Sensory Integration Teaching Lab

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Sensory Integration Teaching Lab

Scholarly Project

by

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CHAPTER ONE

Introduction

The purpose of this scholarly project was to develop an organized way of teaching occupational therapy students about sensory integration techniques utilizing a “hands on” teaching lab approach. Throughout the process of completing this project, I have also expanded my own knowledge in the area of sensory integration and the techniques used in treatment interventions. Completion of this project has enhanced student understanding of the treatment interventions used for sensory integration in occupational therapy practice and of the neurological process when sensory integration dysfunction is the client’s diagnosis.

Yack, Sutton, & Aquilla (1998) define:

Sensory integration, the use of sensory information for function, is a process that begins prior to birth and continues right through our lifetime. Sensory integration is fundamental to our self care, our play, and our work. We organize and use sensory information automatically; we never really think about it. This automatic process frees us up to be able to focus our attention on other tasks (p. 45).

“A diagnosis of sensory integrative dysfunction requires evidence of deficits in the central processing of vestibular, proprioceptive, or tactile sensation that are not attributable to frank peripheral or CNS damage or associated with
cognitive deficits” (Bundy & Murray, 2002, p. 12). The majority of individuals treated for sensory integrative dysfunction are children. The theory does apply to adults, but only adults who demonstrate a continued dysfunction that was present in childhood, this then excludes adult-onset deficits. (Bundy & Murray, 2002)

People often refer to other interventions as sensory integration, when they are more appropriately termed sensorimotor or sensory stimulation. According to Bundy & Murray (2002), “Sensorimotor approaches focus specifically on motor responses, such as muscle tone or movement. Sensory is secondary to motor in this type of treatment. Sensory stimulation is when different sensations are applied to, rather than sought by an individual to elicit a general response” (p.13).

This project is specifically focused on sensory integration, which involves enhanced sensation in the context of meaningful, self-directed, adaptive interactions. The emphasis is on the integration of vestibular, proprioceptive, and tactile sensations and not only on the motor response. Using sensory integrative principles, the therapist incorporates meaningful activities that provide specific sensory stimuli to elicit an adaptive response, thereby assisting the child in his or her overall motor and conceptual learning (Bundy & Murray, 2002).

To complete this project, I have reviewed literature in the area of sensory integration dysfunction and current treatment intervention practices. After I completed a review of current literature, I compiled a lab manual that includes a general lab overview, directions for the lab setup, and materials and supplies needed to implement the activities. The lab manual includes activity cards to be used during the teaching lab. Each lab card has a description of a specific
treatment activity, purpose for the activity in therapy, and the specific sensory system.

The importance of a lab experience is paramount for this type of treatment intervention. Once a therapist completes an assessment, he/she must determine what interventions will be most effective for that unique individual. Therapists need to understand the impact of sensory integrative interventions on a specific sensory system, as well as the individual, as a whole. What better way to understand the impact of treatment interventions than to experience them through a “hands on” lab.
CHAPTER TWO

Review of the Literature

Theory

Jean Ayres, an occupational therapist with advanced training in neuroscience and psychology, developed the sensory integration (SI) theory. Ayres developed this theory to explain the relationship between deficits in sensory processing and complications with academic or motor learning. Sensory integration is a theory of brain-behavior relationships and is used to: explain why individuals behave in certain ways, plan interventions to reduce difficulty, and predict how behavior will change following intervention. SI theory has three components including: sensory integrative function, sensory integrative dysfunction, and intervention programs (Bundy et al., 2002).

What is Sensory Integration?

Ayres (1972) defines sensory integration as “the neurological process that organizes sensation from one’s own body and from the environment and makes it possible to use the body effectively within the environment” (p. 11). Yack et al. (1998) identify five components of sensory integration processing.

The first is sensory registration, which occurs when an individual first becomes aware of sensory input. An individual may not become aware of this event until it reaches a certain threshold, referred to as the sensory threshold. The sensory threshold varies depending on an individual’s
previous sensory and emotional experiences, how alert or stressed an individual is, and what is expected (p. 12).

Orientation is the second component of SI identified by Yack et al. (1998), and is identified as:

the process which enables an individual to determine which sensory information needs attention and what can be ignored. The ability to appropriately achieve this balance requires sensory modulation. Sensory modulation occurs unconsciously and is a result of balance between facilitation (excitation) and inhibition (relaxation). The third component is interpretation, which is the ability to identify the characteristics of sensory information. Once the characteristics are identified, an individual is able to determine what sensory information to respond to (p. 14-15).

