. Chantoor, Schaefer and Egan (1985), at the Children’s Hospital Medical Center at George Washington University described three stages in feeding development which look at normal and pathological behaviors that affect both the infant and the mother. The three stages they identified were: homeostasis, attachment and separation-individuation.

During the first two months of life, the newborn learns to regulate sleep with alertness and feeding (homeostasis). As the infant’s autonomic and motor systems stabilize, the infant is able to interact with the world. At the same time, the parent attempts to provide an environment that allows the infant to balance between her internal state and external input from the environment. In the realm of feeding, the infant progresses from reflex suckling to sucking and giving signs of hunger which the parent learns to interpret (Chantoor et al.1985). Feeding problems that occur at this stage can be
caused by medical difficulties, motor involvement, and sensory problems which then directly affect the infant’s ability to eat an adequate number of calories each day.

Between 2 and 8 months, the infant has achieved self-regulation; the infant is ready to develop an attachment with the parent. Chantoor et al., (1985) described attachment behaviors as mutual eye contact and gazing, reciprocal vocalizations and physical closeness that occur throughout the day and during feeding. If the infant presents with difficulties during feeding, then feeding becomes a time that may be stressful for both the parent and child. There are characteristics that contribute to poor attachment, including: irritability, poor calming, and hypersensitivities to touch, sound, light, or change in position.

According to Chantoor et al. (1985), between 8 months and 3 years of age, after the infant has learned self-regulation and has established an attachment to the parent, the infant enters a stage of separation and individuation. The infant’s motor and cognitive skills are developing, which allows the infant to move away from the mother to explore the environment. Cognitively, the infant learns about cause and effect. It is around 12 to 18 months when the child begins to use a utensil to self-feed and it is important that the parent allow self-feeding to begin. The authors described a scenario of a child wanting to feed himself, but the parent continues to insist on feeding the child. As a result, the child refused to eat; the parent become anxious and tried harder to get the child to eat only to meet with increased resistance from the child; thus the “battle of the spoons” began (p.15).

Satter (1992) reported that a feeding problem and the acceptance of food is caused by medical or physical conditions, inappropriate food selections, and/or inappropriate
dynamics during feeding. In order to determine intervention strategies, it is necessary to evaluate and determine the underlying causes that are creating the feeding disorder.

It has been documented that many children who have some form of autism have feeding problems. Williams, Dalrymple and Neal (2004) conducted a study that reviewed patterns of concern regarding feeding, expressed by families. A survey, with questions regarding the feeding behaviors of their child, was sent to 340 families; 100 families returned the survey. Two thirds of the parents reported that their child was a “picky eater” yet half reported that their child ate a well-balanced diet. However, the parents that reported that their child had a good appetite noted that it was only when the child ate foods he/she liked. The major problems reported were the unwillingness of the child to try new foods, mouthing objects and rituals around mealtimes. Screck, Williams and Smith (2004) conducted as study to analyze the types of feeding problems with autism. In this study, parents reported that their children were more likely to refuse foods, require specific presentation of foods, ate only certain food textures, and ate a narrow variety of foods.

Other feeding disorders are found in children who have or have had medical conditions that required tube-feeding. These children have experienced multiple medical procedures around and inside of the mouth which have been very invasive for the child; consequently, anything that approaches their mouth is perceived as painful. This makes the introduction of oral feeding a very difficult process. These children may also have poor suck-swallow-synchrony making it difficult to manage food. Other children may be hypersensitive to touch, taste, temperature, which can cause gagging and vomiting; this
response to tactile input promotes an aversion to eating foods. Eating does not feel comfortable or manageable to these children (Bazyk, 2000).

Ernesperger et al. (2004) described environmental factors that can create feeding disorders; the context in which eating occurs impacted a child’s eating. These factors included a families’ work schedule, cultural beliefs around eating, and the family’s mealtime environment. Often families do not have the opportunity to eat meals together and children tend to eat their meals in front of the television. These environmental factors can contribute to feeding disorders in children who already have problems with eating. Sanders, Patel, LeGrice and Shepherd (1993) found evidence that parents of children with feeding problems use many more coercive tactics to get their child to eat than do parents of children who do not have feeding difficulties. The parent’s behaviors have a direct effect on the child’s eating. This provides support for parent training.

As noted above cultural beliefs can affect a child’s eating behaviors. Ernesperger, et al. (2004, pp. 39-46) outlined several of these cultural beliefs:

1. “Good parents are responsible for getting their child to eat.” When the child does not eat, the parent may resort to coercing or forcing their child to eat. This does not work for children who are selective eaters. Force feeding generates a “fight of flight’ reaction, which suppresses appetite. Children will become distrustful of their parents, which affects their attitude in trying new foods. It is more important to focus more on the child’s experiences at mealtime and learning about foods.

2. “Don’t play with your food.” Touching the food, helps the child to learn about foods.

3. “Leaving food is wasteful: clean your plate.” This idea is harmful to children who are resistant eaters. Often children are given adult-size portions of food on a large dinner plate and the child is expected to clean their plate. It is better to start small and encourage your child to request more food.
4. “Don’t talk with your mouth full.” Resistant eaters often have oral motor delays. Eating is a time for parents too describe how they chew and move the food inside of their mouth. The first goal is to increase diet and food selections and then begin to work on table manners.

5. “Certain foods are for breakfast, while others are for lunch and dinner.” For resistant eaters limiting certain foods for certain meals limits their exposure to new foods.

6. “If children are hungry, they will eat children will not starve.” This applies to typically developing children, however children, who are resistant to eating and forced to do so, will reject foods. Toomey (2005) approximates that 4-6 % of resistant eaters will starve themselves and require medical assistance.

Children who have sensory-based or motor-based problems often have issues that affect eating and this can contribute to feeding disorders. Children with motor based problems show difficulties with muscle tone and movement. This affects the child’s ability to suck, chew and swallow foods, as well as their ability to coordinate sucking, swallowing and breathing (Oetter, Richter & Frick, 1995). Children with sensory based problems have difficulties eating because their sensory systems do not support eating (Ernsperger & Stegen-Hanson, 2004).

Field, Garland and Williams (2003) examined the effects that medical conditions, congenital factors or developmental delays have on the occurrence of feeding problems. This study examined the prevalence of these conditions to determine if certain factors are associated with certain feeding problems. Feeding problems were classified as either motivational or skill based. Motivationally based problems are those found in the child’s environment. This includes a child’s refusal to eat certain foods, which creates a situation where the child is allowed to eat only preferred foods; this may be a factor that
maintains the feeding disorder. Skill based feeding disorders result from adverse experiences from medical intervention, congenital problems or developmental issues.

The results of a study by Field et al. (2003) showed that up to 80% of children with developmental disabilities also had feeding problems. Children with autism showed a significantly higher prevalence to food selectivity. Eighty percent of the children with Down Syndrome had oral motor delays and half of those children also had selectivity to food textures. Children with Down Syndrome had a significantly higher prevalence to oral motor problems than other children in the study. Children with cerebral palsy also had significant oral motor problems, with the exception of food selectivity. It was also determined that children with gastrointestinal problems had a significantly higher frequency for feeding problems then children without gastrointestinal problems. Children with cardiac disease also have poor feeding; it is believed that pulmonary problems make the coordination of feeding and breathing difficult and that there is an increased energy requirement for these children.

Feeding problems are one of the most common difficulties in children. It is estimated that 24% of two year old children, 19% of three year old children and 18% of four year old children are reported to have problems with feeding (Beautrais, et al. 1982). The etiology of feeding problems reflects the complexity and interaction between the motor, sensory and behavioral aspects the affect eating. Therefore, an interdisciplinary team and parent training are needed in the treatment of feeding disorders.
Treatment Strategies

The assessment and treatment of feeding disorders is an ongoing process based on collaboration between the therapist(s) and parent(s). The parent(s) and therapist are constantly changing the treatment strategies, based on the child’s progress (Bazyk, 2000). Cloud (2004) reported that “successful treatment of problems requires consistency on the part of the parent/caregiver, agreement between the team members and parent/caregiver regarding the importance of all intervention strategies” (p.5). The effectiveness of a feeding program requires an interdisciplinary feeding team approach, including the parent(s), physician, occupational therapist, speech/language pathologist, psychologist, and consulting professionals (Cloud, 2004; Delaney, 1998; Morris & Klein, 2000; Toomey, 2005).

