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Sensory Integration Educational Material for Parents and Caregivers

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SENSORY INTEGRATION EDUCATIONAL MATERIAL FOR PARENTS AND CAREGIVERS

by

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This Scholarly Project Paper, submitted by Sarah Urvand, MOTS and Samantha Wilmot, MOTS 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 Faculty Advisor under whom the work has been done and is hereby approved.

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Faculty Advisor

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ABSTRACT

During a review of the literature, we identified a lack of information that was geared towards parental education specifically regarding sensory integrative diagnoses and treatment interventions.

Research articles were obtained after we conducted a literature search using the PubMed, ERIC, and CINAHL databases found on the University of North Dakota Harley E. French Library website (http://undmedlibrary.org/). Several texts and other books that we owned were also utilized in the literature review process due to their direct correlation to this scholarly project and the relevance of the material found in the texts. We also contacted Ellen Cohn, who was a lead researcher on many of the studies that the students read as part of their literature review, via e-mail to gain more information about parent education materials that were already in circulation.

The information gathered from the review of the literature demonstrated the variance in the evidence regarding the efficacy of sensory integrative treatment interventions. This variance was significant to the formation of this scholarly project as many parents are not well versed in medical terminology and they may access one source of literature that does not fully describe the use of SI treatments and provides skewed data about the effectiveness of these treatments for many client diagnostic populations. The literature also provided evidence for the importance of parent education to provide the parents with coping skills and to help them adjust to raising a child with a sensory integrative deficit. Parents also identified that being involved in a support group with
other parents who had children with similar dysfunctions was beneficial to their learning about their child’s diagnosis and learning coping skills and other strategies.

From the literature review, many areas emerged that are important to build parent education material upon. These findings guided the development of our three products. We created a pamphlet that is to be given to the parents to provide them with a brief overview of sensory integrative dysfunctions and the therapy process. Next we created a PowerPoint presentation that the occupational therapist can use to provide further education about SI and activities the parents can incorporate into their routine at home. Lastly, we created a website that encompasses many areas that may be unclear to the parents. This website has a variety of different sections that were written at a fifth grade level to ensure that most parents would be able to read and understand the information.
CHAPTER I
INTRODUCTION

Statement of the Problem

Based on a review of the literature, we identified a lack of information that was geared towards parental education specifically regarding sensory integrative diagnoses and treatment interventions.

Purpose of the Scholarly Project

The lack of easily accessible information and considering the level of comprehension needed by parents to understand the materials available, we felt that creating reader friendly parent educational materials would positively impact the occupational therapy process, as well as the relationship between caregivers and therapists involved in the treatment process.

Significance of the Problem

When children are diagnosed with any disorder or disease, it often places strain on the family system—to varying extents—due to lack of understanding about the diagnosis, uncertainty of the future of the child, denial of potential disabilities, and fear of the unknown that many parents have when something is wrong with their child. The importance of providing education to parents and caregivers at the outset is tremendous and allows these caregivers to become involved and often vital participants in the therapy process. When a child receives sensory integration (SI) therapy the occupational therapist often sends home “homework” activities for the parents to complete with the child. If the
parents have better understanding of the child’s diagnosis and the therapy process they will be better able to participate in the child’s home program.

Many therapy programs do not simply stop after the child attends a therapy session; building on skills and abilities and practicing various occupations will continue when the child is not at therapy and is at home. Providing education both about the child’s diagnosis as well as programs and activities that can be done with the child at home will allow the parents to be involved and will also facilitate adaptation, learning, and change in the skills the child is working on while involved in therapy services. When children receive therapy services that include the use of sensory integration techniques, it is important that the parents also learn how to use certain SI techniques while they are at home. A sample SI program that the parents may be taught to incorporate into the home program they complete with their child is the Wilbarger Brushing Protocol. It is important that the techniques that will be part of the home program be taught to the parents by the occupational therapist and it is also important that the parents demonstrate relative mastery when practicing the techniques in front of the therapist.

**Model and Frame of Reference**

The Occupational Adaptation model and the Sensory Integrative frame of reference were utilized to guide the development of this scholarly project. We found their guiding principles to encompass the outcomes anticipated in regards to the products being developed and the goal of parental benefit parents through the use of these products.

**Definition of terms**

Sensory Integration is the process of the brain interpreting and processing the information it gathers from external stimuli acting on the body. Sensory Integrative (SI)
therapy is used to retrain the brain to understand and correctly process the information it receives.

Conclusion

The topic for this scholarly project was chosen by us based on the perceived need parents have for obtaining education about their child's diagnosis and the treatment process they will be involved in, specifically sensory dysfunction and SI therapy. The subsequent chapters include a review of the literature, which supports the need for parent education in the SI treatment process, a synopsis of how the literature review was conducted, the products that were developed and created for this scholarly project, and limitations and recommendations for further development of these materials.
CHAPTER II

REVIEW OF LITERATURE

Introduction

In an attempt to gain and provide information about the various aspects that are facets of sensory integration (SI) treatment, we have reviewed a variety of informational resources—articles, published reviews, case reports, and evidence-based literature—to understand the various aspects of SI theory and treatment. Following this introduction, the information presented is arranged so that the readers can become accustomed to SI concepts and diagnoses, treatment interventions, and literature regarding the roles and thoughts of parents.

Our scholarly project focuses on providing information for parents of children who have sensory integrative dysfunctions and the literature review focuses on many of the facets that will be incorporated into the parent education materials developed for this scholarly project.

Method for Reviewing the Literature

A search of all recent literature was conducted using PUBMED, CINAHL, and ERIC databases, available through the Harley E. French Library homepage which is part of the University of North Dakota School of Medicine and Health Sciences website. The students initially searched for articles that related to parent education materials already in circulation. This search returned no results within the realm of occupational therapy. The students then focused their search criteria to locate literature that pertained to parental
perspectives throughout their child’s course of treatment and also on sensory integrative therapies that are currently being utilized by practicing occupational therapists. Research based articles were sought for the literature review, however, due to the paucity of evidence-based articles, non-research based articles were also included in the search and discussion.

The literature was first reviewed according to three categories that emerged; research-based articles, non-research based articles, and articles that discussed parent perspectives. After reviewing the literature, the students determined what themes were present throughout the articles and re-organized the outline for this chapter according to various aspects of sensory integration (SI) that emerged from the literature. Organizing the literature review in the manner as to which it is laid out, will allow the reader to gain a broad sense of the literature available regarding SI and the thoughts of parents while also looking at the involvement of the brain during sensory integrative dysfunctions.

History

Sensory integration therapy (SI) was founded by A. Jean Ayres, PhD, an occupational therapist with additional training in neuroscience and psychology. Ayres worked with children who were neurologically disabled (Schaaf & Miller, 2005). Ayres worked with other professionals to develop a treatment for children with difficulty in the areas of learning and behavior. These difficulties were attributed to the inability of the child’s brain to properly integrate sensations their bodies were experiencing (Ayres, 2000). In Sensory Integration and the Child, Ayres (2000) explains that all children’s brains must develop ways to integrate sensory experiences. Most children are able to do
this through their own self-directed play. Some children however, are unable to develop these skills on their own. According to Ayres (2000):

> The neurologic problem in the child with minimal brain dysfunction or sensory integrative dysfunction prevents him from processing the sensations of his own play, so he cannot develop the adaptive responses that organize the brain. In other words, the child may play, but he does not play in a manner that is integrating. He needs an environment especially designed to meet his needs. (p. 139-140)

After working with and experiencing success with children who had behavior and learning difficulties, Ayres and Tickle used the SI approach with children who were diagnosed as having autism. They found that using SI with this population was effective in decreasing sensitivity to sensations such as touch and sound (Schaaf & Miller, 2005).

Over the course of the years since Ayres first developed SI, it has been used with diverse populations including children with autism, Down syndrome, fragile X, and others. SI has also undergone some minor modifications mainly in the areas of categorizing treatment needs and research methods. According to Schaaf and Miller (2005), treatment needs are now categorized into three broad groups of sensory disorders: "sensory modulation disorders, sensory discrimination disorders, [and] sensory based motor disorders" (p. 145). There has recently been a push in the area of pediatric occupational therapy for more research of an empirical nature that supports the use of SI (Dawson & Watling, 2000). Treatments have also become more technologically advanced as the computer age has progressed and technology has increasingly become a part of everyday life.
When Ayres described the application and activities of SI therapy, she specifically discussed sensory input from a number of sensory modalities including proprioceptive, vestibular, auditory, visual and olfactory systems. She placed particular emphasis on the importance of vestibular stimulation during therapy (Ayres, 2000). All these systems, and the emphasis placed on the vestibular system, continue to be the focus of stimulation during SI treatment (Case-Smith & Bryan, 1999; Uyanik, Bumin, & Kayihan, 2003). The articles reviewed mainly illustrated similarities in the original SI principles and what is currently in practice.

In 1997 the American Occupational Therapy Association (AOTA) issued a statement regarding the practice of SI in school settings. This document sets forth the parameters of the SI frame of reference as it currently stands (1997). This gives therapists a framework in which to build their treatment sessions and protocols. It can also serve as a reference for other professions to obtain a quick overview of SI in occupational therapy and what the parameters and aims of treatment are.

