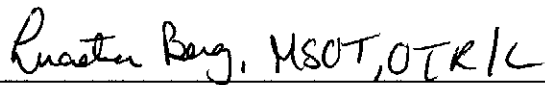


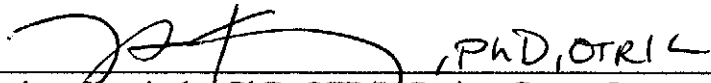
Feeding Activity Book for Home Treatment Programs

May, 2013

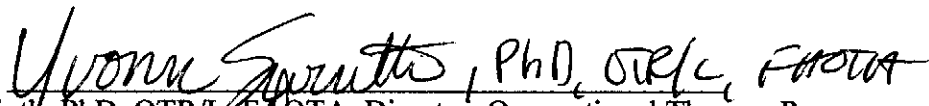
This project, submitted by Haley Wens, has been approved and accepted in partial fulfillment of the requirements for the degree of Master of Occupational Therapy from the University of Puget Sound.



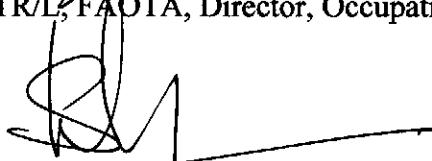
Lucretia Berg, MSOT, OTR/L, Project Chair



Tatiana Kaminsky, PhD, OTR/L, Project Course Instructor



Yvonne Swinth, PhD, OTR/L, FAOTA, Director, Occupational Therapy Program



Sunil Kukreja, Dean of Graduate Students

Abstract

Sensory processing challenges in children can have adverse effects on their ability to eat. These children may experience food temperatures, flavors and textures more intensely, causing them to have an aversion to many food types, which can potentially lead to the inability to get proper nutrition. In observing feeding therapy at Cascade Children's Therapy (CCT), it was discovered that the therapists would benefit from a book to efficiently assign home treatment programs to these children with sensory processing challenges as an adjunct to in-clinic intervention. However, the home treatment programs needed to be playful in order to enhance adherence to the program. *Eat, Play, Love* is a book created for CCT containing 20 sensory-rich, playful food games and crafts from which therapists can efficiently reproduce, and assign to children and their caregivers as a home treatment program. This feeding activity book aims to improve food tolerance, and to increase food repertoire.

Feeding Activity Book for Home Treatment Programs

Sensory processing differences affect up to 1 in every 6 children (Ben-Sasson, Carter, & Briggs-Gowan, 2009). This includes 95% of children with autism spectrum disorders, and 69% of children with attention deficit hyperactivity disorder (ADHD) (Parush, Sohmer, Steinberg, & Kaitz, 2007; Tomcheck & Dunn, 2007). Many studies have found that children with sensory processing differences have difficulties in the tasks of feeding and eating (Ayres & Tickle, 1980; Kientz & Dunn, 1997; Koenig & Rudney, 2010; Miller, Coll, & Schoen, 2007b; Simmons & Miller, 2008). These difficulties include sensitivities to food textures, taste, visual appearance, and smells, and can result in severe food aversions and limited food preferences (Dickie, Baranek, Schultz, Watson, & McComish, 2009; Kientz & Dunn, 1997). Children that suffer from these ailments are candidates for early intervention occupational therapy.

Sensory-based treatment has demonstrated the ability to improve the skills of these clients (Fucile, Gisel, McFarland, & Lau, 2011; Gisel, 1996; Lessen, 2009; May-Benson & Koomar, 2010; Miller et al., 2007b; Rocha, Moreira, Pimenta, Ramos, & Lucena, 2007; Wittman, Velde, Lamm, Mohler, & Linda, 2007). In addition, occupational therapists reported that treatment sessions were more successful when the parent was involved (Mayer, White, Ward, & Barnaby, 2002). Several studies reported that home treatment programs with parent-delivered treatment showed significant improvements in sensory processing skills (Cohn, 2001; Silva, Schalock, & Gabrielsen, 2011). Occupational therapists have also reported that treatment sessions were more successful when the parent was involved (Mayer, White, Ward, & Barnaby, 2002). However, despite the effectiveness of the sensory-based home treatment program, parents

have reported difficulty strictly adhering to the home treatment programs (Segal & Beyer, 2006). If treatment evoked a negative response, or a child reported that he or she did not want to participate, parents tended to not adhere to home programs.

Sensory Processing Differences

Every task that is confronted in daily life requires the performance skill of sensory processing. Sensory processing has been defined as “a generic term used to describe the way in which sensation is detected, transduced, and transmitted through the nervous system” (Roley, Mailloux, Miller-Kuhaneck, & Glennon, 2007, p. CE-2). The ability to process, interpret, and respond to incoming sensations from the environment affects many neurological functions and behaviors such as perceptual awareness, motor learning, body awareness, postural control, attention, and academic performance (Bundy, Lane, & Murray, 2002). Renowned occupational therapist and psychologist, A. Jean Ayres, calls this process of receiving and integrating various multisensory perceptions “sensory integration” (Roley et al., 2007).

Sensory processing differences affect up to 1 in 6 children to the point where tasks of everyday life are disturbed (Ben-Sasson et al., 2009). The terminology in sensory processing differences has yet to reach homogeneity across professionals and clinicians, but some classification similarities do exist. Over time, professionals have grouped sensory processing differences into three major categories: Over-sensitivity (also called over-responsivity, hyper-responsivity, high threshold, poor registration or sensory-avoiding), under-sensitivity (under-responsivity, hypo-responsivity, low threshold or sensory-seeking), and dyspraxia (Bar-Shalita, Goldstand, Hahn-Markowitz, & Parush, 2005; Dunn, 2001; Simmons & Miller, 2008). However, children can experience a

combination of symptoms from different categories (Miller, Anzalone, Lane, Cermak, & Osten, 2007a).