Morris and Klein (2000) stated that an effective treatment plan needs to be based on the child’s strengths and needs and the development of goals. Treatment for feeding problems consists of a broader viewpoint, which Morris & Klein referred to as the “mealtime circle” (p. 237). The mealtime circle consists of all the factors that have an impact on a child during mealtime including: communication, learning, physical status and sensory status. The communication circle consists of verbal and non-verbal mealtime interactions. This includes the manner in which a child communicates information to let his/her parents know he/she is hungry, wants to eat more, or is finished with the meal. The parents, in turn, respond to their child’s messages and cues. They offer information and create a feeding relationship with their child.

According to Morris and Klein (2000), the learning circle includes all of the aspects that make up the mealtime experience. It is learning about foods, eating skills
and behaviors that are acceptable to the family during mealtimes. The physical circle incorporates the physical abilities of the child, such as muscle tone, stability, head and trunk control, and oral motor skills. It also includes what position the child needs to use for support, during mealtime. The sensory circle includes all of the sensory inputs that surround eating. This includes the sights, tastes, smells, textures, temperatures, sounds that make up the mealtimes experience; sensory includes how a child interprets and responds to all of these sensations.

Wolff & Lierman (1994) presented information on the management of behavioral principles related to feeding problems. Their report supports the interdisciplinary team approach in evaluating and treating feeding disorders. It is their belief that feeding programs need to be implemented within the home setting and that the parents are the primary team members. According to Wolff & Lierman (1994) a behavioral approach may be a useful adjunctive therapy to support the oral-motor and sensory-motor approaches to feeding. For example, it is recommended that the length of time for a meal is 20 to 30 minutes; a survey of the literature provided no evidence that extending mealtimes, until most of the food is consumed, was effective in treating feeding disorders. The authors reported that establishing a mealtime routine and a structured place to eat, enhanced the opportunity for a child to observe others eating without external distractions, such as television or playing with toys. Behavioral principles can be applied when helping a child manage foods of greater texture. One treatment strategy was to present smaller portions of food so as not to overwhelm the child with large portions that they may not be able to consume. Other behavioral strategies included the use of high probability foods for reinforcement. High probability foods are those foods
that the child will likely eat. Wolff & Lierman suggested that new foods be introduced
during snack times as it may be less disruptive to the child's feeding patterns. They also
noted that the most frequently implemented behavioral procedures are positive
reinforcement, shaping or successive approximation, stimulus control, and modeling.

In their work, Birch and Marlin (1982) indicated that children began to prefer
novel foods that were presented on a frequent basis. When novel foods were presented to
the children, they were willing to taste the novel food(s) however, there was considerable
hesitation. The children demonstrated their reluctance by not swallowing the novel
food(s). Nevertheless, the novel food(s) were accepted with more frequent exposure.

Escobar (1999) reported that “children prefer foods that are familiar, compared with
foods that are not, regardless of the food’s sensory characteristics” (p.47). Escobar
reviewed many articles that investigated the rejection of foods by children. The authors
of the articles reviewed by Escobar determined that the process for a child to move from
rejecting new foods to accepting them is a slow process and requires multiple exposures
to the novel food(s).

Bazyk (2004) pointed out that behavioral management strategies are well
documented, however, these strategies, need to be used taking into account the child’s
physical, developmental, social, and emotional needs. Promoting a positive feeding
relationship between the parent and the child is an essential component of treatment.

Bazyk pointed out that “parents are effective with feeding when they are involved in
supportive relationships” (p.13). A crucial part of a feeding relationship is the trust the
child has in the parent(s). Finding the “just right challenge” for the child, involves gently
guiding the feeding experience, by consistently respecting the child’s fears and
reservation related to food and eating (p. 13). It is important for the parent to recognize the child’s cues during eating. This helps to develop the child’s sense of trust, and gives the child some control. Bazyk (2004, p. 13) delineated several treatment suggestions which include:

1. Age-appropriate portion sizes: A general rule of thumb is 1 tablespoon for each year. Giving less food is not so overwhelming to the child.
2. Expect toddlers to reject new foods. Reassure the child that they can remove the food from their mouth if desired. Tasting foods is the beginning to changing food preference.
3. Prevent excessive snacking and juice intake. Excessive amounts of liquid affects a child’s hunger for food. A regularly planned mealtime schedule, including snack is advised.

Cloud (2004) suggested the following intervention strategies concerning the feeding environment: 1) having an environment that is pleasant with minimal stimulation; a non-distractible area away from the television and bright lights, and 2) the use of background music, consisting of 60 to 70 beats per minute (p.16).

According to Morris & Klein (2000),” treatment must address the child’s overall sensory processing and integration as a foundation for changing specific feeding related difficulties” (p.678). They continue by stating that, “sensory processing difficulties have the strongest impact on the child’s mealtime behaviors” (p.678). Morris & Klein addressed the sensory challenges of mealtimes by outlining the following intervention strategies.

1. “Start early and work toward dietary diversity.” Provide a wide variety of foods, alternate between commercially prepared foods and homemade foods. Encourage mouthing of different toys and utensils, consisting of various textures and shapes.
2. “Treat the whole child”: Provide an overall sensory based program that treats the whole child vs. just the oral sensory-motor issues.
3. “Reduce stress and increase the child’s attention during the meal”: Provide sensory activities before and during mealtimes to help increase focus and
decrease anxiety. It has been reported that Hemi-sync music, which contains binaural beat sounds, is beneficial for many children.

4. “Know that the child’s sensory reaction is real”: It is important for the parent to understand that the child’s reaction to certain foods is real and serious for the child. The challenge for the parent is to explore new ways to present the food that is not challenging for the child.

5. “Create a balance between routine and variation”: In small increments and ways change the routine, utensils, cups, food are presented to the child.

6. “Offer new foods at snack time”

7. “Make changes slowly”

8. “Begin with familiar flavors”

9. “Mask the smell of a new food”

10. “Offer foods that provide a high level of nutrition” (pps.679-681).

In designing treatment strategies for children, with sensory processing disorders, it is imperative to treat the whole child using a team approach if possible. Using a sensory-based approach, and a behavioral management approach in the treatment of children with sensory processing disorders, including children with Pervasive Developmental Disorder, may be an effective way in treating feeding disorders. In addition, it is necessary to include medical history and information, nutrition, environment and cultural preferences in the development of a complete treatment plan.

Role of the Occupational Therapist

The occupational therapist has a role in the assessment of children with oral motor/feeding problems, as a member of an interdisciplinary feeding team (Case-Smith, 2001). Bazyk (2000) discussed how the occupational therapist can be supportive by actively listening and acknowledging the parent’s concerns and frustrations concerning feeding. Bazyk (1989) reviewed the occupational therapist’s role as a consultant to parents, to assists in gaining knowledge and skills, needed to care for their child.

Applying a collaborative model with the parent(s), suggests that the occupational
therapist and parent(s) work together and become equal partners in the development and implementation of home programs.

Humphry (1989) described how occupational therapists provide services that directly affect the child's development, as well as developing a relationship with the parent(s). The author also examined how a disability affects the parent-child relationship. This relationship, in turn, affects the child's development. The occupational therapist can educate the parent(s) concerning their child's strengths and needs. According to Humphry it is the role of the occupational therapist to be supportive and aware of the stress factors that affect the parents' ability to deal with the special needs of their child. An early intervention program can be a source of support, when it does not place demands on the parent(s) that are overly stressful to the parent.

The home-based setting is an optimal setting to gain an understanding of the environment in which the child lives and the family's interactions with each other and the child (McBride & Peterson, 1997). When early intervention services are provided within the home, it is the role of the occupational therapist to assist the parent in finding community support and guiding the parent in the use of intervention possibilities.