_Sensory Integration and the Neurological Processes_

Sensory input can be applied to the body in various ways—whether it is touch, proprioception, feeling the effects of gravity, temperatures, and pain. For children, experiencing new sensory stimuli can be a scary experience and may cause the child to develop dysfunctional sensory preferences that interfere with his/her daily functioning.

When sensory input is applied to any part of a child’s body, the stimuli from the input source are transmitted to the spinal cord, further processed, and relayed via the somatic sensory pathways to the thalamus and the primary somatosensory cortex of the brain. Within the sensory cortex, further processing and integration of the sensory
information allows an appropriate response (or non-response). When the stimuli are not processed correctly, the child’s brain may tell him/her that the sensation he/she just experienced was, to varying degrees, unpleasant. For example, a soft fabric touching a child may feel excruciatingly painful. Sensations can be provided to the body through various means such as textures of clothing or objects; substances that feel slippery, coarse, or sticky; various textures associated with foods; and vestibular stimuli such as spinning, jumping, or swinging.

Sensory integration begins during fetal development and continues throughout the lifespan. Early sensory integration experiences contribute to and influence the achievement of developmental milestones. They also influence what forms of play children engage in and how they participate in that form of play. Children who experience sensory integrative dysfunctions may hesitate to join an activity or they may not play with objects because they receive aversive sensory input from these activities and objects. Due to the fear or pain these children experience, their aversions may impact the family and its dynamics. If the child does not like to engage in play off the ground, it may limit what activities the family can participate in (i.e. the family may not fully enjoy an outing to the playground because their child with an SI dysfunction may not participate and play on the equipment). The information found in this section describing the neurological aspects of sensory integration was adapted from Ayres (2000) and Bear, et al (2001).

Efficacy of Sensory Integration

Finding empirical scientific based research articles dealing with the efficacy of OT using an SI approach proved to be somewhat difficult. Most articles presented a
qualitative rather than quantitative approach. Case studies of children who were receiving or had received occupational therapy were available in the research. Young (2006) examined two case studies where SI treatment was utilized with children who were being seen for psychological reasons. Effectiveness of SI in these cases was demonstrated after just nine treatment sessions (2006). Case-Smith and Bryan (1999) also used a case study approach to study the effects of SI on five pre-school aged children diagnosed with autism. They analyzed the results of each child’s treatment separately and then as a whole. In four different target areas they found improvement in at least one child and in some of the target areas as many as four of the children showed significant improvement after the SI treatment sessions (1999). Although these articles cannot be generalized to the broad population, they do indicate that significant improvement can be made when treating children with an SI based therapy regimen. Uyanik, et al. (2003) conducted a study comparing three treatment types: SI, SI with additional vestibular stimulation, and neurodevelopmental therapy (NDT). NDT techniques include positioning and massaging to facilitate or inhibit the firing of muscle fibers. The authors found that SI with additional vestibular stimulation was the most effective treatment method (2003). This is congruent with Ayres work. She stated the importance of vestibular stimulation and noted that it was likely the most important input that a child could receive during an SI treatment session (Ayres, 2000).

Vargas and Camilli (1999) conducted a meta-analysis of SI studies that were research based and published from 1972-1998. They found no statistical difference in SI over other treatments when all the data from the articles were compiled and analyzed. They did however note some trends in the literature. They found that the earlier articles
were more likely to support SI treatments than the newer articles. They also found that more studies were published in the early years of the time frame than they were in the more recent years (1999), suggesting that more research was being done in the early years of SI and for some reason has become less researched in the present. It may be concluded from this finding that SI no longer needs to be as heavily researched now because it is an accepted treatment method. However, the authors emphasize that “... the concept of sensory integration has been the subject of controversy in the fields of neuropsychology, education, and medicine” (p. 189). Although SI is widely accepted by the OT community, research should continue until we are able to present scientific evidence to other disciplines that supports the use of SI in the pediatric population.

As with any review of the literature, articles disputing the effectiveness of the SI approach were also found. Leemrijse, et al. (2000) found that SI is not significantly effective compared to other treatment options when used with children who have developmental coordination disorder (DCD). They also found, however, that some of the parent reports indicated improvement in the child’s functional abilities during the control period. This indicates that parents may have been seeing deficits that were more of a problem in their own minds than a true problem. When they had the assurance that their child was being treated, these deficits began to clear up even in the absence of true treatment (2000). Salokorpi, et al. (2002) also found SI to be an ineffective treatment over the course of a long-term study with extremely low birth weight infants. They saw improvements in the children receiving SI therapy after a six-month period but when the children were evaluated again at four years of age there were no significant differences in
abilities between the children who had received SI and those who had been in the control group.

Although the findings regarding OT using an SI approach vary, the need for more research and more evidence is easily discernable. It is apparent from this information that, although full support for the use of SI does not exist, it is still an important treatment, which should be utilized and further studied to find the most effective uses of this approach for children of many diagnoses.

*Sensory Integration and Various Diagnoses*

Ayres (2000) originally, beginning in the 1970’s, worked with children who had learning and behavioral problems, later extending her treatments to children who were diagnosed as having autism. In those children with learning and behavioral problems Ayres targeted problems such as sensory integrative dysfunction, sensory defensiveness, dyspraxia, visual-perceptual disorders, and hearing-language disorders (2000). As the development of SI therapy proceeded, new populations that can profit from this approach have been identified. Schaaf and Miller (2005) stated that SI may be used with children who have been diagnosed with learning disorders, autism and autism spectrum disorders, regulatory disorders, fragile X syndrome, attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD), and children who have been in environmentally deprived situations. Another study completed by S.B. Young (2006) supports the use of SI techniques with children who are seen for psychological reasons. The study suggests that as the sensory integrative troubles experienced by the children improved, there was a positive effect on the psychological issues the children were facing.
SI is widely used with children who have been diagnosed with autism. There are multiple studies to support this use. However, the focus of this literature review was not autism and only two articles in this review address this population. Case-Smith and Bryan (1999) as well as Dawson and Watling (2000) both maintain that the use of SI for children with autism generates significant positive results. The use of occupational therapy with an SI emphasis in preschool aged children who have autism was shown to decrease the frequency of non-engaged behaviors and increase the frequency of engagement of goal-directed play (Case-Smith & Bryan, 1999). Smith, Press, Koenig, & Kinnealey (2005) found that similar treatments also decreased the number of self-injurious behaviors that a child engaged in by up to 11 percent.

Developmental coordination disorder (DCD) is a disorder that affects motor performance and coordination in children. Children with this disorder often are clumsy and have difficulty keeping up with their peers in gross motor play. Leemrijse, et al. (2000) completed a study of SI compared to Le Bon Depart (LBD) treatment for children with DCD. Their findings suggested that LBD was more effective for this population. However, the most positive effect was identified when the children received a combination of both treatments (2000). This is an important finding because it supports the use of SI but not as a primary therapy. It is important to remember that many times a combination of therapies may be the most effective approach. A study by Uyanik et al. (2003) also supports the combination of SI with other therapies in children who have Down syndrome. They found that SI should always be combined with vestibular activities such as swings and ball activities. They also found that combining SI
techniques and NDT techniques was effective in increasing the functional abilities of the children in the study (2003).

Children with sensory disorders fall into two categories, sensory seeking or sensory avoidant. Those children who engage in self-injurious behaviors may utilize the input they receive from participating in those behaviors as a way of providing themselves with the sensory input they seek in order to calm themselves, even though these behaviors are often harmful. Smith, et al. (2005) researched what effect, if any, sensory integration interventions would have on the number of self-injurious or self-stimulating behaviors seen in children who engage in these behaviors. The clients were treated for four weeks and during weeks one and three the child completed control group interventions that consisted of tabletop activities, while during weeks two and four the client was provided with and engaged in sensory integration interventions. What the researchers found at the conclusion of this study was that during the weeks when the children were given the sensory integrative treatment, the number of self-injurious/self-stimulating behaviors the client engaged in decreased by 11%. Conversely, during the two weeks that the control interventions were applied, the clients' behaviors increased in frequency by 2%. While more evidence-based studies are needed to support or refute these findings, the data so far support the notion that sensory integration therapy is effective and beneficial.

Royeen & Lane (as cited in Stagnitti, Raison, & Ryan, 1999) discussed the concept that "tactile defensiveness is now hypothesized to be a disorder in the modulation or regulation of tactile sensory input" (p. 176). Some children are easily startled or avoid the stimuli that provide sensations that they perceive will hurt their skin or body when
touched or engaged in movements. The children, who present with these characteristics or behavioral implications, may suffer from sensory defensiveness syndrome, which will have an effect on their day to day functioning and may have a large impact on the activities of play they engage in or how they act behaviorally at school. If you can easily identify what stimuli the child is aversive to and reacts negatively to, you can design a course of treatment that is most appropriate for helping the child overcome his or her reactions to those stimuli. Also identified in the article by Stagnitti, et al. (1999) was an indication of sensory integrative treatments that can be used during therapy when treating children with sensory defensiveness syndrome. They discussed using modification of the environments that the child frequents in order to reduce the amount and type of offending stimuli present, as well as providing direct therapy to the child using sensory integration techniques that includes the use of a brushing program.