The third component is organization of a response, in which the brain determines if a response is necessary and chooses either a physical, emotional, or cognitive response. Appropriate responses to sensory input cannot be organized if the information is unclear. Difficulties with registration, orientation, and/or interpretation affect the ability to appropriately respond. The final component of the SI process is executing a response and this is dependent on the above components and adequate motor planning, otherwise known as praxis (Yack, et al., 1998).

Population Served

According to Bundy & Murray (2002),
SI theory is intended to explain mild to moderate deficits in learning and behavior, especially problems with motor incoordination and poor sensory modulation. A diagnosis of sensory integrative dysfunction requires evidence of deficits in the central processing of vestibular, proprioceptive, or tactile sensation that are not attributable to frank peripheral or CNS damage or associated with cognitive deficits. The majority of individuals treated for sensory integrative dysfunction are children. The theory does apply to adults, but only adults who demonstrate a continued dysfunction that was present in childhood, this then excludes adult-onset deficits.

Children with mental retardation, cerebral palsy, or other developmental disorders caused by frank CNS damage may have deficits in sensory integration. However, one must keep in mind this may be attributed to the CNS and is not likely to be caused by sensory integrative dysfunction (p. 12).

PDD is defined by Case-Smith & Miller (1999) as “an array of conditions distinguished by global developmental delays (p. 509). Yack (1998) defines PDD as behaviorally defined developmental disabilities that are associated with neurological impairment. Pervasive developmental disorders are broken down into subcategories, which include Autism, Asperger’s syndrome, Rett’s syndrome, and PDD, not otherwise specified. Each subcategory has specific behavioral characteristics and ages of onset. However, they each share common characteristics including poor social skills, impaired communication, and some form of stereotypic behaviors. According to the American Psychiatric Association
Sensory Integration Lab

(1994), children with PDD generally display deficits in the areas of language and communication, social skills, play motor skills, coordination, and cognition (p.511).

**Sensory Integration Dysfunction**

Sensory Integration dysfunction occurs when the brain does not process or organize sensory input in a clear way that gives the individual precise information about his/her and the surrounding environment. Children with SI dysfunction often develop unevenly; some parts of the nervous system function in an irregular way, yet other parts do their jobs normally. Therefore, children with SI dysfunction will be up to age expectation in some areas of function and show delay in others. Many children with SI dysfunction have normal or above average intelligence. However, a severe SI deficit may result in significant developmental delays. There is not yet proven research as to what causes sensory integrative dysfunction, however some researchers believe possible causes to be: hereditary predisposition, increased environmental toxins, genetic factors, inadequate oxygen at birth, children leading deprived lives, and internal sensory deprivation (Ayres, 1995, p.51-54).

Sensory integrative disorders fall under four categories including sensory modulation problems, sensory discrimination and perception problems, vestibular processing disorders, and dyspraxia. The first two categories are observed in behavioral and social-emotional responses and the other two involve motor outcomes of sensory input. Sensory modulation refers to the ability to respond appropriately to incoming sensory stimuli, rather than over or underreact. A child
who underreacts is said to be hypo-responsive and has poor sensory registration. This child fails to notice sensory stimuli that would elicit a response from most people. Children with sensory registration problems often seek intense stimulation. An individual who overreacts to sensory input is said to be hyper-responsive or sensory defensive. A child with sensory defensiveness may be overwhelmed by normal sensory input and will often react defensively.

Sensory discrimination and perception problems consist of the organization and interpretation of sensory stimuli (distinguishing one stimulus from another). Dyspraxia is a condition characterized by difficulty with praxis, which is the ability to conceptualize, plan, and execute a non-habitual motor act (Case-Smith, 2001).

The Sensory Systems

Sensory integration theory addresses all sensory systems but focuses predominantly on the tactile, vestibular, and proprioceptive systems. According to SI International, sensory experiences include touch, movement, body awareness, sight, sound, and the pull of gravity.

Tactile

The tactile system is the first sensory system to function in the uterus. This system receives sensory information about touch from receptor cells in the skin. These receptors provide information about light touch, pressure, vibration, temperature, and pain. Successful functioning of the tactile system requires a balance between the protective and discriminative functions of the systems. The protective system alerts a child when in contact with something that may be
potentially dangerous and triggers the body to respond. The discriminative system is the system that determines the quality of what a child is touching (details).