The occupational therapist can encourage the interaction between the child and parent by modeling optimal interactions with the child during feeding. Parents may need assistance in recognizing and reacting to the cues their child gives during mealtimes and feeding activities (Bazyk, 2000). Toomey, Ross and Massey (2005) presented a treatment approach to feeding that includes a sensory motor approach and a behavioral approach. This method uses a systematic treatment approach, which includes "steps to eating". These steps consist of small increments that a child progresses through when expanding
his/her diet. In addition, the child’s overall sensory processing skills are addressed via a sensory diet and oral motor and sensory play activities.

In summary, occupational therapists, working with children and families, need to possess good communication skills; practice a family-centered approach; and be willing to collaborate with other team members in the evaluation and implementation of treatment strategies within a home-setting.

Role of the Parent

According to Satter (1992), the role or responsibility of the parent is to offer appropriate foods to the child, beginning with milk/formula and progressing to eating solid foods. As the child becomes a toddler, the parent needs to provide a variety of appropriate solid foods, a positive feeding structure, and a positive environment for the child. It is also the role of the parent to have sufficient knowledge about nutrition and feeding.

The Education of the Handicapped Act amendments of 1986 (Public Law 99-457) included Part H, which established national guidelines for family-centered early intervention programs. This law made a shift from child-centered to family-centered services. The difference is that the child’s care is directed by the needs and concerns of the entire family (Bazyk, 1989). Bazyk suggested six guidelines to be used when designing a family-centered intervention program. There guidelines are

1. The parent is the decision maker and the therapist is the service provider. We work with parents to identify intervention strategies, respect their decision and support their decision, whatever it may be.

2. Support the parental role vs. the role of the parent as a therapist.

3. Develop collaborative home programs with the parent(s) and use terminology that is family friendly.
4. There are differences in collaboration with each family. Parent participation will vary depending on the changes that occur within the context of the family.

5. Provide a range of options that would fit the family’s routine. Identify the parent’s needs and concerns and ways in which those needs can be met for their child.

6. Consideration of the child’s needs (pp. 725-727).

Law, Missiuna and Pollack (2001) described family-centered services as “a philosophy of service provision, which arose from early intervention programs” (p.43). The three concepts that define family-centered programs are: “(1) parents know their children the best, (2) families are different and unique; and (3) optimal child functioning occurs within supportive family and community context” (p.43). The authors note that the role of the family, their interests, cultural background and environment in which they live make up the context for the provision of intervention.

Viscardis (1998) presented the aspects of a family-centered approach in which she stated that the parents are members of their child’s team. Parents are a constant in their child’s life and they know their child the best. By providing services that meet the needs of the family, the probability will increase, that the needs of their child will be met, within the context of the family. However, not all parents are able to assume the full responsibility of being a team leader, and need the support of the service provider(s).

Stephens & Tauber (2001) reported that intervention services could be provided in several different ways. The first is when the therapist directly treats the child and the parent observes the session. The second method is when the parent(s) are involved in the planning of their child’s program. The third is when the parents are trained to provide the various intervention strategies. The degree in which a family is involved depends on the
family's needs and beliefs. Their involvement will vary depending on the external and internal factors that are affecting the family.

When Occupational therapists use a family-centered approach, they work collaboratively with the parent(s). The occupational therapist is guided by the family's needs and concerns and amount of involvement they are able to give to their child's intervention program (Stephens & Tauber, 2001).
CHAPTER III

ACTIVITIES AND METHODOLOGY

Oral motor/feeding therapy in the pediatric population has been a long time interest to this author. Initially, the focus was with children who had physical disabilities, such as cerebral palsy, and had difficulty coordinating their oral motor movements to safely eat food. There has been much written about this topic in regards to assessment and treatment. Currently children with sensory processing disorders, who demonstrate good motor skills, have come to the fore-front in this therapist’s practice. These children are often diagnosed with an autism spectrum disorder, and present with overall sensory processing difficulties that affect their daily living skills. Parents of these children struggle with the challenge of feeding their children. Most of the information pertaining to children who are resistive to eating is described as Failure to Thrive: non-organic, and the treatment has primarily focused on the parent-child relationship and behavioral intervention strategies. This condition is a very complex one with a multitude of variables and consideration for treatment.

It was the intent of this author to focus on those children with a sensory-based eating disorder and to design a guide for parents and occupational therapists which includes an interdisciplinary approach to treatment and consists of a sensory-processing approach, mealtime strategies, and behavior-management methods to deal with this complex situation. Therefore, a topic proposal was written, submitted, and approved for
the development of written materials which include a sensory-processing approach, as well as a behavioral approach to the treatment of children with eating disorders.

In order to complete a guide for parents and occupational therapists, a review of the current research and literature was completed. This review consisted of literature from journals, and books in the areas of sensory integration, eating disorder, causes of food aversion, evaluation and treatment of oral motor/feeding disorders, the parent-child relationship, behavioral intervention strategies, the role of the occupational therapist and parent in the treatment of a child with a sensory-processing disorder. *The Occupational Therapy Practice Framework Domain and Process* (AOTA, 2002) was used as the framework in communicating the focus on occupation and daily living skills; specifically, eating/feeding and the factors that influence occupational performance.

The intention of this scholarly project was to develop a mealtime guide that focused on sensory-based eating problems. The information included was based on personal experiences and current research and literature. There is a focus on the sensory integration model, the behavioral model, and intervention strategies which can be implemented in a family-centered approach towards successful participation in the occupation of eating.
CHAPTER IV

PRODUCT

Eating and drinking are basic to our health and survival; it is also an integral part of our social life. For parents, feeding their children is a vital part of how they nourish and nurture them. It is difficult for both the parents and the child when eating becomes a stressful experience. Children with a sensory-processing disorder often approach mealtimes with apprehension and discomfort. The willingness or inability to eat may be a sensory-processing based problem, which often exhibits itself as a behavioral problem such as, the child refusing to eat, to try new foods, or to touch food.

Children with sensory-based feeding problems present with problems eating because their sensory systems may not process and integrate sensory information. They may over-react or under-react to sensory information from the environment. Many children with sensory-based feeding problems also have difficulties with muscle tone and coordination, (Morris & Klein, 2000). This affects their ability to interact and participate in their occupation. Occupation refers to “everyday life activities” (American Occupational Therapy Association [AOTA], 2002). For a child, this includes activities such as play, education, eating, dressing, and bathing.

Sensory experiences have a powerful affect on a child’s experiences, which may have been painful and uncomfortable. Many of these past experiences directly effect eating and cause a negative emotion and response at mealtimes.
The intervention strategies for this group of children, focuses on treating sensory processing problems. Treatment consists of providing the “just right” sensory input to the nervous system, including pre-feeding activities; this will help to prepare the child for eating. The techniques used are different from the techniques used with children, who have motor-based feeding difficulties.

The product of this project, *Mealtime Guide for the Young Child with a Sensory-based Eating Disorder* was designed to assist parents and occupational therapists to meet this need. The mealtime guide includes assessment information, sensory diet information and activities, dietary guidelines, positions for feeding, oral motor/feeding activities, environmental suggestions and scheduling, mealtime strategies for introducing solid foods and expanding foods into a child’s diet. This guide is designed to be used by occupational therapists treating children with sensory-based eating problems. It is intended to be used in collaboration with the child’s parent(s) and family.
Mealtime Guide
For
The Young Child
With A
Sensory-Based
Eating Disorder

Developed by
Zondra Thompson, MOTS
Advisor: Gail Bass, PhD. OTR/L
University of North Dakota
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Role of the Occupational Therapist and Parent(s)

The role of the occupational therapist is to collaborate with the parent(s) in designing and implementing strategies that will assist the child in eating a greater variety of foods.