Research is currently investigating the use of SI with infants who have extremely low birth weights. Although at this time the findings are inconclusive and suggest that SI doesn’t have long-term effects, further research is needed to more completely understand this application of SI with this population (Salokorpi, Rautio, Kajantie, & Von Wendt, 2002). In many populations there has been an attempt to use SI but the evidence has not been established and therefore the use of these techniques has not continued. It is important to note that this review does not include all of the possible populations that can benefit from SI; rather, it includes those with which SI is most commonly used.

*Sensory Integrative Treatments*

As noted above, SI treatments include stimulation to tactile, proprioceptive, vestibular, auditory and olfactory systems. Many activities can address one or more of
these areas at a time. Therapy is ideally child-directed, although this is not always possible (Ayres, 2000). Hand-eye coordination tasks such as grab and place games may be used during SI treatments (Salokorpi, Rautio, Kajantie, & Von Wendt, 2002). Touch boards with different textures and shapes may also be used. Having children complete puzzles and image searches are also appropriate activities that can be utilized (Uyanik, Bumin, & Kayihan, 2003). Swings, scooter boards and tilt boards are also effective and commonly used materials around which multiple activities can be designed (Ayres, 2000). Also, Ottenbacher (1983) found that controlled vestibular input and vestibular therapies demonstrated positive effects on “arousal level, visual exploratory behavior, motor development, and reflex integration in infants who are at risk and in young children with developmental delay disorders” (p. 341). The use of vestibular stimulation may also increase the child’s body image, which will allow the child to feel more comfortable and confident in his or her body. These studies discuss and provide evidence and literature regarding various sensory integrative treatments that are being used in occupational therapy practice today. They also provide literature to parents documenting the success seen with various populations and SI treatments and support what their child’s therapist may be utilizing during the treatment process which in turn may help parents understand that while many SI treatments look like just play, they are a lot more to the child.

In conjunction with the numerous activities employed by therapists administering SI therapy, weighted vests are often used to apply additional proprioceptive input to a child. Olson & Moulton (2004) completed a survey to investigate the views of therapists who employ the use of weighted vests in their sensory treatments. Over half of the
respondents stated that they use the weighted vests in their practices and the common benefit they saw was an increase in positive behaviors while the client demonstrated a decrease in negative behaviors. Many of the therapists who participated stated that they felt they needed more knowledge about the use of weighted vests in order to feel competent in using that specific modality (2004).

Although SI treatment is generally thought of as taking place in the clinic with a licensed therapist, it can also take place in the form of a home program. Bumin and Kayihan (2001) found that those children in both the individual intervention settings and those in the group intervention settings improved more on their post-test scores than the children in the control group that received only the home program. This does not indicate that home programs are ineffective however these findings coupled with the findings of Salokorpi et al. (2002) indicate that home programs are most useful when combined with outpatient or in school therapy. SI can also be offered in a group setting where children not only work on reacting appropriately to environmental stimuli but also learn to interact appropriately with each other (Bumin & Kayihan, 2001).

Children’s Primary Occupation of Play

In occupational therapy practice, play is considered the primary occupation that children engage in. Miller and Miller-Kuhaneck (2006) published two literature reviews as part of a series addressing the importance of sensory integrative preferences and other factors that guide children’s play. The first article focuses on the importance of play and the intrinsic motivation that drives a child to engage in certain playful activities from a theoretical view. The article states that one of the beliefs of SI theory is, “...children’s play preferences are guided by their inner drive and motivation for mastery, which is
influenced by their patterns of sensory preferences” (p. 1). Children are more likely to engage in play activities if they are intrinsically motivated to participate in the activity or to play with a toy (2006). As a therapist, being able to tap into the child’s internal motivation will allow the child to engage in more client-centered practice, which is what therapists strive to provide. This can also be beneficial to the child as they will be able to experience mastery over pieces of their environment and gain confidence to explore their surroundings without as much fear and anxiety associated with confronting new sensory experiences.

Each individual child has unique sensory preferences that he/she has gained throughout his/her lifetime. These preferences may come in the form of objects, sensory stimuli present, color, or any other number of object and activity characteristics. These characteristics may carry on into the child’s adult life and therefore if the child has maladaptive sensory patterns or aversions these may be problematic to adaptation in childhood and in later life. Sensory integrative treatment interventions attempt to regulate and normalize the adaptive responses that occur in response to sensory stimuli that is acted on various parts of the body in many different ways (Ayres, 2000). Helping the brain to reinterpret sensory stimuli will benefit children and allow them to be more engaged in their environment, during play, and within their family systems.

The information from the two articles by Miller and Miller-Kuhaneck (2006) illustrates the importance of a child being able to experience sensory stimulation and properly process it. Without proper sensory integration children cannot interact sufficiently with their surroundings and then are at risk for missing important milestones and learning experiences that other children their age experience.
Humphry and Wakeford (2006), discussed the importance of the relationship between the occupation of play and the process of development. Many skills are developed first through the means of play and, later on in the developmental spectrum, these skills are adapted and integrated into the occupation of education. According to the authors, skills developed through play may include creativity, problem solving, cooperation, gross motor skills, and fine motor or object manipulation. These skills will be used during the child’s education and if these skills are lacking or dysfunctional, they may require therapeutic services to practice these skills and gain mastery over them.

Children also engage in different forms of play and these forms change as the child grows older and becomes more confident in his or her abilities. A child may play by him or herself but be playing next to another child or he or she may play cooperatively with another child. How a child plays and interacts with his or her peers is important for parents, teachers, and therapists to observe, as many school activities are done in groups, and children engage in social interactions during the school day in a variety of environments and contexts. These interactions may support or detract from a child’s learning and should be taken into consideration when therapy services are going to be provided or if the child needs assistance regulating the sensory stimulation he or she is experiencing.

For some children with sensory integrative dysfunctions, the symptoms and characteristics may not be noticed or seen as dysfunctional to the child until he or she enters the school system. These SI dysfunctions may manifest as behavioral problems as opposed to presenting as SI dysfunctions. The teacher can be a source of reporting to the
parents or caregivers and may urge them to seek medical interventions. If the child does not know how to effectively cope with the sensory stimuli being received, he or she may feel embarrassed, ashamed, or upset and those feelings may contribute to feelings of low self-esteem. Having an understanding of the child's SI dysfunction and being able to discuss this with the class may help the other children become aware of differences among themselves. Each individual likes and dislikes different things and being able to show that these differences are okay is important in regards to peer relationships and engaging in activities during school and other extracurricular activities.

*Parent Perspectives on Various Facets of the Treatment Process*

Involving family members in a child’s treatment program is beneficial to the child and the family dynamics that are integral parts of these relationship systems. Several studies that are part of this literature review discuss various perspectives of parents throughout different stages of the treatment process. Candler (2003) and Weatherston, Ribaudo, and Glovak (2002) both discuss utilizing family members as analytical tools to determine the effectiveness of sensory interventions. In both of these articles, the parents of children with sensory integrative dysfunction relayed information to the primary therapists working with their child either verbally or by completing a section of the Canadian Occupational Performance Measure (COPM) that determines the client’s performance and level of satisfaction with this performance. In the case of completing the COPM, the parents filled out the questionnaire in regards to their child’s level of functioning.

Family perceptions are integral in determining the outcome and efficacy of sensory integration treatment and allow the family to be involved in their child’s therapy
program. The therapist can also gain information about how a child functions at home as opposed to how the child interacts in other settings such as school or church. Families are often better able to report if a significant change has taken place in regards to their child’s behaviors as they are with the child for more hours than the therapist is present.

In 2001, Cohn conducted a study of parents who spent time in the waiting room while their children were participating in their therapy program. In her interviews with the parents, many stated that at first they sat in the waiting room and read magazines or other isolating activity. The parents then stated that as the frequency in which they saw the other parents in the waiting room increased, they began talking to one another. As they talked, they formed a small support group where they felt free to talk about difficulties they were having with their child or with their therapy and the other parents were able to provide suggestions or coping strategies. The parents felt that these support groups were beneficial to their well being as parents and the groups provided a place to talk about their difficulties, frustrations, and family dynamics with other parents who are going through many of the same struggles. Many parents also identified that they felt uneasy talking to extended family members, friends, or others who did not have a child with a sensory integrative dysfunction because they felt that these individuals did not fully understand what the parents were going through (2001).

Feeling misunderstood can create tension in relationships, especially those that are already strained due to an illness. Support groups are a way to create a nurturing environment for parents of children with sensory integrative dysfunctions to be able to talk about various issues and struggles that they are dealing with. Also, because the other parents are often going through or have gone through many of the same struggles, they
are able to offer advice, comfort, and understanding about the difficulties associated with the amount of therapy time needed per week, the strain an illness places on the family, and the feelings of inadequacy that parents feel when something is happening to their child that they are unable to control.

Another finding that emerged out of Cohn’s work was that when parents sat in the waiting room, they had a tendency to compare their child with the other children who were there to receive services. Cohn found that when the parents compared their child to other children that the parents often perceived that their child’s dysfunction was not as profound as those they observed in other children. This new viewpoint allowed the parents to modify how they perceived and treated their own child (2001).

The downward social comparison mentioned above is important to understand as many families wait in clinic waiting rooms each year. Being able to identify and socialize with other families in this context allows individual families to gain a perspective about their situation in relation to others around them (2001).