Feedback from the tactile system contributes to the development of body awareness and motor planning abilities (Yack et al., 1998, p. 34).

Tactile dysfunction may consist of hyposensitivity, hypersensitivity, or problems with tactile discrimination. Hypersensitivity is also referred to as tactile defensiveness and is when a child overreacts to ordinary tactile stimuli (Mailloux and Parhum, 2001). A child with hypersensitivity may have difficulty focusing as all attention is on the tactile stimulus. According to Yack et al. (1998), children with tactile defensiveness are constantly on guard; they frequently experience of “fight, fright, or flight” response (p. 35). Other children may be under responsive to touch and need very intense sensations to register; the stimulation is a great safety concern for these children. Children with discriminative problems are able to register touch, but are unable to determine the characteristics of what they are touching. Some common behaviors that may indicate tactile dysfunction include: avoidance of touch or contact, avoidance/dislike of messy play, appearing irritated with certain clothing and food textures, very active or fidgety behaviors, having difficulty manipulating small objects, and using hands to explore objects (Yack et al., 1998).

Interventions

For a child who is hypersensitive to touch/tactile defensive; deep, firm, predictable touch should be used to avoid alerting the child and causing an extreme reaction. For a child who is hyposensitive to touch; a light, ticklish, and
unpredictable touch should be used to alert and elicit a response from the child. A child with tactile dysfunction needs to be touched and be exposed to different tactile experiences. (Yack et al., 1998)

**Vestibular**

The vestibular system focuses on movement (direction and speed of movements), gravity, and head position. Ayres (1995) suggests the vestibular system has a critical role in the modulation of all sensory systems. The receptors of the vestibular system are located in the semi circular canals, the utricle, and the saccule in the inner ear. The vestibular system has a close relationship with the auditory and visual systems. It has been observed that when a child is engaged in movement, there is an increase in vocalization and expressive language. The vestibular and visual systems work together to help the body maintain upright posture. The protective system consists of reflexes and righting reactions. The discriminative system can distinguish between characteristics of movement, such as fast, slow, rotary, or rhythm. Individuals need to accurately process vestibular information to adequately use vision, prepare posture, maintain balance, plan actions, move, calm, and regulate behavior (Yack et al., 1998, p. 37).

Vestibular dysfunction may cause a child to overreact to vestibular sensations and may cause them to be fearful with any change in head position and center of gravity. This response is referred to as gravitational insecurity. The individuals interpret any change in head position and movement as being harmful, especially when moving backward or upward. On the other end of the spectrum, children who are hyporesponsive, crave movement; the nervous system requires
excessive amounts of movement to stay alert. Some common behaviors indicating
deficits in the vestibular system may include: appearing fearful of playground
equipment or carnival rides, becoming sick in cars, elevators, on rides, appearing
fearful of heights or stair climbing, avoiding balancing activities, seeking fast
moving activities, avoiding sports or active games, engaging in frequent spinning,
jumping, bouncing, and running activities (Yack, et al., 1998).

Interventions

In general, calming interventions for individuals with gravitational
insecurity should include slow, repetitive, linear movements. For individuals with
hypo-reactivity; fast, irregular movements should be incorporated into
intervention to elicit a response (Yack et al., 1998).

Proprioceptive

The proprioceptive system is the unconscious awareness of body position.
This system organizes the other systems. Proprioceptive input can help to
decrease hyper-reactive responses to other systems. This system allows an
individual to grade movements and determine how much muscle force is
necessary to execute a response. The receptors are located in muscles, tendons,
joint capsules, ligaments, and connective tissue. The ability to respond to
proprioceptive input appropriately is critical for motor development (Yack et. al.,

Subsystems of the proprioceptive system include: motor planning, bilateral
body skills, postural adjustments, and body scheme. Motor planning/praxis is the
ability to generate an idea, sequence, and execute a response. Indications of motor
planning dysfunction may include slow intentional movements from having to figure things out over and over, avoidance of new challenges, and doing a less challenging task very quickly. Bilateral body skills are the ability to use both sides of the body simultaneously to complete a task. Indicators of a bilateral body skill dysfunction may include difficulty with gross motor tasks, such as swimming, running, skipping, crawling; and fine motor tasks such as, not holding paper down while writing or cutting, poor manipulation of objection with both hands, inability to perform reciprocal movements, and lack of hand and foot dominance (SI International).