The occupational therapist’s role includes, but is not limited to:

➤ Assessing your child’s eating skills
➤ Assisting in the development of a home feeding program
➤ Communicating with others members of your child’s medical and educational team
➤ Providing information concerning your child’s sensory processing needs and eating
➤ Assisting in finding community support, if needed
➤ Demonstrating the various sensory and feeding techniques

Your role as a parent may include, but is not limited to:

➤ Completing the Mealtime questionnaire and 5 day food log
➤ Defining the feeding/eating goals for your child
➤ Assisting in the development of the feeding program
➤ Sharing your intervention strategies with the therapist
➤ Implementing the feeding strategies at home
➤ Communicating with the therapist regarding any concerns or questions
**Description of a Sensory-Based Eating Disorder**

The brain receives information from the environment through our sensory systems. Our sensory systems consist of touch, taste, smell, vision, hearing, balance/movement, and body awareness. Upon receiving the information from our sensory systems, we interpret the information, organize it and respond in a purposeful way. All of these sensory systems help us learn about ourselves and our surroundings allowing us to participate in our activities of daily living.

This process is called sensory processing. If for some reason, one of our senses either over-reacts or under-reacts to the sensory information it receives, the nervous system's response is disrupted. This is called a sensory processing disorder. For example, if a person’s nervous system over-reacts to touch, a simple touch on the arm may be perceived as a threat and cause that person to react by running away, hitting, or becoming upset. A child may be over-sensitive (hypersensitive) to touch, which will affect how he reacts to the texture of different foods in his mouth, or even how the food feels in his hands, or how he interprets the taste of the food.

(Adapted from Ernsperger & Stegem-Hanson, 2004.)

There are many reasons why a child is resistant to eating. It can be caused by physical, emotional, and sensory reasons. It is necessary to assess and receive input from all the people involved in the child’s life, in order to develop strategies to improve eating skills.
Parent Questionnaire

Eating and Drinking

Child’s Name: _______________ Date: ________________
Date of Birth: __________________________
    Age: ______
Parent’s Name(s): __________________________

History:
    What are the feeding concerns you have for your child?

What illnesses or surgical procedures has your child had?

Is your child on medication? What?

Does your child have any allergies? If so, what are they?

Was your child breast or bottle fed?

What formula(s) does your baby take?

When did you introduce pureed baby food?

How did your child do with pureed foods?

How did your child do in transitioning to lumpy and solid foods?
Current Feeding Routine

How often does your child eat and drink?

Which types of foods does your child eat?

What types of foods are hardest for your child to eat?

What do you usually use when feeding your child?
- Breast
- Fork
- Bottle
- Fingers
- Cup
- Straw
- Spoon

Which does your child use independently?
- Spoon
- Fork
- Bottle
- Fingers
- Cup
- Straw

What are your child’s favorite food tastes?

Does your child eat all types of textured foods? Yes No
If no, what food textures does he/she eat?

Does your child eat foods at all temperatures? Yes No
What temperatures does he/she prefer?
Where is your child fed?

How long does it take to feed your child?

Does your child have difficulty with:
  Gagging? Yes  No

  Gastro-esophageal Reflux? Yes  No

  Vomiting? Yes  No

  Constipation? Yes  No

What else would you like to share regarding your child’s eating?

(Adapted from Morris & Klein, 2000.)
Please keep a 5 day food diary for your child. Write down everything your child ate for each meal and snack. This information will help in developing a list of foods for your child.

<table>
<thead>
<tr>
<th></th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snacks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beverage</td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
Mealtime Assessment Guide

Child’s Name: __________________________ Date: __________________________
Date of Birth: __________________________ Therapist: __________________________
Age: __________________________
Parent’s Name(s): __________________________
Pediatrician: __________________________

History and Concerns

Parent Concerns:

Birth History:

Medical History:

Current Medications:

Current Weight: __________________________ Current Height: __________________________ Head Circumference: __________________________

Mealtime Observations

Developmental Skills (gross motor, fine motor, sensory motor):

Mealtime Interactions:

Mealtime Communication Skills:
Mealtime Environment:

Mealtime Physical Skills (muscle tone, seating, utensils):

Strengths:

Weaknesses:

Mealtime Sensory Skills (taste, smell, texture, temperature):

Mealtime Oral Motor Skills (suck, swallow, bite, chew):

Seating during eating (high-chair, booster seat, trip trap chair):

Feeding Equipment (utensils, cups, straws):

Independent Feeding Skills:

Intervention Strategies:

(Adapted from Morris & Klein, 2000.)
Developmental Summary

The skills outlined below are only a few of the many developmental eating skills. It is intended to give an idea of the interaction between gross motor, fine motor and oral motor skills.

<table>
<thead>
<tr>
<th>Age</th>
<th>Gross Motor</th>
<th>Fine Motor</th>
<th>Oral Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 months</td>
<td>Holds head erect briefly</td>
<td>Briefly holds object placed in hands</td>
<td>Suckling on breast/bottle</td>
</tr>
<tr>
<td>3-5 months</td>
<td>Sits upright for brief periods with lower trunk support</td>
<td>Uses fingers to grasp with thumb used. Voluntary reaching.</td>
<td>Begins to eat solid foods. Uses mouth to explore objects.</td>
</tr>
<tr>
<td>6 months</td>
<td>Sits well in high chair. Begins to sit independently with arm support.</td>
<td>Transfers objects hand to hand. Attempts to help with spoon feeding and cup drinking.</td>
<td>Opens mouth as spoon approaches. Sucks liquid from bottle/breast. Gags pm new semi-solid foods.</td>
</tr>
<tr>
<td>7-9 months</td>
<td>Sits on floor without arm support.</td>
<td>Independently holds bottle. Finger feeds. Assists with holding cup and spoon feeding.</td>
<td>Uses an up and down movement when chewing. May gag on new textured foods.</td>
</tr>
</tbody>
</table>

(Adapted from Alexander, Boehme, & Cupps, 1993.)
Nutritional Guide 1

For Children Birth to Twelve Months

Nutrition is important for a child to grow and develop. Below are two tables that outline the recommended amounts of food children need. It is recommended that you consult your child’s doctor regarding these recommendations.

<table>
<thead>
<tr>
<th>Foods</th>
<th>B to 3 months</th>
<th>4-5 months</th>
<th>6-8 months</th>
<th>9-10 months</th>
<th>11-12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast milk</td>
<td>Every 2-3 hours</td>
<td>Every 2-4 hours</td>
<td>Every 3-4 hours</td>
<td>Every 4-5 hours</td>
<td>Every 4-5 hours</td>
</tr>
<tr>
<td>Formula</td>
<td>18-40 oz</td>
<td>24-45 oz</td>
<td>24-37 oz</td>
<td>24-31 oz</td>
<td>24-31 oz</td>
</tr>
<tr>
<td>Infant cereal</td>
<td>1-4 Tbs.</td>
<td>6-8 Tbs.</td>
<td>6-12 Tbs.</td>
<td>6-12 Tbs.</td>
<td>6-12 Tbs.</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1-4 Tbs.</td>
<td>3-6 Tbs.</td>
<td>3-6 Tbs.</td>
<td>3-6 Tbs.</td>
<td>3-6 Tbs.</td>
</tr>
<tr>
<td>Fruits</td>
<td>1-4 Tbs.</td>
<td>3-6 Tbs.</td>
<td>3-6 Tbs.</td>
<td>3-6 Tbs.</td>
<td>3-6 Tbs.</td>
</tr>
<tr>
<td>Finger Foods</td>
<td>Small servings</td>
<td>Small servings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meats/beans</td>
<td>2-4 Tbs.</td>
<td>2-4 Tbs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yogurt &amp; cheese</td>
<td>Small servings</td>
<td>Small servings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg yolk</td>
<td>3 per wk.</td>
<td>3 per wk.</td>
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</tr>
<tr>
<td>Fruit juice</td>
<td>1-2 oz</td>
<td>1-4 oz</td>
<td>3-4 oz</td>
<td>3-4 oz</td>
<td></td>
</tr>
</tbody>
</table>

(From the University of Connecticut Cooperative Extension System, January 2000.)
## Nutritional Guidelines 2
Children one to three years