Parents often place a great deal of investment into their child’s therapy program and are often present during the intervention sessions. It is important for therapists to talk with the parents about the benefits and the contraindications of particular treatment interventions so that the parents are able to assist the therapist in making the best choice for their child. Parents often have hopes for what these therapies can do. Cohn, Miller, and Tickle-Degnen (2000) conducted a study to determine what themes emerged in regards to parents’ hopes for their child’s treatment and what the parents themselves hoped to learn from attending their child’s therapy sessions. The outcomes of the study identified several hopes that parents had for their children and hopes for themselves. The
parents hoped for their children that they would gain skills to participate socially with their peers and family, that they would gain skills that would increase their ability to self-regulate their behaviors, and to increase the child's level of self-confidence. The parents identified for themselves that they wanted to be able to better understand their children and the behaviors that they display in order to connect with their child at a greater depth, and they also wanted to receive some affirmations that they are doing what they should be doing to help and parent their child. Providing the parents with positive affirmations will increase their confidence in their parenting skills and will decrease feelings of guilt and blaming. Therapy sessions are also an ideal time to involve the parents and/or other siblings into the treatment regime so that the family can connect and learn ways to interact with the child who has a sensory integrative disorder. This will allow the parents to learn skills to help their child regulate their sensory input and will also provide a bonding experience for the family.

While interacting and conversing with parents is a strategy to provide parents with coping skills, another is to gain education from the occupational therapist in regards to specific interventions and strategies that are unique for each child. Cohn and Cermak, (1998) reported that another strategy for providing a nurturing family environment is for the occupational therapist to provide education and information to families who have a child who has been diagnosed with a sensory integrative disorder. Understanding the disorder, the difficulties or problems that are manifesting and the treatments will allow parents to be more involved in their child’s therapy program and will also allow parents to utilize strategies and techniques that may calm their child or reduce the amount of behaviors that the child displays throughout the day. Parent education about all aspects of
sensory integrative treatment including the diagnosis, the problem manifestations and the interventions will also allow the parent to view their child differently and bond with their child in ways that they did not allow themselves to do in the past (1998).

The results from a subsequent study conducted by Cohn (2001) supported the above statements regarding the benefits that the parents gaining a new perspective about their situation and their child’s disability has on the family dynamic system. This article also discusses the parents need to know that they are doing the right thing for their child and are not “bad parents” because they are unsure of how to best help their child. Again, educating the parents about various techniques that can be utilized with their children allows them to feel a sense of mastery by gaining knowledge about these techniques that may help their child regulate the amount or type of sensory stimulation that they are receiving from the surrounding environment (2001).

Conclusion

SI is a complex, multi-faceted treatment approach for children across a broad spectrum of disabilities and diagnoses. An SI treatment regimen can be intense and difficult for a parent or caregiver to understand. In the literature reviewed above many of the components of SI dysfunction and treatment are identified and discussed. Treatments of this nature can be controversial in professions outside of occupational therapy and parents may be confused and unsure if this is the correct treatment approach for their child and family’s needs.

The subsequent chapter will discuss the methods used to gather information and develop the products and materials that comprise this scholarly project. The information
outlines search engines and methods, personal correspondences, and terms used to define relevant literature.
REFERENCES


CHAPTER III

METHOD

This scholarly project is aimed at providing comprehensive and versatile materials to help therapists guide the learning process for the parents of their patients. These products will bring sources together to provide a single source that addresses a broad range of topics and gives parents a broad base of introductory knowledge with which to start their search for understanding in the therapy arena. The intent of these materials is to offer different strategies for providing education to parents to allow them to choose the method and level of learning that they prefer and can fit into their schedule. This variation in the types of learning materials will also allow them to choose the type of educational material that will be the easiest for them to read and understand.

The information utilized to provide evidence in support of the product developed for this scholarly product came from a variety of literary sources of different mediums as well as from a personal interview we conducted during the creation of this product. Research articles were obtained after we conducted a literature search using databases found on the University of North Dakota Harley E. French Library website (http://undmedlibrary.org/).

The databases that we used to search for journal articles that were pertinent to the topic of this scholarly project were PubMed, ERIC, and CINAHL. Articles that discussed sensory integration and its use in therapy practice or parent perspectives during the treatment process were included in the literature review. Keywords used to search were
Sensory Integration, Occupational Therapy, Parents AND Therapy services, and combinations of the aforementioned keywords. Several texts and other books in our possession were also utilized in the literature review process due to their direct correlation to this scholarly project and the relevance of the material found in the texts.

After the compilation of the literature, we read the articles and books and formed a working outline into which the literature was categorized and placed in the literature review in a sequential order that our advisor and we deemed logical and progressive.

Ellen Cohn, who was a lead researcher on many of the studies that the students read as part of their literature review, also served as a resource. She provided material including several websites that we could visit to obtain more information on the topic of sensory integration. These websites were included as links on the website and PowerPoint created for this scholarly project.

We determined that in addition to creating a website that encompassed many of the areas that parents do not understand, that an additional pamphlet that could be given to parents and caregivers and also a PowerPoint presentation should be created to ensure that the information is readily available. The pamphlet can be given at the start of the therapy process and can be used to generate questions early on in the treatment process. The PowerPoint was designed for occupational therapists to provide them with a teaching tool that they can go through with the parents to ensure that the parents understand their child's sensory integrative dysfunction and also the purpose and benefits of therapy. The information for the website, PowerPoint, and pamphlet was gathered from many of the sources utilized for the literature review and also from our backgrounds working with sensory integrative disorders and from our pediatric coursework curriculum.
When a child is receiving therapy services the parents and their beliefs and feelings can be as affected as the child is. It can be hard for a parent or caregiver to understand what is going on in therapy and in their child’s life which can lead to frustration and a lack of confidence in the therapy providers working with their child. Parents interviewed by Cohn (2001) reported that spending time in the waiting room talking to other parents who they came to know was helpful and was like having a mini support group. This project has designed an area on an informational web site where parents can post their concerns and share ideas and support with one another. It can be inferred from the findings regarding parents perspectives and feelings that education to parents about the treatments their child is receiving and the anticipated benefits of those treatments is important to parent satisfaction and follow through with home programs as well as therapy attendance (Cohn & Cermak, 1998).

When the information was assembled into the three mediums, we collaborated with a child who is in 5th grade to ensure that the material was written at an appropriate age level and that the information was understandable from a 5th grader’s perspective. The child provided feedback about the concepts and terms he did not understand and those he did not think his classmates would understand. The readability function in Microsoft Word was also utilized to give an objective measure of the reading level. We then revised our products to ensure that they could be easily accessed and understood by parents and caregivers.
CHAPTER IV
THE PRODUCTS

Introduction

When a child is newly diagnosed with any form of illness or disability, there is a great deal of stress placed on the parents as they try to understand what is happening to their child. Disabilities, especially those that are not obvious to the eye, may be especially difficult for parents of children with these dysfunctions to understand if they are not well versed in medical terminology and jargon. At the time we were deciding on a topic for their scholarly project, this phenomenon came to our attention and we focused on the process of sensory integration and the treatment process that accompanies a sensory integrative dysfunction diagnosis.

A website, PowerPoint presentation, and a pamphlet were developed by us because we identified a need for parent/caregiver education material on the topic of sensory integration that could be utilized in schools, clinics, and other pediatric therapy settings. Literature regarding the use of parent education materials during sensory integration therapy was found to be lacking during the literature review that we performed.

The products were created as a means of presenting information about what sensory integration is, what sensory integrative dysfunctions and disorders are, benefits and purpose of occupational therapy treatment interventions, and what parents can do to support other parents and resources for parents to utilize for support and further
knowledge about the process of sensory integration and how it affects their child’s daily functioning.

The products will be presented in this chapter according to the following order: A Quick Look at Sensory Integration (SI) Therapy Pamphlet, Parent Education PowerPoint, and finally the Parent Education Website.

Description of the Products

The products that were designed for this project were created to be used in conjunction with one another. The information given in each product is similar in that all of the information is targeted toward educating parents on their child’s diagnosis and therapy. The volume and intensity of the information presented in each product varies widely, and gives the parents and therapist the opportunity to choose the method of education that best suites the parents schedule and desires.

A Quick Look at Sensory Integration (SI) Therapy Pamphlet. This pamphlet was designed to be given to parents on their child’s first visit to occupational therapy. It outlines the basic premise for SI based therapy and provides a short definition of sensory integrative dysfunction. The pamphlet also presents the parents with a short list of resources to get them started on their journey of learning that will accompany their child’s journey through therapy. One of the resources mentioned in the pamphlet is the website created for this project.

Sensory Integration Therapy and Sensory Integrative Dysfunction! This is a PowerPoint presentation that is designed to be used by the therapist as a means of guiding educational interaction with parents and facilitating discussion of topics that may otherwise be forgotten or avoided. The PowerPoint includes words and phrases often
associated with SI that may be confusing or hard to understand for those who do not have a therapy background. These words and phrases were included in the PowerPoint because parents will likely hear these phrases often in conjunction with their child and presenting them at a time when the therapist is readily available for discussion and explanation may alleviate future misunderstandings and frustrations. The PowerPoint includes basic information on sensory integration, sensory integrative dysfunction, and SI therapy. It also includes a symptom list, adapted from *Sensory Integration Dysfunction* (Stepp-Gilbert, 1988), which breaks down common manifestation of sensory dysfunction by age group. This will provide a convenient checklist for therapists and parents to review together in order to identify the areas of most concern in the child’s life. This will also provide an opportunity for parents to understand that many of the behaviors their child exhibits are not “bad behavior” but rather a mechanism that the child uses to cope in their environment because of the way they see life through their diagnosis. A list of commonly treated diagnosis is included in the PowerPoint. However, it is made clear that this is not an exhaustive list and the therapist is best suited to decide if SI therapy is right for any child. A slide addressing common benefits of SI therapy is also included and targets the benefits that the parents are most likely to see, such as school performance and behaviors at home. A resource list is also included in the PowerPoint and contains a larger list of websites and books then is contained in the pamphlet.