Postural adjustments are movements that maintain the head and body toward the center of gravity, hold the head and body upright, and maintain balance of the trunk so that hands can be available for activities. Indicators of dysfunction with postural adjustments may include poor balance and coordination and the child may be fidgety. Body scheme is the ability to be aware of body parts and how they move together. Body scheme dysfunction may be observed by confusion while dressing or undressing, refusal to participate in games such as “hokey-pokey” and “simon says”, and discomfort when vision is blocked (SI International).

Proprioceptive dysfunction occurs when the brain gives inadequate information about movement and body position. Proprioceptive dysfunction usually occurs simultaneously with problems in the vestibular or tactile systems. Common behavioral indicators of proprioceptive dysfunction may include: exerting too much or not enough pressure when handling objects, assuming body
positions necessary to perform different tasks, enjoyment of rough/tumble play, seeking out deep pressure, and relaxation when given firm massages. The ability to respond to proprioceptive input is critical for motor development (Yack et al, 1998, p. 42).

**Interventions**

Calming and alerting interventions are similar to the ones used with vestibular dysfunction. To calm; slow, deep pressure and heavy work should be used in activities. The deep touch pressure and heavy work may also help to reduce hyper-reactive responses to touch and sounds. To alert the system; quick irregular pressure/stretch should be incorporated into intervention. Rough play activities are commonly used with individuals with proprioceptive dysfunction (Yack et al, 1998).

**Far Senses**

The far senses include the visual, auditory, gustatory, and olfactory systems. Although the far senses are not the primary senses included in sensory integration theory, they are important for sensory modulation. Many deficits with the far senses may contribute to dysfunction in the other three sensory systems or vice versa. Behaviors that may indicate SI dysfunction within the visual system include: sensitivity to changes in lighting, turning away from television or computer screens, appearing to be irritated by sunlight, focusing on shadows, reflections, spinning objects, and difficulty scanning the environment. Indicating behaviors in the auditory system include becoming upset with loud or unexpected sounds and humming or singing to screen out irritating noises. Indicators of
olfactory and gustatory systems include: dislike of strong smells or tastes, craving strong smells or tastes, smearing their feces, and eating non-edible foods (Yack et al., 1998).

Assessment

An occupational therapist (OT) begins the assessment process with a general exploration of the occupations of the child and family, focusing on their concerns and goals. Assessment tools used by OT’s include interviews/questionnaires, clinical observations, standardized tests, and consideration of services and resources available and appropriate to the child and family (Case-Smith, 2001). The Sensory Integration and Praxis Test (SIPT) is the most statistically comprehensive way for assessing sensory integration. The SIPT includes four categories: form and space, perception, visual-motor coordination and constructional ability; tactile discrimination; praxis; and vestibular and proprioceptive processing. Along with the SIPT, clinical observations and assessment of sensory modulation provide a more comprehensive evaluation of SI (Bundy and Murray, 2002). Assessing the child is the first and foremost step in the treatment process. By assessing the child, the occupational therapist is able to plan the treatment interventions most suitable for each child’s unique identified needs.

Sensory Diet

A sensory diet is an activity program designed to meet a child’s specific sensory needs. As stated by Yack et al. (1998),
“Wilbarger and Wilbarger developed the approach to provide the just right combination of sensory input to achieve and maintain optimal levels of arousal and performance in the nervous system. Every child has unique sensory needs and their sensory diet must be developed to specifically meet those needs. Engaging children in sensory experiences on a regular basis can help them focus, attend, and interact. One of the primary goals of the sensory diet is to prevent sensory and emotional overload by satisfying the nervous system’s sensory needs. Depending on the needs of the child, a sensory diet can be comprised of very specific activities carried out at prescribed times” (p. 61-62).