<table>
<thead>
<tr>
<th>Food Group</th>
<th>One year old</th>
<th>Two years old</th>
<th>Three years old</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breads, Cereals, Rice, Pasta</strong></td>
<td>1/4 to 1/2 slice bread or 1 Tbsp. cooked cereal</td>
<td>1/2 slice bread or 2 Tbsp. cooked cereal, rice, pasta or 1/2 to 1/3 cup ready to eat cereal</td>
<td>1/2 to 3/4 slice bread or 2 to 3 small crackers or 3 Tbsp. cooked cereal or 1/3 cup ready to eat cereal</td>
</tr>
<tr>
<td><strong>Fruits</strong></td>
<td>1/4 fresh fruit or 1/2 cup juice or 1-2 Tbsp. cooked fruit</td>
<td>1/4 to 1/2 fresh fruit or 1/2 cup juice or 2 Tbsp. cooked fruit</td>
<td>1/2 fresh fruit or 1/2 cup juice or 3 Tbsp. cooked fruit</td>
</tr>
<tr>
<td><strong>Vegetables</strong></td>
<td>1-2 Tbsp. cooked vegetables or 1/3 c. juice</td>
<td>2 Tbsp. cooked vegetables or 1.2 c. juice</td>
<td>3 Tbsp. cooked vegetables or 1/2 c. juice</td>
</tr>
<tr>
<td><strong>Meat, Poultry, fish, eggs, beans</strong></td>
<td>1-2 Tbsp. one egg 3 to 4 times/week</td>
<td>2-3 Tbsp. one egg 3 to 4 times/week</td>
<td>1/2 oz. one egg 3 to 4 times/week</td>
</tr>
<tr>
<td><strong>Milk, Yogurt, Cheese</strong></td>
<td>1/4-1/3 c. whole milk or 1/4 to 1/2 oz cheese</td>
<td>1/4 to 1/3 c. whole or low fat milk or yogurt, 1/4-3/4 oz cheese</td>
<td>1/2 to 3/4 c. low fat milk or yogurt or 1/2 to 1 oz cheese</td>
</tr>
</tbody>
</table>

(Adapted From the Cornell Cooperative Extension System, January 2000.)
CHILDREN'S FOOD PYRAMID

Dietary Considerations

Serve smaller portions, too much food on a child’s plate is overwhelming, especially to a child, who is a selective eater. A rule of thumb is one tablespoon for each year. It is better to put small amounts of food on your child’s plate, as they may be more willing to eat smaller portions of food. This gives your child the control to request more food if he/she wishes.

Every meal and snack should consist of a protein, starch (fruit/vegetable) and milk or milk substitute. Vary the foods from meal to meal if possible. If your child only eats two protein foods, and 2 to 3 fruits and vegetable, alternate between the foods, so not to create a “food jag”. A “food jag” is when a child prefers to eat the same food day after day, at every meal.

Talk to your pediatrician about adding a multiple vitamin to your child’s diet. Many vitamins come in a liquid form. If your child’s diet is limited to only a few foods, ask your pediatrician for a nutritional consult/assessment from a nutritionist/dietician, with experience in pediatric feeding needs.
Foods to Avoid for children under 3 years of age:  
Nuts, seeds, popcorn, corn chips, hard candy, raw carrots

Foods that need to be given with caution:  
Whole grapes, hot dogs, sausages, olives, orange sections,  
apples - these foods need to be cut into small pieces and often  
times by peeling a grape or removing the skin from hot  
dogs/sausages makes it easier to eat.

Avoid high volumes of juice, kool-aid, milk throughout the day, as it  
can suppress a child’s appetite and decreases hunger. Diluting  
juice and milk with water can be helpful

Introduce water into your child’s diet as soon as possible. Water  
provides hydration to the body and prevents constipation.

(Adapted from Ernsperger & Stegen-Hanson, 2004; Morris & Klein, 2000;  
Toomey, Ross & Massey, 2002.)
“Texture” refers to the consistency of the food, is it smooth, thick, thin, lumpy, hard or chewy.

The following describes different textures, food examples, and the oral-motor skills needed for your child to eat the texture.

<table>
<thead>
<tr>
<th>Texture</th>
<th>Description</th>
<th>Example</th>
<th>Oral motor skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pureed foods</td>
<td>Consistency is uniform, thin or thicker</td>
<td>Commercial baby foods, pudding, cream of wheat, applesauce</td>
<td>Suck and swallow, take food from a spoon with lips</td>
</tr>
<tr>
<td>Thin and thick</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mashed/lumpy foods</td>
<td>Food that is mashed with a fork, same consistency</td>
<td>Mashed potatoes, mashed bananas, mashed vegetables and fruits</td>
<td>Swallow without gagging, lips closed when swallowing, remove food from spoon with lips, up and down munching movement</td>
</tr>
<tr>
<td>Chopped foods</td>
<td>¼ to ½ inch in size</td>
<td>Ground meat, cooked vegetables, small pieces of bread/crackers</td>
<td>Beginning to chew in a rotary manner with side to side tongue movements</td>
</tr>
<tr>
<td>Mixed</td>
<td>Combination of solid and liquid, soft and hard</td>
<td>Soups, casseroles, pasta with sauce</td>
<td>Good jaw strength, rotary chewing</td>
</tr>
</tbody>
</table>

(The above is adapted from Ernsperger and Stegen-Hansin, 2004.)
Your child may prefer high intensity taste, such as garlic, cinnamon, salt, salsa, salad dressing, ketchup, lemons, and pickles. As long as there are no gastrointestinal problems to consider, you may want to introduce these foods into your child’s diet. Often times, children like to “dip” foods into ketchup or salad dressings. This allows you the opportunity to use a new food as the “dipper”.

The temperature of foods is a consideration, when adding new foods to your child’s diet; your child may prefer foods at room temperature. Many children do not prefer cold foods, however colder foods tend to be more alerting and increases sensory awareness in the mouth.

When starting cup drinking from an open cup thicker liquids, such as nectars (pear, apricot), provide more sensory input. This texture of liquid is easier for the child to coordinate the sipping, swallowing and breathing. Juices can be thickened with applesauce, and yogurt smoothies are a good thicker liquid, if your child does not have an allergy to milk products.

Making power shakes can be a way to add vegetables and fruit to your child’s diet.
Guidelines for Introducing Solid Foods to Infants

- Feed only breast milk or infant formula to infants under the age of 4 mos.

- From 4-6 months of age, begin to introduce solid foods, starting with iron fortified infant cereal. Initially, the starting of solids provides the infant with an opportunity to experience a new texture and taste. The main source of nutrition will continue to be the breast or bottle. Consult with your pediatrician when to introduce cereals.

- Initially, your baby will push most of the cereal out of his mouth.

- Begin with one food at a time. You may wish to choose Stage 1 vegetables, before trying fruits. Because fruits are sweeter, your baby may be more interested to move from vegetables to fruits, then fruits to vegetable. This may help prevent your baby from developing a “sweet tooth”.

- Your baby will need time to adjust to eating new textures and tasted. In the first few weeks, it is not important how much solid foods he eats. It is the experience that counts.

- Babies often gag when new foods are introduced. This is typical until your baby gets use to the taste and texture of the new food. Try not to over react and communicate to your baby that
everything is o.k. If you panic and over-react to the gagging, your baby may sense this and become fearful. This can affect your baby’s willingness to continue to eat.

➢ Start by giving approximately one tablespoon of cereal, vegetables and fruit.

➢ Make eating an enjoyable time.

➢ Look for your baby to open his mouth in anticipation of the spoon.

➢ Give your baby time to taste and swallow the food.

➢ 11. **Eating is messy.** There will be food on the baby, on you, on the tray and on the floor. Having the sensory experience when eating is **important** to the feeding process. Lay a plastic table cloth under the high chair during mealtimes, this can make clean up easier.

➢ When your baby has had enough food, he may turn his head away from the spoon, not open his mouth for the food, gag, cry, yawn or fall asleep. Be observant for these signs, and stop the feeding. You want to end the mealtime on a “happy” note.