Children with over-sensitivity receive stimuli faster and with increased intensity and duration, thus causing inappropriate responses or responses that are not functional, and not fitting to the demand (Miller et al., 2007a). Such responses tend to manifest as withdrawal, avoidance, anxiety, and fight-or-flight responses due to the activation of the sympathetic nervous system (Miller et al., 2007a). This can lead to avoiding new stimuli (Dunn, 2001). Behavior can also be aggressive, controlling, and impulsive (Miller et al., 2007a). These children also tend to have difficulties with everyday sensations such as the tag on a piece of clothing, brushing their teeth, touch around the face or mouth, and walking on sand or grass (Addison et al., 2012).

Children with under-sensitivity appear to not receive stimuli, or appear to disregard it (Miller et al., 2007a). This inability to perceive stimuli from the environment manifests as lethargy, lack of motivation, and what some may describe as laziness (Miller et al., 2007a). This behavior is not due to laziness but rather the inability to perceive opportunity for engagement, and the inability to become aroused for action (Miller et al., 2007a). These children may not react to pain, body irritation, and extreme temperature in a cautious and safe manner (Miller et al., 2007a). Some children with reduced perception of sensation may be what some professionals call “sensory-seeking” (Miller et al., 2007a). These children have an intense desire for sensory input. They will engage in activities that provide intense sensations such as spinning, jumping off objects, bumping and crashing their bodies into things or people, and other sensory-rich activities that can be invasive to safety as well as difficulty in forming social relationships with peers

(Miller et al., 2007a). Due to their constant need for arousal and the resulting restlessness and over-activity, these children often have difficulty in school (Miller et al., 2007a).

Dyspraxia is the difficulty to motor-plan due to sensory perception problems (Simmons & Miller, 2008). Dyspraxia is linked to poor sensory discrimination or “a decreased ability to interpret the spatial or temporal qualities of touch, movement, or body position” (Koomar & Bundy, 2002 pp. 276). Children with dyspraxia have trouble with planning, sequencing, and performing tasks (Simmons & Miller, 2008). They have trouble following instructions, activities with many steps, and participating in coordinated motor movements, such as in sports and handwriting (Simmons & Miller, 2008).

Sensory processing differences have a strong link with autism spectrum disorders (ASD), anxiety, and attention deficit hyperactivity disorder (ADHD) (Ermer & Dunn, 1998; Reynolds & Lane, 2009; Tomcheck & Dunn, 2007). In a study by Tomcheck & Dunn (2007), 95% of children with autism displayed dysfunction in sensory processing. Children with ADHD also have a high incidence of co-morbidity in sensory-seeking behavior (Ermer & Dunn, 1998; Miller et al., 2007a). About 69% of children with ADHD exhibit symptoms of sensory-oversensitivity (Parush et al., 2007). Sensory processing differences have also been reported in children with fragile X syndrome, fetal alcohol syndrome, Angelman syndrome, cochlear implants, and traumatic brain injuries (Baranek et al., 2002; Bharadwaj, Daniel, & Matzke, 2009; Franklin, Deitz, Jirikowic, & Astley, 2008; Galvin, Froude, & Imms, 2009; Walz & Baranek, 2006).

Effects of Sensory Processing Differences on Feeding and Eating

Many studies have found that children with sensory processing differences have difficulty in feeding and eating (Ayres & Tickle, 1980; Kientz & Dunn, 1997; Koenig &

Rudney, 2010; Miller et al., 2007a). The American Occupational Therapy Association defines feeding as “the process of [setting up, arranging, and] bringing food [fluids] from the plate or cup to the mouth” (American Occupational Therapy Association [AOTA], 2007). Eating is defined as “the ability to keep and manipulate food/fluid in the mouth and swallow it (AOTA, 2007). Koenig and Rudney (2010) found that children with sensory processing differences have difficulties in functional performance in their activities of daily living (ADLs), which include the task of eating. Children who are sensory-seekers may exhibit dangerous behavior such as consuming really spicy foods and stuffing their mouths in order to receive desired sensory input (Miller et al., 2007a). Those who have sensory-under-sensitivities may fail to respond to the pain and tissue damage of high-temperature foods (Miller et al., 2007a). Children with dyspraxia also display difficulty eating because of oral-motor issues as well as difficulty with fine-motor manipulation of food and utensils (Miller et al., 2007a). Children who are over-sensitive display a very limited food preference, and an aversion to foods based on their textures (Kinnealey, 2006; Reeves, 2006). These children may experience food temperatures, spices and textures more intensely (Dunn, 2001). They may refuse food or respond to food in an over-reactive manner such as crying, gagging, and spitting food out (Addison et al., 2012).

Ayres and Tickle (1980) studied 10 children with autism and sensory processing differences and found that as a group they were under-sensitive to the smells and tastes of food, but over-sensitive to the textures. In a similar study of children with autism and sensory differences, all parents reported that their children had limited diets, were inflexible in trying new foods, and usually rejected food based on its texture (Talay-