*Sensory Integration for Parents.* This website is the most comprehensive product developed for this project and is also the most comprehensive. It is designed to allow parents to explore the world of SI on their own and to guide their learning toward research based information. The website contains similar information to that presented in
the PowerPoint but it is offered without medical terminology and in a way that is easily understandable regardless of educational level.

Terminology that could not be reworded is defined as clearly as possible on one of the pages of the website. Multiple pages are dedicated to helping the parents understand what goes on during a session of SI therapy and why that is important for the child. A list of common activities is provided so that the parents will understand the basic ideas behind the activities the therapist engages the child in. Common behavioral problems in children with sensory integrative dysfunction are set forth. Each behavior is explained in terms of why the child may engage in it and ideas the help the child through these behaviors are presented. A list of questions to discuss with the therapist is provided.

There is also a list giving parents ideas on toys and activities that will foster development of appropriate sensory processing in the child’s brain. Many of these activities are simple games and tasks that the child can be engaged in while having free time at home. The toys range from simple items found in most homes to more specialized toys that would be bought specifically for the child’s needs. There is also a section for therapists where the pamphlet and PowerPoint are available to be downloaded for use in a clinic. This portion of the website contains a note to therapists explaining the intended use of the pamphlet and PowerPoint as well as giving permission for the PowerPoint to be altered to fit the specific needs of the population that the therapist works with. The complete website can be viewed at http://freewebs.com/sensoryintegrationproject/.

Model and Frame of Reference.

In completing this scholarly project, we chose to utilize both a model for practice as well as a frame of reference to guide the creation of their products. The Occupational
Adaptation model and the Sensory Integrative Frame of Reference were determined to best fit the projected products that were going to be created for this scholarly project.

To create the products for this scholarly project, we chose to use the Occupational Adaptation (OA) model and the Sensory Integrative frame of reference to guide this project. Due to the educational nature of this project, the OA model benefits this project with its emphasis on adaptation and participation in occupations. The products that were created for this project provide examples of sample activities that parents can utilize when playing with their child so that they child is able to engage in the occupation of play as well as work on sensory processing and integration skills that are also being worked on during the child’s therapy sessions. The educational material also provides the parents and caregivers with a greater knowledge base about their child’s sensory dysfunctions and their needs and allows the parents to make more informed choices regarding their child’s therapy experience and prospective outcomes they would like to see for their child.

Based on the nature and content of this scholarly project, we also utilized the Sensory Integrative (SI) frame of reference because the basis of this scholarly project is sensory integration. We utilized this frame of reference to guide the assumptions made about the neurological processes associated with the sensory system and the subsequent behaviors that may be exacerbated by a disruption to these processes.
CHAPTER V

SUMMARY OF PROJECT

This scholarly project was designed to provide comprehensive educational material regarding the topic of sensory integration. The information that was compiled and the subsequent products created during this project included information for parents and caregivers regarding sensory integrative treatment approaches and activities, diagnoses related to or contributing to diagnoses relating to sensory integrative dysfunction.

A pamphlet, PowerPoint presentation, and a website were designed and created to facilitate education for parents and caregivers through the use of various mediums. The PowerPoint presentation was designed by us to be given by an Occupational Therapist during an educational session provided during the child’s therapy experience. The website that was created was designed as a research tool and educational space for parents to navigate and learn about sensory integration and various aspects regarding treatment at their own pace. It also includes a feature where parents can socialize and discuss their concerns and current difficulties with other parents who have experienced or are currently experiencing similar situations. This space is designed as a discussion forum and was designed by us as a place for parents to give and receive supports to other parents, to talk about frustrations and listen to other parents, and where parents can share ideas for activities and strategies that they have found worked with their child.
Several limitations have been identified regarding this project. The first limitation is that we were not able to utilize actual subjects to determine the efficacy and appropriateness of this project because the project was not presented to the IRB committee for review. This hindered the development process because all assumptions and information had to be pulled from literature and other research documents rather than actual responses from the target population regarding educational needs.

We also identified the lack of consistent communication and direct collaboration with an occupational therapist who is currently practicing in the field of pediatrics and using sensory integration therapy as a limitation to this project. While we contacted Ellen Cohn for more resource material, this was a single occurrence and was not consistent throughout the project.

We utilized a site on the Internet that hosts free websites in order to make this a cost effective project. Creating the website for the product on a free site also allowed us to be more involved in the creation of this project than we would have been allowed if we had contracted with a web designer. After we completed creation of the website, we identified a potential barrier to visibility of the educational website on the Internet. A limitation of creating the product in this manner is that the web address assigned to the project makes the website less visible when searched for on the Internet.

If further development of this project is pursued, it is recommended that collaboration with practicing therapists and parents be utilized to further tailor the material to fulfill the specific needs of the parents. It is also recommended that the project be updated with new literature and findings, as well as to conform the materials to
feedback received from therapists and parents to best suit the needs of the target population.

This scholarly project was researched and created due to a lack of research literature pertaining to the importance of educational material available for parents. The information was adapted to be easily understood by parents and caregivers, to help them learn about their child’s diagnosis, and to gain a better understanding of the occupational therapy treatment process provided to their child.
APPENDICES
APPENDIX A

A Quick Look at Sensory Integration (SI) Therapy!

An Educational Pamphlet

Created By:

Sarah Urvand, MOTS and Samantha Wilmot, MOTS

Advisor: Dr. Michael Atkinson, PhD, Associate Professor

Grand Forks, North Dakota
May 2007
A Quick Look at Sensory Integration (SI) Therapy!

Designed by: Sarah Urvand, MOTS and Samantha Wilmot, MOTS

What is Sensory Integration?
Sensory integration is a type of treatment used by Occupational Therapists when working with children who have sensory integrative dysfunction. Sensory Integration focuses on helping the child’s brain understand and process the sensations the child feels. These sensations can include touch, smell, sight, motion, and the sense of the body in space.

What is Sensory Integrative Dysfunction?
Sensory integrative dysfunction is the inability of a person (normally a child) to understand and process his/her environment and the input he/she is getting from that environment. Sensory integrative dysfunction can be a symptom of a wide range of diseases including Autism, ADHD, Downs Syndrome and many others. Sensory integrative dysfunction can impact several areas of a child’s life such as schoolwork, playing with friends, paying attention, eating, family relationships and many other areas.

Good Resources
The best resource for information about your child’s therapy is your child’s therapist. If you’re looking for additional information there are books and websites that are good sources of information. The following are just some of the possible options.

http://www.freewebs.com/sensoryintegrationproject/

The Out-of-Sync Child by Carol Stock Kranowitz, M.A.

The Out-of-Sync Child Has Fun by Carol Stock Kranowitz, M.A.

Sensory Integration and the Child by A. Jean Ayres
APPENDIX B

Sensory Integration Therapy and Sensory Integrative Dysfunction!!!

An Educational PowerPoint Presentation

Created By:

Sarah Urvand, MOTS and Samantha Wilmot, MOTS

Advisor: Dr. Michael Atkinson, PhD, Associate Professor

Grand Forks, North Dakota
May 2007
Sensory Integration Therapy and Sensory Integrative Dysfunction!!!

Created by: Sarah Urvand, MOTS and Samantha Wilmot, MOTS

Advised by: Michael Atkinson, Ph.D.
What is Sensory Integration???

- Sensory Integration is a process that takes place in the brain. When the body senses something, either taste, touch, smell, vision, or feelings related to the force gravity has on the body, the brain takes the information and turns it into the feelings that we know and understand.
What is Sensory Integrative Dysfunction?