➢ Your baby may cry at the beginning of the meal because he is hungry. After several spoonfuls of food, the crying should stop.

➢ Talk to your baby during the meal. Label the food(s), he is eating and reinforce the eating behavior.

➢ At 6-9 months, your baby may start reaching for the spoon. Give him a spoon to hold and play with during the meal, if it is not too distracting. He will start to bring the empty spoon to his mouth.
➤ At 7-9 months, toddler biscuits/cookies can be given to your baby, however, close supervision is needed to make sure that large pieces do not break off. It is easier for your child to grasp and place a toddler biscuit into his mouth. This experience provides a new taste and texture. He is not ready to bite and chew the biscuit at this point.

➤ At 8-9 months, your baby will be ready for “finger feeding”. Begin by placing small, dissolvable pieces of food on the tray for your baby to practice picking up and putting into his mouth.

➤ If your baby does not seem to like a certain food, after introducing it for several meals, stop the food and try it again at a later time. He may be more accepting of trying the food.

➤ The age at which your child eats a certain food is based on when your child is ready. Your child must have good head and body control to sit in order to eat solid foods, or you need to consult with an occupational or physical therapist, in order to find a highchair or booster seat that provides the support, which your child needs. Your child needs to feel secure.

(Adapted from Finney, 1986; Ernsperger, & Stegen-Hanson, 2004; Morris & Klein, 2000)
When to Give Solid Foods
(Guidelines)

Baby’s first food is breast milk or formula.

At 5-7 months, your baby will be ready for solid foods. Giving foods before this time may cause allergies.

Be sure to discuss with your baby’s doctor when to start giving solid foods.

Foods to Start With

1. Rice cereal with breast milk/formula
   - Mix 1 teaspoon of cereal with 2 to 3 tablespoons of formula or breast milk.
   - Give the cereal from an infant size spoon
   - Gradually increase the thickness of the cereal
   - Gradually increase the amount of cereal

2. Fruits & Vegetables
   - Next food is strained or pureed vegetables
   - This is Stage 1 baby food
   - Give 1 teaspoon and gradually increase to 1-2 tablespoons
   - Give 1 vegetable for 3-5 days before adding a new vegetable
   - Add fruits(stage 1), follow same procedure as you did with vegetables

3. Meats: lamb, chicken, turkey, veal & beef
   - Introduce one meat at a time, wait 3-5 days before introducing a new meat
If your baby does not like meats, try canned/cooked beans that are pureed, by adding a little water.

4. By 8-10 months, you can begin to offer mashed table foods such as:
   - Mashed potatoes, rice, pasta
   - Mashed/cooked vegetables
   - Mashed fruits: bananas, canned pears or peaches (without sugar)
   - Applesauce

5. By 9-10 months, you will be able to begin finger foods such as:
   - Gerber veggie/fruit puffs
   - Cheerios, rice krispies
   - Pancakes/waffles that are moistened with butter and syrup
   - Canned vegetables: green beans, asparagus, potatoes, sweet potatoes, cut into small pieces
   - Bananas, ripe peaches and pears
   - Pieces of muffing (without nuts, raisins)
   - Rice curls (puff type)
   - Crackers: club crackers, ritz (low salt), gold fish
   - Infant teething biscuits/cookies
   - Cooked pasta: elbow, digitali
   - Scrambled eggs

As your child reaches his/her first birthday, you will be able to add more textured foods to promote biting and chewing. During finger feeding, it is important for your child to practice reaching, grasping and getting the food to their mouth. It is a messy time, but it develops hand skills, grasp, eye to mouth coordination and sensory experiences.

Additional Suggestions for Your Child are:
Mealtime Environment and Schedule

Suggestions for mealtimes:

- **Mealtimes that are calm and comfortable**, without distractions promote attention to the task of eating.
- **Play soft music** that has 60 beats/minute, such as Mozart or hemi-sync music
- A **consistent mealtime schedule** provides structure and routine, which is helpful for children with a sensory processing disorder.
- **Establish a routine to transition to the table**: Examples, washing hands, get plate and utensils for the meal, get cup...
- **Eating is to be done sitting** either in the child’s high chair or in a booster seat at the table. This provides much needed structure for the “selective” eater. It also provides the support a child needs in order to focus on eating and using their hands to feed themselves.
- **Eating five or six small meals** may be better for some children, who prefer to snack or eat less amounts of food at a meal. Try to include a protein, fruit/veggie and milk product.

- **Set a reasonable time limit for each meal**, for example, 20-30 minutes, and 15 minutes for a snack. You can use a kitchen timer to let your child know when the meal is over.

- **Never discuss the child's eating behaviors during the meal.** Discuss or describe what you are eating and the process. For example, "I am using my teeth to chew the food"; "The food smells yummy."

- **Praise your child** for sitting, using a utensil, eating....Do so in a way that is reinforcing, but not to a point, that may make your child reluctant to continue eating, because of all the attention around eating.

(Adapted from Morris and Klein, 2000)
Mealtime Strategies

- Mealtimes together are an excellent way for your child to observe others eating and enjoying food. Your child may be interested in trying foods when he/she observes you eating.
- Mealtimes provides your child the opportunity to observe, and smell new foods without the demands of eating.
- Give small portions (1 tablespoon per child age). Too much food on the plate is overwhelming. Use a child size plate, maybe one with a design of a favorite character, if not too distracting.
- Allow your child the opportunity to feed himself. This gives your child control of when and how the food enters his mouth.
- If you are feeding your child, give him a spoon to hold and play with during the meal.
- Use a teething toy to feed your child, if he is more willing to put the teething toy into his mouth. You can also use your finger.
- Never force or coerce your child to eat. He will begin to mistrust you and feeding will become more difficult.
- Eliminate distractions, such as the T.V. or loud noises when eating.
• Balance familiarity and flexibility. For example, use a different spoon to feed a preferred food or use a familiar spoon of a different color.

• When you offer new foods, keep the utensils, seating and environment the same.

• Give dried cereal or small pieces of food, while you are spoon feeding your child. The cereal occupies the child as he moves it around the tray/plate or attempts to pick it up.

• Spicier foods can create an interest and motivate a child to taste a new food.

• Be aware of your child’s communication signals during mealtimes; for example, when your child does not open his mouth in anticipation of the food, or turns his head, or cries, or opens his mouth. Respect and honor these signals. It will build trust and communication.

• Do not discuss your child’s eating habits/behaviors in front of the child. Children may not seem to be listening, however your child may be hearing everything you say. If you need to talk about something related to eating, present it in a positive way, as though you were talking to your child. Otherwise, wait and discuss it at a later time.

• Allow your child to remove a new food from mouth, by having a small bowl or napkin available for him to spit the food into.
A sensory diet is “a planned and scheduled activity program designed to meet a child’s sensory needs” (Yack et al. 2004).

Patricia Wilbarger and Julia Wilbarger (1991) coined the term “sensory diet” which was a concept based on the idea that each person requires a certain amount of sensory input and activity to maintain alertness. The important idea about a “sensory diet” is to help a child feel alert, calm and organized by designing activities into his daily schedule. The child’s role is to choose and directs the activities and the adult’s role is to make the activities available, set up the environment and supervise.

A sensory diet can decrease a child’s defensiveness to sensory input, that directly affect a child’s ability to participate in daily living skills, such dressing, sleeping, playing and eating (Yack et al. 2004).

There are certain sensory activities that provide movement, deep-touch pressure and heavy work. These activities have a significant and long lasting effect on the nervous system.

By engaging your child in sensory experiences throughout the day, their ability to focus and participate in their daily living skills improves.
In treating children, who are selective eaters, it is important to address all of the sensory systems not just what happens during eating. Planning and implementing a sensory diet with an occupational therapist will help in the treatment of feeding problems.