Ongan & Wood, 2000). In a study in 1997, Kientz and Dunn performed a study between typically functioning children and children with autism, using the Sensory Profile (Dunn, 1999). The Sensory Profile is a 125-item sensory parent questionnaire that is used to discover information about sensory processing skills of a child on 10 different factors (Dunn, 1999). The 10 Sensory Profile factors are Sensory Seeking, Emotionally Reactive, Low Endurance/Tone, Oral Sensitivity, Inattention/Distractibility, Poor Registration, Sensory Sensitivity, Sedentary, Fine Motor/Perceptual, and Other (Dunn, 1999). Kientz and Dunn (1997) found that the biggest difference between typically functioning children and children with autism and coinciding sensory differences was under Factor 4 (oral sensitivity) of the Sensory Profile. Factor 4 contains sensory issues such as sensitivity to tastes, textures and temperatures of food (Kientz & Dunn, 1997). There was a 25% difference in having strong food preferences and a 38% difference in the tendency to be picky regarding food texture between the two groups of children (Kientz & Dunn, 1997). Besides texture, restricted food preference has also been linked to over-sensitivity to taste (Reynolds & Lane, 2008). A qualitative study on parent perspectives of their children's sensory experiences reported that the majority of problems related to feeding included, but were not limited to, "texture, taste, smell, visual aspects of the food itself, and having the food on hands or tongue" (Dickie et al., 2009, p. 177). Negative reactions to food included gagging, vomiting, and temper tantrums (Dickie et al., 2009). One mother reported that all mealtimes are stressful and that "it's probably the most difficult thing" (Dickie et al., 2009, p. 177).

Occupational Therapy

Feeding and Eating

As stated by the Occupational Therapy Practice Framework: Domain & Process (OTPF), both feeding and eating are activities of daily living that occupational therapists can evaluate and treat if needed (American Occupational Therapy Association [AOTA], 2008). In a randomized controlled pilot study, children with sensory processing differences who received sensory-based occupational therapy showed significant improvements in alleviating sensory difficulties when compared to children with sensory processing differences who received a placebo treatment and those who received no treatment (Miller et al., 2007b). In another pilot study conducted by Pfeiffer et al., (2011), children with ASD who received sensory-based treatment showed more significant improvements on the Quick Neurological Screening test, 2nd Edition (QNST-II) compared to children with ASD who received non-sensory-based treatment (Pfeiffer, Koenig, Kinnealey, Sheppard, & Henderson, 2011). The QNST-II considers areas of neurological integration including tactile perception abilities and praxis (Mutti, Martin, Sterling, & Spalding, 1998). The children who received sensory-based treatment also showed a decrease in autistic mannerisms such as stereotypy, or self-stimulating behaviors (Pfeiffer et al., 2011). People with ASD have described stereotypy and self-stimulating behaviors as mechanisms to cope with the inability to process sensory information (Shoener, Kinnealey, & Koenig, 2008). It is possible that the decrease in these coping mechanisms is a reflection of the efficacy of sensory-based treatment to improve sensory processing.

A systematic review of research on the effectiveness of a sensory-based treatment included seven studies that showed positive outcomes such as improvement in tactile processing, decreases in over-sensitivity, and overall improvements in sensory processing (May-Benson & Koomar, 2010). In a case example of a young girl with sensory processing difficulties who overreacted to touch and could not tolerate toothpaste, the mother reported that sensory-based treatment with an occupational therapist that incorporated feeding improved both her and her family's quality of life (Wittman, Velde, Lamm, Mohler, & Linda, 2007). Studies have shown that oral sensory-based treatment has improved overall oral feeding in infants that were born prematurely (Lessen, 2009; Rocha, Moreira, Pimenta, Ramos, & Lucena, 2007). This population also demonstrated a faster transition from the introduction of oral feeding to independent oral feeding when receiving oral and tactile sensory treatments (Fucile, Gisel, McFarland, & Lau, 2011). A study involving 27 children ages 2.5-10 years old observed the effects of a sensory treatment on feeding (Gisel, 1996). This study reported improvements in spoon feeding, chewing, and swallowing. Studies also reveal that when parents are involved in their child's occupational therapy treatment, the child demonstrates greater improvements in sensory processing skills, confidence, and activity engagement, as well as greater progress towards therapy goals (Cohn, 2001; Mayer et al., 2002; Silva et al., 2011).

Parent Involvement in Treatment

Many occupational therapists believe that parent-child relationships are critical to a child's development and consider parental involvement in therapy to be essential in early intervention (Mayer et al., 2002). Therapists reported that sessions were satisfactory when the parent was able to experience his or her child's accomplishments (Mayer et al.,

2002). They also reported that parent involvement helped progress the child toward therapy goals (Mayer et al., 2002).

In 2001, Cohn examined parents' perspectives on sensory-based treatment for his or her child. Not only did parents report improvements in his or her child's basic skills, activity engagement, and self-worth, but they reported that learning more about sensory processing differences and sensory-based treatments also allowed them to understand his or her child's behavior and to become more supportive (Cohn, 2001).

In 2011, Silva et al. conducted a study that examined the effects of parent-delivered sensory-based therapy on children with autism. In this randomized controlled trial, 24 children received treatment (a skill-based tactile therapy), and 18 children did not receive treatment in order to create a control group for comparison. Of the children that received treatment, some received the "Dual Program" (a therapist-delivered program and a parent-delivered home program) and some just received the "Home Program" (the parent-delivered home program). In comparison to the control group, the group of children that received treatment had significant improvements in areas including, but not limited to, sensory processing and self-regulation (Silva et al., 2011). Of these children receiving treatment, there were no significant effects for the children receiving the Dual Program compared to those receiving the Home Program (Silva et al., 2011). However, those children that were less affected by their impairment (meaning they had less severe reactions to sensory input) showed larger gains in just the Home Program, compared to the severely impaired participants who showed larger gains in the Dual Program (Silva et al., 2011). Despite the effectiveness of parent involvement in his or her child's treatment,

parents have reported having challenges adhering to home treatment programs (Segal & Beyer, 2006).