- When the brain is unable to correctly interpret the information that it receives from the body's sensory systems, the problem is referred to as Sensory Integrative Dysfunction. Sensory Integrative Dysfunction can be a symptom of other diagnoses or can exist as a diagnosis on its own.
Signs of Sensory Integrative Dysfunction
For Children From Birth to 2 Years Old

- Child is easily startled (birth to 3 months)
- Overactive tonic neck reflex, indicating poor muscle tone
- Tonic neck reflex that persists past 6 months
- Overactive asymmetrical tonic neck reflex
- Difficulty consoling self
- Abnormal scarf sign
- Abnormal traction response reflex
- Failure to bring hands together to clap and bang toys
- Stow to roll over, creep, sit, or stand
- Difficulty with or no babbling
- Failure to explore
- Inability to build a tower with blocks
- Failure to visually track horizontally to midline
- Frequent hand fisting after 3 months
- Difficult tolerating prone position
- Dislikes bathing
- Becomes tense when held
- Resists being held/dislikes cuddling
- Has difficulty sucking
Signs of Sensory Integrative Dysfunction
For Children From 3 to 5 Years Old

- Clumsy, frequently falls
- Bumps into things because of difficulty judging where things are in space
- Difficulty balancing on a curb
- Difficulty holding head, arms, and legs off floor while laying on stomach "airplane position"
- Does not appear to enjoy normal childhood activities such as climbing, jumping, or swinging because of insecurity related to the pull of gravity
- Breaks toys easily
- Avoids playing with age appropriate toys because they are challenging and cause frustration
- Difficulty learning to tie shoes, ride a bike, zip or button clothes
- Delayed language development-no language skills by 2-3 years
- Because of poor eye-hand coordination and/or poor motor planning has difficulty coloring between lines, putting puzzles together, or learning to cut with scissors
- Fails to develop hand dominance
- Difficulty inhibiting stimuli; may overreact to touch, smells, lights, or noises
- Dislikes to get hands dirty
- Dislikes going barefoot especially in sand or grass
- Drops things frequently
- Difficulty learning how to use playground equipment
Signs of Sensory Integrative Dysfunction
For Children 6 Years Old and Up

- Difficulty learning to read, write, or compute math
- Difficulty following instructions
- Rests head on hand while sitting at a desk or table
- Cannot keep letters between lines
- Reverses letters such as b and d
- Difficulty focusing attention
- Poor self-esteem

- Teacher may report that the child "goofs off" too much, cannot seem to "get his/her act together" or is "too messy"
- Has trouble keeping up with peers in physical education
- Tends to need much more practice than peers to learn a new skill
- Finds it hard to make friends with children of own age and prefers friends that are younger
What is Sensory Integration Therapy?

- Sensory Integration (SI) therapy is designed to help the brain learn to correct responses to everyday sensory stimuli. The therapist provides activities to the child that expose them to stimuli they find adverse or misinterpreted and help them to find the correct response to that stimulus.
Sensory Integration Therapy Continued

- Therapy often looks like play because play is how children learn and explore their environments. "Traditional" therapy treatments are useful in some situations but when dealing with sensory integration the best approach often is to use activities and objects that are familiar to child.
Diagnoses

- SI therapy can be used with many different diagnoses. Commonly treated diagnoses include:
  - Autism and Autism Spectrum Disorders
  - Pervasive Developmental Disorders (PDD)
  - ADHD
  - Downs Syndrome
  - Fragile X Syndrome
  - Developmental Coordination Disorder (DCD)
  - Premature and low birth weight infants
  - Children who have been environmentally deprived
  - And many others
Benefits of SI Therapy

- Although sensory integration can be hard to understand and can seem unimportant it can impact many areas of daily function. Some of the areas that are commonly affected include ability to pay attention, ability to interact with others, food preferences, and clothing preferences. After your child begins therapy you may see improvements in their behavior, eating patterns or school work.
For this portion of the presentation, you may have specific goals that you will be working on with the child during therapy but there may be activities that the parents can do at home with the child to integrate the therapy process into different environments. If you want the parents to be involved in a home program, this is the time to teach them the techniques that you want them to use and to ensure that they are properly completing the technique so that it will not harm the child. Techniques such as brushing programs or other treatments that need to be practiced and ensured are being done right can be done at this time. At this time, you can also discuss games, toys, and other activities that the family can participate in that will also be working on the goals identified that you will be working on during therapy. Jump rope, swinging, tag, playing with shaving cream or other soft, foamy substance, etc.
Resources

- http://www.canchild.ca/
- http://www.familyvillage.wisc.edu/
- http://www.kidfoundation.org/
- http://www.pediatrictherapy.com/
- http://www.otalVattertown.com/
- www.ourwebsite.com
- The Out of Sync Child by Carol Stock Kranowitz
- The Out of Sync Child Has Fun by Carol Stock Kranowitz
- Sensory Integration and the Child by A. Jean Ayres (2000)
APPENDIX C

SENSORY INTEGRATION FOR PARENTS

An Informative Website

Created By:

Sarah Urvand, MOTS and Samantha Wilmot, MOTS

Advisor: Dr. Michael Atkinson, PhD, Associate Professor

Grand Forks, North Dakota
May 2007
Figure 1. This figure is a direct representation of the layout of the information that can be found on the website that was created for this project. The text following this page is the text for each section of information that can be found on the website.
Sensory Integration for Parents

This website has been created as part of a scholarly project by two students in a Master’s of Occupational Therapy program. The information contained here is an accumulation of information from research articles, textbooks, and other printed materials. The information found here is in no way exact or exhaustive. This website was created to provide support to parents and caregivers of children who have been diagnosed with sensory integrative dysfunctions and is a place where these caregivers can access information and other resources. This site was also constructed to help parents and caregivers understand and enhance their child’s therapy experience.
What is Sensory Integration (SI)

Sensory integration is the process of the brain organizing and interpreting the sensory information that touches or acts on any part of the body.

Sensory information can be given to the body or acted on the body in a number of ways.

- Touch and different textures felt by parts of the body
- Temperature (Hot or Cold)
- Gravity is a source of sensory information that the body responds to when an individual is moving around his or her environment and gravity is also a force that is applied to the body at all times.
- Changes in the body's position in space are a source of sensory input that affects the body's sense of balance. This can be felt when an individual goes from a sitting position to standing position or when children engage in play activities that cause them to be turned upside down, swinging through the air while on a swing set, or sliding quickly down a slide.
- Anything that you can touch, that touches you, or that causes you to feel something happening to your body is the process of sensory integration at work.
Terminology

- Sensory Integration - process of the brain organizing and interpreting the sensory information that touches or affects any part of the body.
- Sensory Integrative Dysfunction - this term is used to describe the condition that develops when the brain is unable to correctly carry out the process of sensory integration. When the brain does not understand what is touching the body or where the body is in space, sensory integrative dysfunctions occur.
  - For example, if Bill touches his son John with a cotton ball and John tells his Dad that the cotton ball hurt his skin, the brain did not correctly interpret how a cotton ball feels. Cotton balls are soft and fluffy and John's brain told him that the cotton ball feels sharp and produces feelings of pain. This would be an example of when the brain does not understand and identify the correct feeling for the cotton ball, which would be an indicator of a sensory integrative dysfunction.
- Sensory Integration Therapy - the focus of this type of therapy is to provide activities that will help the brain understand the sensory information that it receives and correctly process that information. This form of therapy is normally used with children but is occasionally used with teenagers and possibly with adults.
- Stimulus or Stimuli - this term is used to describe a particular piece of sensory stimulation or a stimulus. For example if a feather is brushed against a child's arm the touch of the feather would be considered the stimulus.
- Vestibular - Does your child fall over a lot when he or she is walking, running or playing? If he or she does, they may have a problem with the part of the body that helps them balance, known as the vestibular system.
  - Vestibular refers to how the ear functions in relation to body movement. There are many parts in the inner ear that help people keep their balance. If these structures are not working right, your child may have a hard time walking for long distances because he loses his balance and tips over. Many activities used in therapy can be designed to help your child work on his or her balance.
- Proprioceptive (Proprioception) - When you hang your child upside down or swing them quickly through the air when you are holding onto their arms, each of these movements put the body in different positions in space. Being held upside down in space gives the boy a different feel and has different movements than the child would feel if he or she was standing on their own two feet. The way the body interprets these movements is handled by what is known as the proprioceptive system.
  - The sensations the children get when they move their bodies either right side up or upside down give their brain information about where they are in space and how they are moving. Sometimes the brain gets mixed up and the child may be scared to move their body because they don't like how it feels when they swing or crawl or even walk.
- Tactile - Tactile is a fancy medical term that simply means touch.
- Intervention - This word is often used by therapists and means treatment or treatment activities.
SI and the Brain

Sensations or touches can be felt on any part of the body. These can be provided to the body through various means such as textures of clothing or objects; substances that feel slippery, coarse, or sticky; various textures associated with foods, and vestibular stimuli such as spinning, jumping, or swinging. For many children, experiencing new sensations and touches can be a scary experience and may cause the child to act out behaviorally or the child may not be able to complete everyday things such as dressing, doing schoolwork, bathing, playing, and eating.

When sensations and touches are felt on any part of the body, the place where the body felt the touch sends signals to the brain so that the brain can figure out what the body just felt. If the brain does no interpret the sensations correctly, the brain might tell the child what he or she just felt was painful even though it was not. An example of that would be that the child's brain may tell the body that the sensation the child just felt was really painful when the child may have been touched by a cotton ball.

The brain also remembers how certain objects, toys, movements, or fabrics felt from the last time the child experienced that stimulus. When a child is turned upside down, touched with new sensations, or even if your child burns their finger, their brain will remember how that touch felt and will store that into memory. It may be scary for a child to see an object that their brain says hurt them at some time in their life. As parents, you can show your child that you understand that it hurt them last time and acknowledge their feelings. If you know that your child is afraid to touch things that are soft or have weird textures, let your child's therapist know so that he or she can use activities that are safer and not as painful to your child at first and then build up to using activities that are closely related to the touch or feeling that your child does not like.

When children are born, their eyesight is relatively poor. They have blurry vision for the first few days or weeks of their lives. During that time, the child uses touch to feel comforted and safe. The sensations that a child can feel or touch provide information that the body will use during future development. These experiences often determine how soon your child will crawl, walk, or run and may also determine what toys and games your child likes when he or she is playing. Children who experience sensory integrative dysfunctions may hesitate to join an activity or they may not play with objects because they are afraid of the sensations they will get from these activities and objects. Due to the fear or pain these children experience, the child may not want to play with others, may not play with toys, may not like getting dressed, and may not move off the ground because they are scared of what will happen.