The following components should be included in a sensory diet. (Wilbarger, P. and Wilbarger, J.L. 1991)

- Specific time for the activities to occur. Collaborating with an occupational therapist knowledgeable in sensory processing disorders is recommended.
- Provide opportunities for deep pressure, heavy work, movement and oral motor activities. See activity list.
- Be aware of the sensory qualities of your child’s daily events. Control and monitor the type and amount of sensory input, especially during times of transition.
- Help your child participate in play activities that meet their sensory needs.
Sensory diet activities

(✓ appropriate activities)

- Wheel barrow walking
- Bear walking
- Tug-O-war
- Riding a tricycle
- Jumping on a mini-trampoline
- Sit-n-spin
- Rocking/jumping on a rocking horse
- Swinging
- Sliding down a slide
- Rolling down a grassy hill
- Climbing
- Running
- Play wrestling
- Pulling a wagon that is filled with toys, a bag of sand, bird seed
- Pushing or carrying a large beach ball or therapy ball
__Swimming
__Giving “bear hugs”
__Playing with a “zoom ball” toy
__Fill a two liter bottle with water, to use for watering the outdoor plants
__Drawing on the driveway with sidewalk chalk
__Using a large paint brush or paint roller, use water to pretend to paint the house
__Playing in a sandbox with buckets and shovels
__Gluing pictures, fabric, yarn, onto construction paper (use scented glue)
__Finding small toys that are hidden in rice, sand, dried beans
__Playing with koosh balls, play dough, silly putty
__Finding small toys (plastic animals) hidden in silly putty, play-dough
__Playing with silly foam in the bath tub or outdoors
__Looking at books that have textured pictures
__Resistive games (brio blocks, pop-beads, accordion tubes)

List other activities that your child already participated in:
Activities of Daily Living

(That can be included in a sensory diet)

Carrying a small bag of groceries from the car to the house
Carrying a child’s back pack to and from the car, to pre-school or house
Putting cans from the grocery bag into the cupboard
Pushing the chairs to the table after dinner
Wiping off the table
Helping wash the car
Watering outdoor plants
Pushing the laundry basket to the washer/dryer
Putting cloths into the washer or dryer and removing the dried cloths
Rubbing lotion or powder onto arms and legs after a bath
### Sensory Diet

**Name:** ____________________  **Date:** M T W T F S S

<table>
<thead>
<tr>
<th>Time</th>
<th>Daily Routine</th>
<th>Activities</th>
<th>Comments</th>
</tr>
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<tbody>
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</tbody>
</table>
Oral Motor/Pre-Feeding Activities

Provide opportunities for your child to explore hands, and objects with his/her mouth. This is how your child learns about size, shape and texture.

**Suggested activities and toys are:**

__ Develop your child’s ability to put his hands in his mouth.

__ Give your child a variety of simple shape and textured “teething” toys to hold, and put into his mouth

__ Touch your child’s face (cheeks, lips) with soft, textured fabrics or small, soft, toys. Do not touch too lightly, as this can be irritating.

__ Tooth-brushing: infa-dent tooth-brush, child’s vibrating tooth-brush

__ For toddlers, blowing whistles, harmonicas, party favors, bubbles, pin wheels

__ Sucking liquids from a straw. Use a variety of straw sizes, and lengths.
Play Activities

Encourage pretend play: a play kitchen with plastic foods, utensils, etc. Pretend to cook, serve and eat food. Pretend to feed food to a doll or stuffed animal, with a utensil, bottle or cup

Looking at books or reading stories that show pictures of children eating or pictures of food: examples:

- *The Very Hungry Caterpillar* by Eric Carle
- *Green Eggs and Ham* by Dr. Suess
- *Bread & Jam for Frances* by Russell Hoban
- *Bear Loves Food* by Janelle Cherrington
- *Who Stole the Cookies from the Cookie Jar* by Margaret Wong
- *Munch, Munch Peter Rabbit* by Beatrix Potter
- *Yummy, Yummy Fruit Salad* by Gosset & Dunlap

Singing songs about food, for example:

- *Apples and Oranges*
  - [www.PBS.org](http://www.PBS.org) Sesame Street link has many songs about food

Going on a picnic in the back yard
Behavioral/Communication Intervention Guidelines

Resistant eaters often exhibit inappropriate behaviors during mealtimes because of their aversion to eating. It will take time to decrease these behaviors and replace them with positive behaviors. Making the mealtime surroundings positive, your child will learn new and acceptable behaviors. Be patient.

Set up a routine for transitioning to the table at mealtimes: Have your child wash hand, set the table, put food on the table, place plates and utensils on the table. This can make the transition predictable for your child.

Break down activity into small steps: Children with sensory-processing problems may have difficulty transitioning to a new activity. It may require breaking the activity into smaller steps, so the change becomes gradual.

For example, teaching spoon feeding, you may want to practice the last part of the activity (backward chaining), which is having your child reach for a spoon, filled with food, which is held in front of the child, and within easy reach for the child.
**Give reinforcement throughout an activity:** Throughout an activity, give praise, either verbally or by clapping your hands, so your child is reinforced to continue the behavior, which you wish to develop or improve. Ignore behavior(s) which you want to decrease by not recognizing the behavior.

**Throwing food:** If your child understands that throwing food is not an acceptable behavior and continues to do so, you may want to have your child pick the food up from the floor and throw it into the trash. You will want to give your child another method to discard the food, such as putting it onto a paper plate and then throw it away. Be sure you understand the reason why your child throws food.

**Communication is vital to change:** Build trust in what is said to the child and what occurs. Follow through in what you say and what you do. Communication takes many forms, such as facial expressions, crying, vocalizing, turning away from the spoon, stiffening of the body, gagging, etc. Be aware of what your child is communicating to you and respect that communication.

(Adapted from Ernsperger & Stegen-Hanson, 2004; Morris & Klein, 2000; Wolff & Lierman, 1994)
Strategies to Expand Foods into a Child’s Diet

Learn about new foods: Choose a time, outside of a mealtime to learn and experience foods. Doing this one time a day, between meals is ideal.

Follow this progression:

_ Select 3 to 5 foods: chose 2 to 3 foods, that the child will eat and 1 to 2 new foods.

_ Everyone washes and dries their hands, and sit at the table.

_ Blow bubbles or a party favor, a harmonica, kazoo, etc.

_ Give a paper plate, napkin, cup to everyone participating in the activity.

_ Pass one of the preferred foods and everyone puts the new food on their paper plate.

_ Look, touch, smell, taste and eat (optional) the preferred food.

_ Talk about the food; the color, feeling, taste, temperature, etc.

_ Present a second preferred food to touch, smell, taste and eat.
Present a non-preferred food. Have the child remove the food from the serving plate. If the child is having difficulty touching the new food, have them use their napkin to pick up the food and put it onto their plate. Reassure the child that he does not need to eat the food. Have extra napkins available.

If the child can not tolerate the food on his plate; move the food to a place, where the child accepts its presence.

Interact with the new food. For example, if the new food item is an apple slice, pretend to use the food item for a boat, a car, a mustache, a nose, teeth, a toothbrush, dipping the food into salad dressing or ketchup. Be creative and make it fun! As you interact with the new food move through these steps:
- holding the food on a napkin (optional)
- touching the food with finger tip;
- holding food in palm of hand;
- touching the food on elbow;
- touching food on chin/cheek;
- touching food on lips;
- touching food on teeth;
- touching food on tongue;
- biting food with front teeth.

Repeat with second non-preferred food.

Encourage but do not force the child to eat any of the food.
If the child attempts to eat the food and decides to spit it out, have a place where the child can put the food, so he does not have to swallow it.

Praise the child at their attempts in touching, smelling or eating the food.

Avoid saying “Can you”? Replace this with “You can.....” This implies confidence in the child’s ability and avoids a power struggle between the adult and child. When you ask a question, you interrupt the child eating.

After 15-20 minutes, clean up by having everyone throw their paper plate, napkin and left over food away.

(Adapted from Ernsperger, & Stegen-Hanson, 2004; Toomey, 2002)
Make small changes at a time. For example, if your child only eats crackers that are “round and brown”, try to introduce other crackers that are ”round and brown”, but have a different taste or size.