Challenges in Program Adherence

Parents have challenges adhering to home treatment programs because of his or her child's reactions to the treatment. A study on a sensory-based home treatment program revealed that parents had difficulty adhering to a treatment schedule, and would stop treatment if his or her child demonstrated a negative response (Segal & Beyer, 2006). If the child did not want to engage in treatment, stated that the treatment bothered him or her, or if s/he demonstrated behaviors like cringing, the parent was less likely to integrate the treatment intervention at home (Segal & Beyer, 2006). Similarly, parents have reported that they tend to avoid or change sensory situations that are not pleasing to his or her child (Dickie et al. 2009). However, positive responses from a child were encouraging for parents to continue treatment and to stick to treatment protocol (Segal & Beyer, 2006). Many therapists incorporate play into treatment to reduce negative responses and to motivate the child (Anderson, Hinojosa, & Strauch, 1987; Bazyk, 2000; Couch, Dietz, and Kanny, 1998).

Incorporating Play into Treatment

The results of a 1998 study performed by Couch, Dietz and Kanny found that pediatric occupational therapists often use play as a motivator and modality for the treatment of children. Play, one of the seven areas of occupation as listed by the OTPF (AOTA, 2008), is one of the most important activities in a child's life, and is one of the primary aspects of intervention in occupational therapy for children. When play is excluded from treatment, children are more likely to become distressed, more resistant,

uncooperative, and may lose concentration easier (Anderson, Hinojosa, & Strauch, 1987). Making feeding playful helps reduce the stress and fear that occurs when food is present, and makes the process of feeding feel less like “work” for the child (Bazyk, 2000). This can be done by including the specific child’s play interests, such as certain books or toys, into the feeding process (Bazyk, 2000). Use of play as a means of motivation and positive reinforcement in treatment has been shown to be successful in improving feeding skills in children with feeding difficulties (Dunbar, Jarvis, & Breyer, 1991; Eckman, Williams, Riegel, & Paul, 2008; Riordan, Iwata, Finney, Wohl, & Stanley, 1984). Dunbar, Jarvis and Breyer (1991) conducted a study in which play was used in a treatment program to help increase food intake in three children with feeding difficulties. Therapists used feeding puppets, water play and presentation of play foods as motivators for child participation in feeding (Dunbar et al., 1991). Two of the three children showed an increase in food intake (Dunbar et al., 1991). While play is important in treatment, therapists lack a resource from which they can efficiently acquire playful sensory-based feeding activities in order to incorporate them into home treatment programs.

Janine Czerniecki, M.S., OTR/L, PT, an occupational therapist, physical therapist and owner of Cascade Children’s Therapy (CCT) in Mill Creek, Washington explained that she has many clients with sensory feeding challenges with whom she uses home treatment programs (J. Czerniecki, August 22, 2012). Following her in-clinic therapy sessions, Mrs. Czerniecki sends home a list of feeding tasks for the caregiver to implement with the child. However, she had reported issues of adherence. If the child did not enjoy the task, the caregiver often halted the home treatment program. Mrs. Czerniecki reported that it would be beneficial if therapists had ready access to a book of

play-based sensory food activities to reproduce as home treatment programs. Not only would this book be efficient for busy therapists at CCT, but the playful nature of the activities would promote adherence as well. However, she had yet to come across such a treatment book. Therefore, the purpose of this project was to provide a book of reproducible sensory-based feeding activities from which the occupational therapists at CCT can copy and then give to the caregivers of children with feeding difficulties due to sensory processing differences as a home treatment program.

Overview of the Project

This project yielded a book of reproducible playful sensory feeding activities for therapists at CCT to share with the caregivers of their clients as a home treatment program. The purpose of these activities was to improve food tolerance in children with feeding difficulties due to sensory processing differences.

This activity book has three main sections. The first section is an introductory section (see Appendix A). This section includes acknowledgements, safety information, the book's instructions and its purpose as an efficient tool for therapists to share home treatment program activities with clients requiring support for feeding. The instructions explain how the therapist should use the book, including an explanation on how to choose appropriate activities based on a specific child's needs and goals. Directions were provided regarding permission to copy the chosen activities and share them with the caregiver of the child to utilize in the home setting as an adjunct to in-clinic treatment. Safety information included in this section explains that this book should only be used under the direction of a licensed and registered occupational therapist, and that a child should always be supervised by an adult during participation in these activities.

The second section of this book includes 20 activities (see Appendix B). For ease of presentation, the activities are listed in alphabetical order. Each activity has corresponding photos on its respective page, a description of the activity, a list of required materials, instructions for set-up and how to perform the activity, and instruction on grading the activity up and down.

The third section contains the appendix including caregiver handouts and activity acknowledgements (see Appendix C). The caregiver handout explains the philosophy of the activities, how they should be implemented in the home, any pertinent safety information. The handout is to be provided to the caregivers by the therapist upon assigning activities for the home treatment program. Activity acknowledgements cite weblogs and web articles from which some activities were inspired by or adapted from.

Targeted Population

The therapists at CCT were the direct population and the recipients of the book, which remains at the clinic. This book was designed to permit quick access to playful, sensory-based feeding activities with caregivers as a home treatment program. Caregivers and children with feeding difficulties due to sensory processing differences who are treated at CCT were the indirect targeted population, as they benefit from the activities that the therapists share with them.

CCT is a private pediatric outpatient clinic in Mill Creek, Washington that has been in operating since 1989 (Cascade Children's Therapy, a). This clinic provides occupational therapy, physical therapy, and speech/language pathology. As stated on their website, the philosophy of CCT is to provide effective therapy services for children that are both supportive and caring (Cascade Children's Therapy, a). This includes

educating and incorporating the family of the involved child into his or her treatment and goals. Integrating therapy activities into the daily lives of children and their families is another important part of the philosophy of CCT.