Summary

It is of great importance for service providers to be trained in this complex treatment intervention. The “hands on” lab is an educational, interesting way to teach students the intervention techniques used in SI treatment. With this lab, students will be given a manual that includes lab activity cards, in which they can use when they are in the field as a reference. A “hands on” learning approach is beneficial in that by actually doing the different activities, students are able to experience the impact of the SI techniques on specific sensory systems, as well as the individual, as a whole. By performing these techniques in the lab, the student will feel more competent in this area of occupational therapy treatment in the field.
CHAPTER THREE

The process of completion for this project began with a review of current literature related to the sensory integration process and sensory integration intervention. From the information gathered, a lab manual was produced. The lab manual includes a general lab overview, directions for the lab setup, and materials and supplies needed to implement the activities. The lab manual also includes activity cards to be used by during the teaching lab. Each lab card has a description of a specific treatment activity, purpose for the activity in therapy, and the specific sensory system.

The Sensory Integration lab took place on April 16, 2003. The class was divided into two groups, each with a time slot of an hour and a half. The tactile activities were set up at tables, as well as a few of the other proprioceptive and vestibular activities. The first group began with the tactile activities and scooterboard activities. Once these were completed, the group split up into two groups and did some vestibular/visual activities. After this, several parachute activities were done. The lab ended with a sensory integration obstacle course and a relaxation activity to relax and calm the sensory systems.

The second group started with the obstacle course and then went to the tactile stations. This group then did some of the vestibular/visual activities, ending with the parachute and relaxation activity. The lab seemed to flow great the second time around. The first group was a little less organized due to time and
room availability for set-up. The following day in class, their instructor asked the students to write down one thing they learned and any questions they had about the lab experience.

The importance of a lab experience for students to learn SI treatment interventions is paramount. By carrying out the specific lab activities, students will experience the impact the treatment interventions have on specific sensory systems, as well as the individual, as a whole. The lab manual and activity cards will also serve as a reference source for students to look at when in the field of occupational therapy, whether it be on fieldworks or a job.
CHAPTER FOUR

Product

What is Sensory Integration?

Ayres (1972) defined sensory integration as “the neurological process that organizes sensation from one’s own body and from the environment and makes it possible to use the body effectively within the environment” (p.11). Sensory integration is what allows individuals to make sense of what is going on around them in their environment. When the brain is able to organize sensory input from the environment, individuals are in turn able to make an appropriate, adaptive response (Yack et al., 1998).

Sensory Systems

Sensory integration theory addresses all sensory systems but focuses primarily on the tactile, vestibular, and proprioceptive systems. The tactile system is the first sensory system to operate in the uterus. This system receives sensory information about touch from receptor cells in the skin. Successful functioning of the tactile system requires a balance between the protective and discriminative systems. The protective system alerts an individual when in contact with something that may be dangerous and triggers the body to react against potential harm. The discriminative system is the system that allows us to determine the quality of what an individual is touching (Yack et al., 1998).

The vestibular system is associated with movement, gravity, and head position. The receptors are located within the structures of the ear (the semi
circular canals, the utricle, and the saccule). The vestibular system has a close relationship with the auditory and visual systems. It has been observed that when a child is engaged in movement, there is an increase in vocalization and expressive language. The vestibular and visual systems work together to help the body maintain upright posture. The protective system consists of reflexes and righting reactions. The discriminative system can distinguish between characteristics of movement, such as fast, slow, rotary, or rhythm (Yack et al., 1998).

The proprioceptive system is the unconscious awareness of body position. This system allows an individual to grade movements and determine how much force is necessary for a muscle to exert. The receptors are located in muscles, tendons, joint capsules, ligaments, and connective tissue. The ability to respond to proprioceptive input appropriately is critical for motor development (Yack et al., 1998).

Overview of Activities

General calming activities are most often used to help a child who is sensory defensive. Calming activities help to relax the nervous system and reduce extreme responses to sensory input. Characteristics of calming sensory input may include: soft, rhythmical, light, sweet, deep, warm, firm, and predictable (Yack et al., 1998).

Organizing activities help a child who is either over or under active to become more attentive. These kinds of activities are used as “distractions”, so the child is able to completely focus on the present task (Yack et al., 1998).
Alerting activities are most often used with children who are under-reactive to sensory input to become more attentive and alert. Such activities need to be carefully observed to prevent over stimulation. Characteristics of alerting sensory input may include: loud, pungent, spicy, heavy, quick, light, ticklish, unpredictable, bright, twinkling, and cold. (Yack et al., 1998).
Activities

Tactile

* When doing tactile activities, allow the child to apply the tactile stimulus to themselves because this is often better tolerated than having someone else apply the stimulus.