Expanding new food tastes: Slowly, slowly add a small amount, starting with 1/8 teaspoon of a fruit to a fruit/vegetable to a vegetable/meat to a meat, that the child is already eating and continue this for a week. If your child refuses to eat the food, add even less of the new food. If your child does eat the small amount of food that has been added to the preferred food, then add ¼ teaspoon of the new food to the preferred food for another week. Then add ½ teaspoon of the new taste and eventually 1 teaspoon. Continue to add the new food, increasing by ¼ teaspoon. Keep the amount of the preferred food the same. Add to 1 tablespoon of the food.

Make changes slowly: Start with a familiar food and make small changes in one area. Keep the flavor the same and gradually change the texture.

Expanding new liquid tastes: Gradually add a new flavor to a preferred drink flavor by making ice cubes from the new flavor. Add one ice cube to about 8 ounces of the child’s preferred drink (juice). As the ice cube melts, it will gradually change the taste of the liquid. Increase by adding two same flavored ice cubes into the drink.

Many children with a sensory processing disorder, prefer highly intense tastes and often like the taste of soda. You can try adding club soda or sparkling water to a juice.

Select foods from family menu: When choosing new foods to add to the child’s diet, add those foods the family already is eating or may be likely to eat. Select foods that are child-friendly, such as grilled cheese, chicken nuggets, cooked baby carrots, peas, tator-tots.....

(Adapted from Ernsperger & Stegen-Hanson, 2004: Toomey, 2002)
Positions for Independent Feeding

Children need to be sitting upright and be comfortable. For children to learn how to feed themselves, they need to feel secure so they and used their hand to pick up food and/or use a spoon/fork.

**Sitting in a high chair**
- Chair adjusted so child is sitting
- Hips bent at 90 degrees
- Knees bent at 90 degrees
- Ankles bent at 90 degrees
- Sitting with back and hips against back of chair
- High chair tray close to body, so arms can rest on tray
- Feet flat on foot rest
- Seat belt fastened
- Non-skid seat pad so child does not slide forward

**Sitting on a booster chair**
- Booster seat securely fastened on chair
- Hip, knees and ankles bent at 90 degrees
- Feet flat on chair or stool
- Child’s resting against back of chair
- Seat belt fastened
- Positioned so booster seat slides under the table, with arms rest on table top

Illustrated by Josh Thompson
Feeding Materials

1. **Guideline for Nipples and Bottles**
   - Fits the size and shape of the baby’s mouth
   - The flow rate of the nipple matches the baby’s suck. Do not make the nipple hole larger, which causes an uncontrolled flow of liquid.
   - The bottle fits the size and shape of the baby’s hand(s).
   - The bottle holds the amount of liquid that the baby will drink during one feeding.

2. **Guidelines for a Cup**
   - The cup is durable, so it will not break if the child bites the edge.
   - There is a thick or rounded lip.
   - The cup is small and fits the size of the child’s hand(s).

3. **Guidelines for a Spoon and Fork**
   - The spoon is durable.
   - The bowl fits the size of the child’s mouth.
   - The handle of the spoon fits the size of the child’s hand.
   - The bowl of the spoon is made from a durable plastic. Some children are very sensitive to putting a metal spoon into their mouth.

4. A non-skid rubber placemat helps to keep the child’s bowl or plate from slipping. There are suction bowls made by Sassy that help to keep the bowl from moving. Keeping the bowl/plate from moving allows the child to focus in the steps of self-feeding.

(Adapted from Morris & Klein, 2000.)

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Self-Feeding Strategies

Developing self-feeding skills in children, with sensory-processing problems can be the key to improving their mealtime skills and willingness to eat new foods. Self-feeding gives your child control of eating and they may be more willing to try new foods when they have the control of putting it into his mouth.

If your child does not like to have “messy” hands, using a utensil may be a good alternative to finger feeding. However, some children do not like the feel of the spoon handle in the palm of their hand.

Keep a wash cloth or napkin available so your child can wipe his hands whenever he wants to.

Strategies to prepare your child for self-feeding are:

1. Encouraging your child to hold and play with a variety of toys.
2. Encourage your child to put a toy to his face or mouth.
3. During meal times, place a utensil near to your child, so he accepts the presence of the utensil.
4. During outdoor play time, use spoon to dig and scoop in sand.
5. During bath time, use measuring spoons to scoop water.
6. Play with play dough or other messy type materials.
7. Play with whistles, bubble blowers, harmonicas.

(Adapted from Morris & Klein, 2000)
Resource List


2. *The Sensory Sensitive Child* by Karen A. Smith, PhD. & Karen R. Gouze, Ph.D.

3. *Sensory Secrets: How to Jump-Start Learning in Children* by Catherine Chemin Schneider, OTR.

4. *Sensational Kids: Hope and Help for Children with Sensory Processing Disorder* (SPD) by Lucy Jane Miller, Ph.D., OTR.

5. *Just Take A Bite* by Lori Ernsperger, Ph.D. & Tania Stegen-Hanson, OTR/L.

References


CHAPTER V
SUMMARY

The Mealtime Guide for the Young Child with a Sensory-Based Eating Disorder is intended for parents and occupational therapists to use to improve a child's ability to eat a greater variety of foods. This guide provides information and intervention strategies designed to be used based on each child's strengths and needs; it was developed for those children with a sensory-processing disorder which is affecting their willingness/ability to eat a variety of food texture, taste, and temperatures. The document was written so the individual sections can be used individually or together, as appropriate. It is not intended to be a comprehensive overview of the many aspects of feeding which affect a child's ability to eat or to be fed. It is recommended that this guide be used under the guidance of an occupational therapist with specialized training and experience in the area of oral motor/feeding and sensory processing disorders. It is the intention of this project author to use this guide when working with parents during the assessment process, and during the establishment of family-centered goals and intervention ideas which can be incorporated into the family's daily routine.

A child with a sensory processing disorder may also have a sensory-based eating disorder affecting their ability to eat a variety of foods. In a survey of parents of children with autism spectrum disorder, ninety percent had problems at mealtimes (Ahearn, Castine, Nault, & Green, 2001). The autistic child is selective in the textures of food he
will eat. These children also demonstrate defensiveness in other sensory systems such as, 
the reluctance to touch, hold or manipulate sand, grass, play dough, or certain foods. 
These children may not have had the experience of putting toys or their fingers into their 
mouth as infants or toddlers. The sensory experiences that are part of the developmental 
process, prepares the mouth for food and provides a sensory awareness inside and outside 
of the mouth.

Other considerations affecting selective eaters are medical conditions such as 
gastroesophageal reflux (GER), allergies and sensitivities to certain foods. This causes 
discomfort for the child and he soon learns to avoid foods.

Children with an aversion to eating are seen as having behavioral problems and 
are treated with behavioral intervention strategies. Providing a multi-disciplinary team 
approach takes into consideration the medical, physical, sensory and environmental 
issues that influence the child’s mealtime behaviors (Delaney, 1998).

The research focusing on incorporating a multi-approach to sensory-based eating 
disorders is limited. Therefore, based on the clinical experience of this author and a 
review of current research and literature, the guide was designed to assist in developing 
an intervention plan for parents using a sensory-based approach along with mealtime 
behavioral strategies.

Based on the literature review, there is a paucity of evidence based research in the 
area of a multi-dimensional approach for sensory-based eating disorders. The majority of 
the literature is based on clinical observations and anecdotal information. The research 
based articles generally have small sample sizes, which the authors indicate as a 
weakness in the research.
It is intended for this guide to be a “work in progress” and revisions will be made as needed in order to optimize the guide into a useful tool for the parent(s) and the occupational therapist. The effectiveness of this guide will be assessed in order to determine the usefulness of the guide. Parent feedback will be obtained through the use of interviews and/or surveys as a method to make revisions to the guide. In addition, it is recommendation that additional evidence based research be conducted in the area of the use of a multi-sensory approach for intervention with children with sensory-based eating disorders.

In conclusion, this project has allowed this author to review the literature, to assimilate the information and then organize the information into a working guide which will hopefully provide a basis for using a multi-sensory approach in the treatment of children with a sensory-based feeding disorder.
REFERENCES