The key player of project was Janine Czerniecki, M.S., OTR/L, PT. Mrs. Czerniecki is one of the two owners of CCT. She is licensed as both an occupational therapist and a physical therapist in the state of Washington (Cascade Children's Therapy, b). Mrs. Czerniecki specializes in many areas including feeding problems and sensory processing differences, and is trained in Sensory Integration Theory and Treatment. The completed activity book was given to Mrs. Czerniecki to utilize in her clinic.

Project Goals and Objectives

Due to time constraints, the book was unable to be piloted at CCT and therefore the project goals and objectives have yet to be assessed.

Goal 1

Following review of the activity book, therapists at CCT will be able to identify appropriate activities as a home treatment program for a client.

Objective 1. Therapists at CCT will be able to identify an oral activity in the book.

Objective 2. Therapists at CCT will be able to identify a gustatory activity in the book.

Objective 3. Therapists at CCT will be able to identify a tactile activity in the book.

Goal 2

Following review of the activity book, therapists at CCT will be able to select the proper grading of an activity for a given child.

Objective 1. After therapists have reviewed the activity section of the book, they will be able to identify two ways to grade down an activity.

Objective 2. After therapists have reviewed the activity, they will be able to identify two ways to grade up an activity.

Desired Outcome

The overall desired outcome for this project was that the therapists at CCT have easy access to home program feeding activities to share with the caregivers of children with sensory-based feeding difficulties. It is hoped that these home program activities will promote improved eating and feeding skills and enhance caregiver adherence. The success of this project will be determined by feedback provided by therapists at CCT via a survey administered to the treating therapists who had the opportunity to use the activity book. This survey has not yet been administered. Once the therapists at CCT have received the book in May 2013, and have had several weeks to pilot it, a survey will be sent to them via email. Outcome of the success in meeting the three goals and related objectives will be reviewed following analysis of the survey responses.

This activity book is sustainable because it can be modified as needed. The key player of this project, Janine Czerniecki, OTR/L, PT, will sustain this book at CCT. A compact disk will be included in the book that will have all of the activities on it in an editable portable document format (PDF) to permit activity modification.

Implications for Occupational Therapy

The domain of occupational therapy is described as “supporting health and participation in life through engagement in occupation” (AOTA, 2008, p. 626). Occupations are meaningful activities that an individual wants or needs to do. They are pursuits that provide people with structure, meaning, productivity and engagement in culture, society and caring for oneself and others (Dickie, 2009). It is within the philosophy of CCT to implement the therapy of meaningful activities into the daily lives of their clients by assigning home treatment programs. Not only is the home a natural environment for most children during the task of feeding and eating, but as previously mentioned, home treatment programs demonstrate strong improvement for the child in conjunction with in-clinic treatment. However, a resource did not exist for the therapists at CCT to provide caregivers with appropriate activities for children with sensory-based feeding difficulties.

The goal of this project was to provide a book of feeding activities for therapists at CCT, in order for the therapists to be able to suggest activities for caregivers to implement as a home treatment program. The book combines the occupations of eating/feeding, play, and social participation, as the caregiver leads the child through activities.

Theoretical Model and Application to the Framework

The Person Environment Occupation Model (PEO)

The PEO model describes the convergence of the person, environment, and occupation, and how it affects occupational performance (Brown, 2009, p. 438). The

person includes what the individual enjoys and finds important, as well as his or her skills and abilities (Brown, 2009, p. 436). In the case of the activities created for the activity book, the person is the child, his or her need and desire to eat, and his or her sensory skills. The environment is the physical, social, and cultural context of the occupation (Brown, 2009, p. 437). This includes the physical characteristics of the child's home, the relationship between the child and the caregiver, and the expectations of the society that he or she is accepted in. The occupation is described as "self-directed tasks that a person engages in over the life course," (Brown, 2009, p. 437) which, in the case of this project, are feeding, eating, and play. These three factors determine occupational performance, that is, the level of success of occupational performance is dependent on the goodness-of-fit of these three factors. Under the PEO model, occupational therapists adjust these factors to enhance occupational performance.

Application of Theoretical Model

This model guides the project regarding home feeding activities for children with feeding difficulties to sensory processing differences by addressing the discrepancies between the person, occupation, and the environment that are causing poor occupational performance. With these children, the demands of the occupation of feeding/eating may be at odds with the child's skills and abilities, which make it difficult for parents to feed or get their child to eat in the home setting. For example, the occupation of eating involves food manipulation in the mouth and swallowing, but deficits in a child's sensorimotor skills such as tactile/texture tolerance and taste tolerance result in poor occupational performance such as gagging or vomiting. Following this model, activities were created that adjusted the occupation of feeding and eating into a play-based activity,

and the activities have the flexibility to be graded up or down to fit the sensorimotor skills of the child to enhance his or her success in feeding. Thus bringing the person, the environment, and the occupation of feeding into a functional convergence for the child.

Application of the OT Practice Framework

The OTPF defines the areas of occupation including play, social participation and activities of daily living (AOTA, 2008). Play is an organized or spontaneous activity that is enjoyable to the person (AOTA, 2008) and the primary occupation of the child. Social participation is “interacting with others within a given social system” (AOTA, 2008). Feeding and eating are categorized as ADLs. Feeding is defined as “the process of [setting up, arranging, and] bringing food [fluids] from the plate or cup to the mouth,” and eating is defined as “the ability to keep and manipulate food/fluid in the mouth and swallow it (AOTA, 2007). All of the activities included in this project are play-based, include social interaction with the caregiver or another participant, and revolve around feeding and eating in order to improve feeding skills in children with feeding difficulties due to sensory processing differences.