Much of a family's interactions with each other revolve around play when the children are small and it is through these play activities that the family bonds. If the family is unable to do these bonding experiences, it may not just be hard for the child with the sensory problems; it may affect the entire family. There are many toys and activities that are suggested on this website that have been found in various literature sources and other printed materials. We suggest that you speak with your occupational therapist for more
information about activities you can do at home with your child or if you have questions about activities you found listed on this site. Your therapist will know your child and will be able to tell you if an activity would be fun for the child to play or if an activity may not be appropriate for your child to do.
Diagnoses

- SI treatments can be used with a variety of diagnoses. Your child's therapist is best able to determine if this type of therapy is right for your child. The following list presents diagnoses that are commonly treated with SI therapy.
  - Autism
  - PDD (Pervasive Developmental Disorders)
  - Fragile X Syndrome
  - Developmental Coordination Disorder
  - Down Syndrome
  - Premature or low birth weight infants
  - ADHD
  - Learning Disorders
  - Sensory Integrative Dysfunction

- Remember this list is not exhaustive and your child may be treated using SI and have a diagnosis or problem that is not on this list.
Occupational Therapy

Occupational Therapy (O.T.) is a therapy service that is provided in order to help individuals achieve the highest function in their daily lives. When working with pediatrics (children), occupational therapists work on skills such as dressing, bathing/brushing teeth, using both hands together and at the same time, handwriting, skills needed to complete school activities, and different play activities that are fun and that the child's classmates also play.

Examples of school related skills that your child's therapist might help your child develop are using scissors to cut paper, holding markers/crayons/pencils, squeezing glue from a bottle, and many others.

Sensory Integrative Therapy

Sensory Integration Therapy (SI) includes many treatment activities and programs. Treatments can generally be classified by the sensory system that they target. Treatments are designed around each child's specific needs and interests. The following paragraphs provide more detailed explanations of SI treatment.

What to Expect From Therapy

Your child's therapy session may look more like play to you. That is because children learn and develop through their play activities and an occupational therapist can plan activities that the child will enjoy and that will enhance the child's ability to properly integrate the sensations around them. The following section lists typical treatment interventions, also called activities.

Typical Treatment Interventions

Typical SI interventions provide the child with opportunities to experience sensations in a protected environment and learn to react appropriately to those sensations. The five main sensation categories of treatment focus are:

- Tactile or touch
  - Common therapy activities include finding items in putty, digging in a sand box, playing in a bowl of water, playing with textured objects such as Koosh balls, or fuzzy toys, and touching/rubbing with a vibrator.

- Proprioceptive or body position
  - Common activities include "wheel barrel" walking, rolling the child tightly in a blanket, having the child wear a weighted vest during other therapy activities, or simply stretching and compressing the child's joints.

- Vestibular or movement
  - Treatments targeting this sensory system often involve swings, tilt boards, balls, scooters, and hollow barrels or tubes. The child may be engaged in swinging while focusing on a target, trying to balance on a tilt board,
bouncing or balancing on a large therapy ball, scooting on a scooter board while sitting or laying on the stomach, or rolling on or in a barrel or tube.

- **Visual or seeing**
  - Visual system treatments often involve sitting in a darkened room watching various light sources such as lava lamps, glitter lamps, disco type light balls, or blinking lights. Visual stimulation can also be achieved using computer programs, which show different colors or images, sometimes requiring the child to click a mouse button or keyboard button to continue or stop the images.

- **Auditory or hearing**
  - This type of therapy often involves listening to music that has a clear rhythm or gives the child instructions to follow. If the child has aversions to certain types of noises these may also be used in therapy to help the child learn to respond appropriately to the sounds around them.
Your Child's Behavior and How You Can Help

- Because your child experiences different touches, textures, and feelings differently, he/she may have a hard time expressing what it is they are feeling or thinking about the sensation.
- Not being able to say what he/she feels when something hurts may cause some children to act out with behaviors such as temper tantrums or banging their head on the floor, desk, etc.
- Other children may demonstrate other behaviors such as not being able to pay attention or not having good balance.
- Understanding that your child’s "bad" behaviors are their way of coping with the world can help you to understand and properly react to your child. When your child begins to act out or display other signs of frustration you can report to your child's therapist what may have been aggravating your child and the therapist can then incorporate similar stimuli into the therapy.
- The following are some common behaviors seen in children with sensory integration difficulties and ideas for helping your child learn to cope with out the behavior.

Not able to pay attention

- Some children have a hard time paying attention during class or keeping their room, locker, desk, or book bag organized.

What’s going on?

- Because your child is unable to interpret sensory stimuli correctly, he/she may be getting too much sensory information or they may not be getting enough.
- If your child is getting too much sensory information, his/her brain is going to be very busy trying to interpret all of the information that it is getting so he/she may not be able to pay attention to specific tasks for long periods because of all that is going on in his/her brain.
- If there is a lot of noise, color, movement, etc. going on around your child he/she may not be able to concentrate on schoolwork or on his/her chores.

How can you help?

- Eliminate clutter around your home, especially in the areas that the child spends the most time (dining room, living room, bedroom, etc.).
- Keep directions simple when you are working with your child to finish schoolwork, chores, or other activities that require the child to concentrate. For most children two-step directions are best because they build the child’s ability to follow a sequence but do not over load the child with too much information.
- If you are doing schoolwork at home with your child try to work in a room that has few decorations. This will prevent your child from being distracted by objects that may catch his/her eye.
• For children who don't seem to be organized, you can make a checklist for your child for all of the things that need to go in his/her backpack, what needs to be done before going to school, how to get his/her backpack ready at the end of the school day, etc. Lists or pictures will help your child remember what needs to be done and what needs to be taken to and from school such as homework. If you have a young child who doesn't read well using pictures or symbol may be appropriate. For older children who can read checklists with words are the most appropriate.

• You can also ask you child's OT to teach you and your child's teacher techniques that will give your child sensory input that is appropriate and will help the child's brain to organize itself. Some techniques that may be helpful include a brushing program, deep pressure, and wrapping techniques. These techniques do not take long to do and can be very helpful, but before you use any SI technique you should check with the therapist to make sure you are correctly completing the technique.

• Your child may also benefit from getting a "fidget" which is a small object, a piece of gum, or anything else that your child can chew on or have in one hand while completing other tasks. We have seen children have a small "Koosh Ball" in one hand under their desk and it allows them to concentrate on reading or writing while receiving positive sensory input.

General Behavioral Problems

• Going to school (or other places children often go) can be hard for any child, though it can be especially difficult for young children with disabilities. Children who look or act differently than their classmates tend to be made fun of during school and may act out in these situations.

What is going on?

• If children are not able to express what they feel, what they are thinking, how experiences affect them, etc. it can be frustrating for them and may cause them to act out because they don't know what else to do.

• Behavioral problems that may be seen are head banging, temper tantrums, crying, screaming, kicking, biting, etc.

• While these behaviors are often stressful and overwhelming to parents and teachers, they are usually a cry for help from your child. These behaviors are the only way your child knows to express what he/she is feeling because they don't know how to explain it with words.

How can you help?

• Play charades with your child so that he/she has a chance to show you what he/she is feeling when a behavior is happening.

• Figure out a way to communicate with your child so that you will know when he/she is feeling scared, hurt, sad, frustrated etc. Doing this will allow you as the
parent to better understand what is happening to your child.

- Ask your child's OT about other techniques that can be used when your child is not able to express himself/herself except through bad behaviors. You may ask about getting a chart that shows pictures of emotions and feelings so that your child can point to the one that best fits him/her at any given time.

Sensory Seeking

- Sensory seeking means that your child tries to find ways to touch things, hit things, or apply pressure to his/her body. The child may also seek out bright pictures or lights, or loud noises. Your child may like to touch everything in sight or may like to lay on the floor with a lot of pillows, blankets, or toys on top of him/her. Some children also like to smell certain strong scents like perfumes or spices.

What is going on?

- Your child feels the need to feel a lot of sensation through one of their sensory paths (touch, body position, gravity, smell, sight, sound).
- Some literature suggests that if your child craves sensations, he/she feels calm when he/she is able to touch or otherwise experience a lot of stimuli all at once.

How can you help?

- Chewing foods or candies that take more effort to chew such as gum or tootsie rolls may help your child to feel stimulated without acting out.
- Playing tag or similar rowdy activities.
- Ask your therapist about other techniques you can use that will be of the most benefit to your child's specific needs.

Sensory Avoidant

- You may notice that your child doesn't like to move around much or doesn't like the feel of certain toys/foods/textures. If this is the case your child may be sensory avoidant. Some sensory avoidant children may not wear certain types of clothing such as long sleeves or jeans because they do not like the sensory input that they receive from the cloths.

What is going on?

- Because your child has a different way of understanding the sensations around them some children are over sensitive and stronger sensations, such as the roughness of jeans, is too much for the child's brain to take in and the child becomes upset and will avoid the situation in the future.
- The child may just seem picky but it is important to remember that the child just
may not understand what he/she is feeling or experiencing and is being "picky" as a way to defend himself/herself from future confusion.