System: Tactile

Materials/Supplies: small objects, play dough or bucket of rice or birdseed

Directions: hide small objects in play dough or bucket of rice and ask the child to a) find the objects without looking b) find and identify objects by touch using a visual cue card for identification c) find and name objects by touch

Expected Response: improve tactile discrimination by recognizing different hidden objects by touch/stereognosis; also, to increase tolerance of tactile input

System: Tactile

Materials/Supplies: shaving cream

Directions: child to use fingers to draw pictures or write letters in shaving cream on table surface

Expected Response: improve tolerance of tactile input; reduce tactile defensiveness
**System:** Tactile

**Materials/Supplies:** various textures

**Directions:** the therapist rubs fingers individually using different textures and has the child guess which finger was touched or which texture was used; start by giving the child tactile/visual cues and then gradually decrease the cues

**Expected Results:** improve tactile discrimination by having the child identify location of touch and what texture was touched; reduce tactile defensiveness

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**System:** Tactile

**Materials/Supplies:** different textured sponges or cloths

**Directions:** rub the child’s arms and legs with different textured sponge or cloth or have the child rub their own arms and legs as this is better tolerated to start (start with the hands as they are least defensive)

**Expected Results:** to reduce tactile defensiveness
**System:** Tactile

**Materials/Supplies:** 5-10 small balls

**Directions:** place balls inside the child’s shirt either inside the sleeves, between the chest and the shirt, or between the back and the shirt; ask the child to then remove each ball and throw them into a bucket

**Expected Results:** improve tactile discrimination and awareness of the body; facilitate response to tactile input

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**System:** Tactile/Proprioceptive

**Materials/Supplies:** blanket, different textured condiments

**Directions:** have child pretend he/she is a hotdog; the therapist or parent then applies condiments using different touches; Ketchup is applied by rubbing the child from head to toe, cheese may be added by lightly squeezing the child, pickles are lightly tapped on, and lettuce and tomatoes are put on with light pressure; when all condiments are added, therapist or parent wraps the “hotdog” with a blanket (serving as the bun)

**Expected Results:** reduce tactile defensiveness; facilitate a calming affect through firm touch and pressure
System: Tactile

Materials/Supplies: soft paintbrushes

Directions: use paint brushes and pretend paint to paint the child; can use different pretend colors to paint fingers or paint on a beard or freckles.

Expected Results: facilitate response to tactile input/ increase tactile input awareness and discrimination

Vestibular

* When doing vestibular activities, it is important to watch for negative responses, such as excessive yawning, hiccupping, sighing, irregular breathing, color change, sweating, motor agitation, increased anxiety, pupil dilation, changes in sleep/wake patterns, and changes in overall arousal levels. e.g. falling asleep or giddiness *If any of the above signs are observed, STOP immediately & determine the cause of the reactions.

System: Vestibular

Materials/Supplies: large therapy ball and small objects

Directions: have child lay in supine on ball and reach for objects on the floor or on a chair

Expected Results: to increase movement input and develop simple balance skills; increase tactile contact with tummy
System: Vestibular

Materials/Supplies: Large therapy ball

Directions: have child lay supine on ball with head down (wrapped around ball); therapist then rocks the child slowly, and rhythmically

Expected Results: to provide a calming experience; also increase tactile contact with tummy and face; promote relaxation

System: Vestibular/Proprioceptive

Materials/Supplies: Small therapy ball

Directions: have child sit on ball and bounce up and down

Expected Results: to provide up and down head movement; promote body awareness through hips and feet; promote sitting balance
**System:** Vestibular

**Materials/Supplies:** scooterboard

**Directions:** have child lay prone on scooterboard and use both hands to spin self around 10 times

**Expected Results:** to increase vestibular input; awareness of body position and increase tolerance of different head and body movements

**System:** Vestibular

**Materials/Supplies:** scooterboard

**Directions:** have child propel forward to achieve linear movement

**Expected Results:** organizing and calming affect; increase tolerance for movement
**System:** Vestibular

**Materials/Supplies:** none

**Directions:** while on hands and knees, have child rock back and forth for 20 seconds

**Expected Results:** to provide relaxation through slow, rhythmical movements

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**System:** Vestibular

**Materials/Supplies:** Large blanket

**Directions:** have the child sit on a large blanket and lift the edges of the blanket on either side and pull child across floor