The children that this book addresses have deficits in the domains of body functions (sensory processing) and performance skills (sensory perceptual skills), which in turn affect their feeding and eating abilities. These children perceive stimuli, such as the taste, texture, and smell of food, at different speeds, intensities and durations which results in dysfunctional responses such as anxiety, gagging, and vomiting that impede feeding and eating. The activities provided for these children are capable of being graded to fit these specific body functions and performance skills of an individual, thus promoting more effective and functional feeding.

Procedure

This project ultimately began by observing sensory-based feeding therapy at Cascade Children's Therapy (CCT). Many of the children receiving feeding therapy at CCT had feeding difficulties due to sensory processing differences. Therapists Janine Czerniecki, OTR/L, PT, reported that it would be helpful to have a book from which she can efficiently reproduce sensory-based playful feeding activities to for such clients to perform as a home treatment program (J. Czerniecki, August 22, 2012). From here, research began into the realm of sensory processing differences, and their effect on feeding, in order to design activities to improve the feeding skills of these clients. Some activities were inspired and adapted from craft and game weblogs. Activities were adapted to fit the needs of feeding clients by including various food choices, a sensory-rich environment with many opportunities to see, smell, taste, and touch different foods, and the capability to grade up and down activities to meet the child at their skill level while still providing a challenge in hopes to illicit progress in feeding skills. Once activities were written up, three volunteers participated in the activities in order to make sure that the directions, required materials, and grading information were easy to follow. Photographs were taken of the volunteers participating in the activities and put into the final book in order to give caregivers a visual of the activity to promote ease-of-use. The activity instructions and photos, along with a book introduction and appendix were compiled, and then printed and bound through a copy and print center.

Special Circumstances, Limitations, or Considerations of the Project

In creation of this project, it was important to consider the usability of this project for the target populations. While this activity book is to be kept with the occupational

therapists at Children's Therapy (CCT), they will copy appropriate pages for a given client, and send them home with their caregivers to implement as a home treatment program. For this reason, occupational therapy jargon on activity pages were omitted or replaced with lay language, so caregivers of multiple backgrounds and education levels can understand the concepts and instructions within. Short and simple words and sentences were used along with easy-to-follow elements such as numbering and bulleting to cater to caregivers of different literacy needs.

It was important to address safety and health issues in this activity book. This book states that the activities are to be performed under the direction of a licensed and registered OT. In addition, it was made clear that these activities must be performed under adult supervision.

Lastly, there are steps that were taken to prevent copyright issues. Any activities or games that were used in the activity book that were from another source were properly cited in the appendix, and the rightful owner of the activity gave permission to the creator to duplicate it. If an activity was merely inspired or adapted from another source, this was stated and cited. In addition, a photo consent form was completed and signed by the parents or guardians of any children that were in the photos in the activity book.

The limitations of this project revolved around time constraints. Scheduling conflicts with the three volunteers made it difficult to find time to pilot the activity with them. This caused the deadline of the book printing to be delayed, so that Cascade Children's Therapy has not yet received the book, and has not yet piloted the activities with their clients. Because of this, the project goals and objectives have yet to be assessed.

Skills and Knowledge Needed for the Project

The following table lists the skills and knowledge that were needed to complete the activity book, as well as if the criteria are possessed.

Table 1	
<i>Skills and Knowledge Needed for the Project</i>	
Posses	Skills and Knowledge
<input type="checkbox"/>	Writing skills
<input type="checkbox"/>	Computer skills
<input type="checkbox"/>	Computer design skills (i.e. using Apple Pages ‘09)
<input type="checkbox"/>	Interview skills
<input type="checkbox"/>	Active listening and observation skills
<input type="checkbox"/>	Collaboration skills
<input type="checkbox"/>	Problem-solving skills
<input type="checkbox"/>	Leadership skills
<input type="checkbox"/>	Teaching skills
<input type="checkbox"/>	Creativity
<input type="checkbox"/>	Therapeutic use of self
<input type="checkbox"/>	Activity analysis (including task grading)
<input type="checkbox"/>	Knowledge of Cascade Children’s Therapy, and their mission statement
<input type="checkbox"/>	Knowledge of the Occupational Therapy Practice Framework
<input type="checkbox"/>	Knowledge of sensory processing differences
<input type="checkbox"/>	Knowledge of feeding difficulties due to sensory processing differences
<input type="checkbox"/>	Knowledge of treatment for feeding difficulties due to sensory processing differences
<input type="checkbox"/>	Knowledge of reading and applying research-based evidence
<input type="checkbox"/>	Knowledge of the Person Environment Occupation Model
<input type="checkbox"/>	Experience with the target population (occupational therapists at Cascade Children’s Therapy)
<input type="checkbox"/>	Experience with the indirect populations (parents of children with feeding difficulties due to sensory processing differences, and their children)
<input type="checkbox"/>	Ability to explain concepts in lay language for indirect populations
<i>Note.</i> “ <input type="checkbox"/> ” indicates that the skill or knowledge is possessed. “ <input type="checkbox"/> <input type="checkbox"/> ” indicates that it is in process of being possessed.	

Materials/Supplies/Equipment Needed and Anticipated Costs

The following table lists the materials and costs for completing this project. Items that are listed at a cost of \$0.00 are personal items owned by the author.