**How can you help?**

- Do not push your child to do things that you know cause them to become upset. Rather then help the child to become used to the stimulus, your child may think that you are trying to hurt them because unwanted stimuli are often interpreted as pain.
- Talk to your child's therapist for activities that you can do at home with your child. Many different toys, activities, and games can help your child become less sensory avoidant and not as afraid of everyday movements and textures.

**Other Behaviors Your Child May Have**

- Another behavior that some children have is being unaware of stimuli or sensations unless they are extreme (very loud or very hard).
- Children who don't notice that they have gotten a cut or a bruise, or children who don't notice that a TV is turned on if it is at the normal volume fall into this category.
- You can ask your child's OT about a home program that you can use with your child and be sure to ask the OT any questions you may have in relation to your child's behaviors.
Signs of Sensory Integrative Dysfunction

*Children from Birth to 2 Years Old*

- Easily startled (birth to three months)
- Difficulty calming self
- Brings arms and legs into a crawling position any time the head and neck are tilted back and continues this behavior past six months old
- If neck is turned to the right, the left arm and leg always flex (can apply to neck turned to left and flexion to the right).
- Does not flex shoulders, neck and elbows when pulled by hands from lying on back to sitting.
- Failure to bring hands together and bang toys.
- Slow to roll over, creep, sit, or stand.
- Difficulty with or no babbling
- Failure to explore
- Does not follow objects with eyes when moved in a straight line from right to left crossing past the nose
- Is unable to build a tower with blocks
- Frequent fistng after three months old
- Does not like to lie on stomach
- Dislikes bathing
- Becomes tense when held
- Dislikes being held/cuddled
- Has difficulty sucking

*Children from 3 to 5 Years Old*

- Clumsy, often falls down
- Often bumps into things because he/she is unable to tell where objects are in relation to his/her body
- Difficulty balancing on a curb
- Difficulty holding "airplane" position - head, arms, and legs raised from floor while lying on stomach
- Does not enjoy activities such as jumping, climbing, and swinging because of a fear of being off of the ground
- Easily breaks toys
- Avoids playing with toys designed for that age group because they are too challenging
- Difficulty learning to tie shoes, ride a bike, and zip or button clothes
- Doesn't talk by 2 to 3 years old
- Struggles to color between the lines, put puzzles together, or cut with scissors
- Does not develop right or left handedness
- Overreacts to touch, odors, lights, or noises
- Dislikes getting hands dirty
- Dislikes going barefoot
Children 6 Years Old and Older

- Difficulty with reading, writing, and math
- Difficulty following instructions
- Rests head on hand while sitting at a desk or table
- Cannot keep writing between the lines
- Reverses letters such as b and d
- Difficulty focusing
- Poor self-esteem
- Teacher reports the child "goofs off" or cannot "get his/her act together"
- Has trouble keeping up with peers during P.E.
- Tends to need more practice than peers to learn a new skill
- Difficulty making friends his/her own age and would rather play with younger children
Questions to ask Your Therapist

- Can you explain more about how my child's diagnosis will affect his/her life at school, home, or other places he/she spends a lot of time?
- What are the reasons for therapy?
- What can we do at home to work on the same skills that my child is working on here in therapy?
- How can I teach the other kids not to be afraid of my child?
- Are my child’s’ teachers going to know what to do to help my child?

There are no silly questions! If there is something that you don't understand or that you think is important talk to your child's therapist about it because if it is important to you and/or your child then it is important.
Toys and Suggested Activities

The following lists are just an overview of possible options and the best plan when selecting toys and activities for your child is to consult our child's therapist.

Toys
- Swing set
- Beads
- Therapy or yoga ball
- Putty or play dough
- Art supplies such as paper, scissors, and glue
- Chalkboard or marker board
- Wood working kits
- Bubble wrap
- Play make-up
- Blocks
- Hula hoops
- Toy instruments
- Bubbles
- Marbles
- Beanbags

Activities
- Playing with shaving cream or bath foam
- Sand painting
- Make hand and foot prints on poster board using finger paints
- Make dough using hands
- Jumping on a trampoline
- Gentle roughhousing such as "riding the horsey", piggy back riding, or "helicopter" spinning
- Swinging on the swing set while lying on stomach
- Jumping from swing onto a mat or mattress
- Playing in an inner tube
- Playing tug-a-war
- Hammering nails
- Dancing
- Beanbag tosses
- Magnetic "fishing"
- Shooting down targets with a squirt gun or hose
- Marching to the rhythm of music
- Rhythm echoing
- Musical chairs
SI and Your Child's Education

Children with sensory integration problems will often either seek our or avoid certain feelings textures, touches, sounds, smells, or even toys because they do not like what they experience. This can be scary for children and it may result in the child behaving differently than his/her peers. If a child does not play or do other activities, it may be hard for him or her to develop friendships because there is not a common interest in the activities that other children are likely doing together. Also, if your child is experiencing bad reactions to various stimuli, he/she may act out because they do not know how to deal with the information they are receiving and the other children may be scared to play with the child because of his/her behaviors.

When a child plays it is a way that the child can foster and develop social skills that he or she will need in order to develop friendships and other relationships throughout life. During play, kids can talk to each other and learn valuable skills such as taking turns and cooperation. These skills are essential to learn in order to deal with everyday life and in order to form lasting relationships.

Children with sensory integration disorders may not engage in play due to the bad sensations they experience when they are touched or swung on a swing or because the child interprets textures of toys in a different way and that texture is not a good feeling for the child to experience.

Social interaction is a large part of what happens during the child's school day. He or she may be involved in a group project, may complete a worksheet together, or they may interact while a story is being read. Helping your child regulate the sensations that he/she experiences is going to be beneficial because your child will be better able to concentrate during school, complete homework or assignments given in class, and interact with his/her peers to make friendships and enjoy their school experience.

Also, during activities that can be done at home or during play activities at school the child can and will be learning how to move different objects with both hands, how to play various games that use the child's arms and legs all at the same time, and other skills. You can talk to your child's OT for more information about skills your child can learn at home and at school and see if there are games of activities you can do with your child to build these skills at home.
Parent to Parent Support

In our research and reading of material for completing this scholarly project, we found that parents benefited from and enjoyed interacting with other parents and caregivers who had children who were diagnosed with similar sensory integrative dysfunctions.

We created this section of the website so that you can interact with other parents and caregivers. You may want to ask them questions you have, ask them for strategies and activities that they found worked for their children, or you can seek and provide support for each other by simply having people to talk to who know what you are experiencing.

This is meant to be a place where you can support and provide information to other parents and caregivers and it is a place where you can find support and people to talk to when you just need to talk to someone who understands.

You can use the shout box below to communicate with others online, or visit the guestbook to post ideas or questions that you might have.
Guestbook

Here in the Guestbook we welcome any comments. If there is something you would like to see changed or added let us know. You can also use the guestbook to communicate with other parents if the Shoutbox doesn't fill your needs. Be sure to check back here often because someone may post who could benefit from talking to you.
For OTR's

- As part of our scholarly project, we also created a PowerPoint presentation that therapists can use in the clinic to provide an education session to parents of children with newly diagnosed sensory dysfunctions.
- We also have a pamphlet we created that can be downloaded.
- The pamphlet contained on this website is a short overview of SI and is meant to be given to parents as an introduction during the first therapy appointment their child has. The PowerPoint is intended to be used for collaborative learning between you, the therapist, and the parents of your clients. Information can be added, emphasized, minimized or deleted as you see fit for you specific client's needs. Some of the information in the PowerPoint may be confusing or hard to understand for the parents. Some of the professional and medical terminology and information was left in the PowerPoint because it was felt by the creators that the phrases or words were important for the parents to understand and leaving these phrases in the PowerPoint allows the parents to be familiarized with the terminology while they are able to ask you questions and gain clarification from you.
- The creators of this PowerPoint understand that you may need to make changes but ask that credit be given appropriately for the original design of this product.
- Please contact us with any questions or comments about the site and the provided materials using either the guestbook or by sending an email to:
  Sarah Urvand at sarahurvand@hotmail.com OR
  Samantha Wilmot at samanthawilmot@hotmail.com

Link to the PowerPoint:
http://www.freewebs.com/sensoryintegrationproject/SI power point.ppt

Link to the Parent Pamphlet:
http://www.freewebs.com/sensoryintegrationproject/SI parent pamphlet.doc
Resource Materials

The links below contain information that can help parents and caregivers to better understand SI therapy and the activities that are part of that therapy. These sites also provide general resources addressing childhood disability, coping strategies for families, and information about types of therapies and the specialty areas they encompass.

http://www.canchild.ca/

http://www.familyvillage.wisc.edu/

http://www.kidfoundation.org/

http://www.pediatrictherapy.com/

http://www.otawatertown.com/
About the Creators of this Website

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Sarah Urvand is a Masters of Occupational Therapy student at the University of North Dakota. She worked collaboratively on this scholarly project with Samantha Wilmot. Sarah will graduate from the University of North Dakota in May 2007. She can be reached at sarahurvand@hotmail.com with any questions or comments.

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Samantha Wilmot is a student in the Masters of Occupational Therapy program at the University of North Dakota. She worked collaboratively on this project with Sarah Urvand. She plans to graduate in May 2007 and begin practicing as an Occupational Therapist in the area of pediatrics. Samantha can be contacted at samanthawilmot@hotmail.com for any questions or comments.
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References

Information for this site and the materials contained on it was adapted from the following:


REFERENCES