**Expected Results:** improve tolerance of imposed movement and tactile input from blanket and floor surface
**System:** Vestibular

**Materials/Supplies:** small objects

**Directions:** have child roll across floor (segmental rolling) and pick up object and then roll back to bring object back to therapist (can be done in the form of a relay race)

**Expected Results:** to provide vestibular input through movement; increase tolerance of changes in body position/movement

---

**System:** Vestibular

**Materials/Supplies:** hula hoop and scooterboard

**Directions:** have child sit on scooter board with legs crossed or on knees and hold hula hoop around them at chest level; the therapist also holds on to the front of the hula hoop and provides push and pull movements

**Expected Results:** to promote sitting/kneeling balance; increase body awareness through push pull movement activity; increase tolerance of fast and slow movements
Proprioceptive

*Proprioceptive activities are the most tolerated activities and are similar to the vestibular activities, as these two systems are somewhat similar. The proprioceptive system is an overall organizer to all systems.

System: Proprioceptive

Materials: large and small balls

Directions: have child hold large or small balls with different body parts; under arms or chin, and between knees, elbows, or ankles

Expected Results: increase awareness of amount of pressure needed to hold balls with different body parts

System: Proprioceptive

Materials/Supplies: none

Directions: hold child’s legs up and have the child walk with hands (wheelbarrow walk)

Expected Results: increase awareness of proprioceptive input; increase bilateral coordination and motor planning
**System:** Proprioceptive

**Materials/Supplies:** bean bags and a bucket or bin

**Directions:** have child throw the bean bags into the bucket or bin; can have competition with other children or therapist

**Expected Results:** to increase awareness of how much force is needed to guide the bean bag to the desired distance/target; tactile input

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**System:** Proprioceptive

**Materials/Supplies:** none

**Directions:** have child walk on feet and hands can be used to have races

**Expected Results:** to provide a calming affect by heavy pressure on arms and legs from gravity; increase body awareness
System: Proprioceptive

Materials/Supplies: none

Directions: have child sit on bottom with arms extended back and knees bent with feet on ground; have child slide bottom backwards

Expected Results: provide pressure to hands and shoulders; increase body awareness; and provide a calming affect from demanding heavy work from hip, tummy, and arm musculature

System: Proprioceptive

Materials/Supplies: scooterboard

Directions: have child lay prone on scooterboard with legs on wall; have child push off the wall with legs

Expected Results: to develop muscle sense in the legs and feet; increase awareness of amount of force required to “blast off” the wall
**System:** Proprioceptive/Vestibular/Tactile

**Materials/Supplies:** obstacle course; be creative

**Directions:** have child go through obstacle course (can be timed for fun or done with partners) *how the course is set up and the materials used can impact the types of sensory input

**Expected Results:** improved motor planning, facilitate bilateral integration, balance, body awareness
CHAPTER FIVE

Summary

The lab experience definitely had an impact on me and my own sensory systems. I felt sick afterwards and extremely exhausted the rest of the day. To participate in these sensory activities in a lab experience is important to understand the impact of the activities on the sensory systems. It’s amazing at how overwhelmed the sensory systems can become through “play”.

In the student’s lab evaluations, many stated how much they felt the impact of the sensory activities and a few commented on how they felt sick afterwards. Many also stated that they were surprised how overstimulated they felt with a “normal” sensory system. Overall, the students gave positive feedback and the goals of the lab experience were fulfilled. Some of the comments were “I got dizzier and more overwhelmed than I thought I would”, “I now understand how kids with sensory integration problems feel on a day to day basis when there is too much stimuli in their environment”, and “I began to understand the reasoning behind some of the activities and how important they can be to help someone with sensory problems”. There were a few questions that the students did have, so I plan to get some responses back to the students or their instructor. Some specific questions I received were “do kids get as sick as we did, usually”, “are there separate rooms a therapist would use for all the different activities so that the child would not be overstimulated by the other things in the room”, and “what other activities of SI involve song; like the hotdog tune; it was enjoyable”.
Through this lab experience, students are able to feel the impact the sensory integrative activities have on specific sensory systems, as well as the individual, as a whole. By experiencing this, students can better understand how a child with sensory integrative dysfunction experiences different environmental stimuli. In turn, this will enable the occupational students to understand their clients more and treat them more effectively and efficiently.
References