Table 2	
<i>Materials/Supplies/Equipment Needed, and Anticipated Costs</i>	
Cost	Materials/Supplies/Equipment
\$0.00	Oven
\$0.00	Stove
\$0.00	Microwave
\$0.00	Toaster
\$2.79	15 10" plain white paper plates
\$0.00	Black permanent marker
\$0.00	2 drinking cups
\$0.00	Cupcakes tray
\$0.00	2 forks
\$0.00	2 spoons
\$0.00	1 chopping knife
\$0.00	1 spreading knife
\$1.09	100 Toothpicks
\$18.99	1 hand puppet
\$0.00	1 9"x11" baking tray
\$0.00	1 pack of 5 "Food Doodlers"
\$4.49	2 large hand needles without a sharp point
\$0.59	8 feet of craft string
\$0.00	2 pairs of small non-latex surgical gloves
\$2.49	1 large white plastic table cloth
\$0.00	1 Fridge with freezer
\$0.00	5 small toy cars
\$0.00	2 paintbrushes
\$0.00	1 large rectangle cardboard box
\$0.00	1 pair of scissors
\$2.29	5 Cookie cutters
\$0.00	1 cooking pot
\$0.00	1 clear plastic bin
\$2.99	1 bag small toy animals
\$103.50 (\$34.50x3)	3 book copies (printing and binding, 50 pages, premium paper, full-color, double-sided, 5 tabs)
\$47.83	Food/Ingredients
	<ul style="list-style-type: none"> • Celery (\$0.79) • Potatoes (\$1.02)

	<ul style="list-style-type: none"> • Grapes (\$2.48) • Cherry tomatoes (\$3.00) • Carrots (\$0.75) • Broccoli (\$0.75) • Apple (\$0.44) • Cucumber (\$1.09) • Small box of Goldfish crackers (\$1.99) • 4 pack of hotdogs (\$4.39) • White bread (\$1.49) • Popcorn (\$3.59) • Rice (\$3.29) • Small box of raisins (\$0.75) • Cheddar cheese block (\$2.79) • 1 pack Jello (\$1.69) • 1 cup of yogurt (\$0.50) • Food coloring (\$4.99) • Large marshmallows (\$2.99) • Spaghetti noodles (\$0.99) • Cornstarch (\$1.79) • Unflavored gelatin (\$2.79) • Refried beans (\$1.69) • Cottage cheese (\$1.79)
\$20.00	“Pages ‘09” for Mac
\$0.00	Camera
\$0.00	Computer
\$0.00	Blank C-D
\$207.05	Total

Feasibility of the Project

This project was completed May 9, 2013. This project was feasible because of the knowledge obtained through research of sensory processing differences and the effects they have on feeding, the ability to observe treatment sessions serving clients with these challenges through Janine Czerniecki, OTR/L, PT, and access to children volunteers through family and family friends who could pilot the activities. This book has not been received, nor has it been piloted by Cascade Children's Therapy (CCT) because of time constraints revolving around scheduling volunteers. CCT will receive the book May 23, 2013. After several weeks of implementing the book, a survey will be sent via email in order to assess goals and objectives.

It is recommended, when working with this agency that students use other forms of communication besides email. Email responses are not always prompt, whereas phone calls seem to be the more efficient in order to get questions answered and/or to schedule meetings or session observations. It is also recommended to observe many feeding therapy sessions, as sensory processing differences present themselves differently in each child experiencing them, and each child's feeding skills are affected differently with these challenges.

Future Steps and Recommendations

Once CCT has received the book, utilized it for several weeks, and returned the survey to assess the goals and objectives of the project, the book will be edited pertaining to the responses to make it most beneficial to therapists. At the University of Puget Sound Occupational Therapy Program poster symposium in May 2013, many pediatric occupational therapists expressed interest in acquiring the book for their home treatment

programs. Because of this, the book will be reviewed by the occupational therapy program's library liaison to check that it abides by all copyright restrictions for publishing, and then it will be published and sold to those wishing to purchase it. It is hoped that this project will be accepted to present at the Washington Occupational Therapy Association (WOTA) conference in October 2013 as a poster presentation. A form will be provided at the WOTA presentation so that therapists can order a copy of the book, if desired.

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Human Resources

Heidi Hynes, OTR/L
Therapy Services for Children
2005 NE Northgate Way
Seattle, WA 98125-6646

Janine Czerniecki, OTR/L, PT
Cascade Children's Therapy
16030 Bothell-Everett Hwy. Suite 140
Mill Creek, WA 98012
(425) 338-9005

Appendix A

The following is the introduction to the book:

Introduction

Acknowledgments

I would like to thank Lucretia Berg OTR/L, for not only being the editor and committee chair for this project, but for being an amazing source of support throughout it all. I would also like to thank therapists Janine Czerniecki, OTR/L, PT, and Heidi Hynes, OTR/L, for helpful input and experience in the world of sensory processing differences and feeding. This project would not have been the same without all of the amazing bloggers who inspired some of the activities. These bloggers have been cited in the appendix of this book. Lastly, I would like to thank my adorable superstar volunteers, Charlie Langsev, Nick Steffy, and Kaitlyn Steffy for playing these fun activities with me, and supporting children with sensory processing differences.

What is “Eat, Play, Love?”

“Eat, Play, Love” is a book from which therapists can provide a home treatment program for their pediatric clients that have feeding difficulties due to sensory processing differences. The philosophy of “Eat, Play, Love” is that children should experience food in a playful context. This helps remove the fear and pressure of eating that many children with feeding difficulties experience. The purpose of these activities is to improve food tolerance and increase food repertoire in these children using playful and sensory-rich exploration. Each activity can be graded up or down to meet the child at his or her level, yet still provide some challenge to improve feeding. Therapists have permission to photo copy activities from this book, and send them home with the client’s caregiver to implement with the child in the home as an adjunct to in-clinic treatment.

Choosing an Activity

Therapists should choose activities that best line up with both the child's sensory feeding goals, as well as the child's abilities and interests. Therapists should also choose the best grading options from the provided grading lists on each activity page.

Food Choices

Some activities instruct the use of "favorite foods," "tolerated foods," and "refused foods." A favorite food is a food that a child enjoys to eat over other food choices. A tolerated food is a food that is not a child's favorite, but one that he or she will eat without showing signs of distress such as cringing, crying, spitting, gagging, and/or vomiting. A refused food is a food that a child does not eat when asked, and that may cause the child to show signs of distress.

Caregiver Handout

A handout for caregivers is available in the appendix. This handout explains the philosophy of the activities, how they should be implemented in the home, and any safety information that is needed. Please provide this handout to caregivers upon giving them activities for their child.

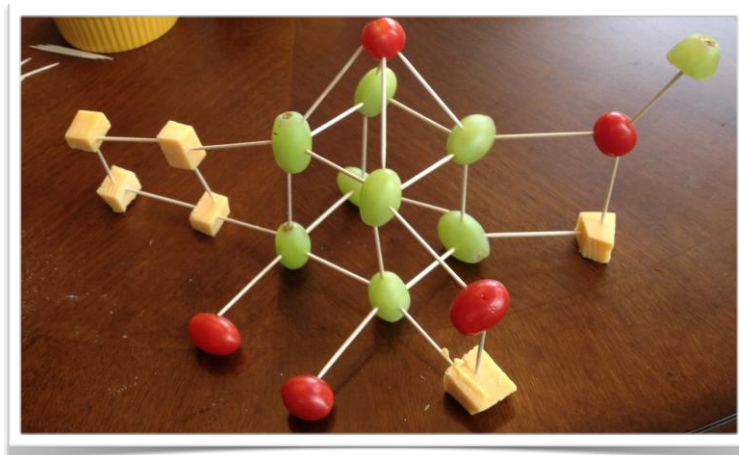
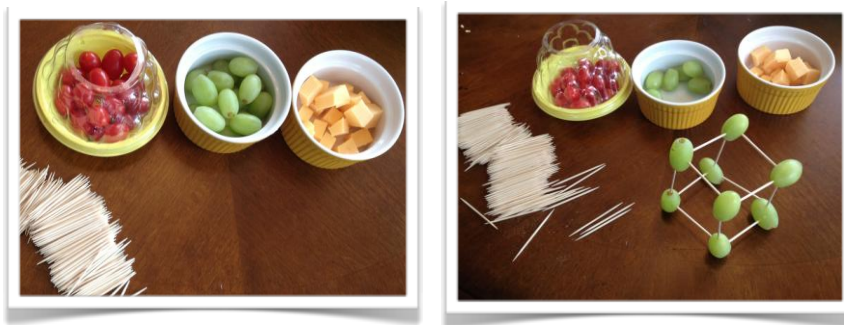
Safety

The activities of this book should only be used under the direction of a licensed and registered occupational therapist. Children should never participate in these activities without adult supervision due to choking hazards. Children should never participate in an activity containing ingredients that they are allergic to. Children should never put non-food items in their mouth, besides those meant for it, such as utensils and cups.

Appendix B

The following is an example of the “Build-It-Up!” activity from the book:

Build-It-Up!



Description: Build shapes and structures using food and toothpicks

Materials:

- Small bowl of grapes
- Small bowl of cherry tomatoes
- Small bowl of cheese cubes
- Toothpicks (or pretzel sticks)
- Knife
- Bowl

Instructions:

1. On a large flat surface, offer the child to build using the toothpicks and/or pretzel sticks as connectors
2. If desired, eat the constructed items, being cautious of toothpicks

Grading Up:

- Encourage the child to use all three types of food in their structure
- Add more food pieces such as melon balls, carrot coins, etc.
- Put all food pieces in the same bowl so the child touches multiple food types while grabbing something
- Remove or substitute food pieces that are easily tolerated by the child with more difficult ones
- Prepare a meal or snack with the experienced foods

Grading Down:

- Remove or substitute food pieces that are difficult for the child to tolerate with easier ones
- Offer the child to wear plastic or medical gloves
- Offer the child to observe you and/or his/her peers participate in the activity. Keep the child involved in the activity by asking him/her questions, making comments towards him/her, and overall engaging him/her in the conversation around the activity

Appendix C

The following is the caregiver handout from the book's appendix:

Caregiver Handout**What are “Eat, Play, Love” activities?**

“Eat, Play, Love” activities are games and crafts that expose the child to various foods in a playful and sensory-rich manner. These activities remove the fear and disinterest in food that a child may experience, by maintaining this playful context, and also by eliminating the pressure to eat or taste foods. The purpose of these activities is to increase food tolerance and food repertoire.

Grading

Each activity has various options for grading it up or down. Grading an activity up makes the activity more difficult, whereas grading an activity down makes it easier. The purpose of grading an activity is to meet the child at his or her level while still providing a challenge to progress their skills.

Participation

“Eat, Play, Love” activities are designed for caregivers to engage in with the child, supporting the child as needed. All activities are flexible in that peers and siblings can join the child to add even more of a playful and social layer. If a child refuses to participate, it may need to be graded down, different foods may need to be used, or the child may need to begin by observing the caregiver and/or peers participate in the activity. A child should never be forced into

participating in an activity, as these activities are designed to remove the fear and pressure that some children feel with food.

Food Choices

Some activities instruct the use of “favorite foods,” “tolerated foods,” and “refused foods.” A favorite food is a food that a child enjoys to eat. He or she will consistently choose this food over others. A tolerated food is a food that is not a child’s favorite, but one that he or she will eat without showing signs of distress such as cringing, crying, spitting, gagging, and/or vomiting. A refused food is a food that a child does not eat when asked, and that may cause the child to show signs of distress.

Safety Information

The activities of this book should only be used under the direction of a licensed and registered occupational therapist. Children should never participate in these activities without adult supervision due to choking hazards. Children should never participate in an activity containing ingredients that they are allergic to. Children should never put non-food items in their mouth, besides those meant for it, such as utensils and cups.

