Engaging child with autism in tabletop occupation: case study

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Abstract

The subject of this case study is a four year-old-male who was diagnosed with autism at approximately 32 months old. Some of his primary deficits include decreased fine motor skills; decreased regard to safety; decreased attention during occupations; decreased response to auditory input; lateral gaze; decreased awareness of his body and environment; and decreased socialization. The following article discusses the use of sensory integration to prepare the child for a tabletop occupation where the child completed a Valentine card for his mother. The evaluation, goal setting, intervention, and re-synthesis process is described in the article. Further research needs to be conducted on the way sensory integration can help children with autism function in their everyday occupations.

Introduction

Background Information

Austin is a four year-old-male who lives with his mother, soon to be step-father, and younger brother in a rural area of Ohio. He was born at full term and showed no signs of complications. Austin was developing typically until at approximately 30 months when his mother noticed that he was not responding to his name and showed no increase in verbalizing thoughts and needs. At this time, Austin was evaluated by an occupational therapist, speech therapist, and his pediatrician and was diagnosed with autism. His primary impairments identified include decreased fine motor skills; decreased regard to safety; lateral gaze; decreased awareness of body and environment.
evidenced by bumping into objects while walking; decreased response to auditory input which results in difficulty with understanding and following directions; decreased attention; difficulty with transitions; decreased play skills; decreased motor planning; decreased/difficulty with social interactions; and language deficits (pragmatics) such as spontaneous speech, inconsistent speech, and echolalia.

Austin receives occupational and speech therapies through outpatient and school services. He began outpatient therapy at Mercy Children’s Pediatric Center in June of 2007. He attends therapy sessions at Mercy Children’s Pediatric Center one time per week. Austin utilizes the Picture Exchange Communication System (PECS) in school with his teachers. PECS are used as a bridge to facilitate verbal communication by using visual strategies to accompany verbalization.

The model of practice utilized for this case study was the sensory integration (SI) model of practice which was originated by A. Jean Ayres. Difficulties with sensory integration can affect perception, behavior, and learning. According to L.D. Parham (2005), the author of a chapter in Occupational Therapy for Children, Ayres believed that the body centered senses (vestibular, tactile, and proprioceptive) are a foundation on which complex occupations are built. Austin requires tactile, vestibular and proprioceptive inputs in order for him to remain on task and stay somewhat focused during tabletop occupations. Ayres (1979) considered sensory input to be sensory nourishment for the brain, just as food is nourishment for the body. The first 20 minutes of Austin’s treatment sessions focus on these sensory needs. During these 20 minutes Austin swings for vestibular input and plays in the ball pit for proprioceptive input. In the 2005 revised edition of Sensory Integration and the Child, Ayres (1988) was noted to
have said that children with autism are much more apt to look a therapist in the eye
during or immediately after movement activities. Fertel-Daly et. al. (2001), have found
that deep pressure calms children by modulating their central nervous system processing
of sensory information. The therapists initiate social interactions, such as eye contact and
verbal requests, with Austin during these occupations. After engaging in these
occupations which allow Austin to fulfill his sensory needs, he is more able to stay on
task and interact with others.

In 1982, J. Paillard defined praxis as “the operations that intervene between then
mental representation that a subject has of his body and the physical world that surrounds
it, and the intentional triggering of an appropriate act as directed within the framework of
that reality.” The process of praxis has a number of different steps. These steps include:
ideation; planning and sequencing; imitation; feedback; and execution. At times, Austin
seems to have difficulty with the ideation and planning aspects of praxis. He is not
always aware of what different objects are used for, and tends to utilize items in an
inappropriate manner. Once someone demonstrates an occupation to Austin, he attempts
to complete the occupation on his own.

Scientific Evidence for MOP

Many researchers have found similar results compared to Ayres’ studies (1972,
1978). Case-Smith and Bryan (1999) found that SI increased mastery play, increased
engagement in occupations, and increased adult interaction. Another study by Linderman
and Stewart (1999) found that the participants demonstrated increases in social
interactions, responses to movement and affection, and increased approaches to new
occupations. Although these studies’ findings agree with those of Ayres’ most studies
have found no statistical evidence that has proven or disagreed with Ayres’ findings. Further studies of the use of SI with children need to be conducted in order to prove the effectiveness of SI.

**Rationale for this MOP**

Austin had impairments in fine motor manipulation; imitation skills and initiation for motor planning; difficulty with social interactions; and decreased attention. All of these deficits can be attributed to his decrease in his sensory processing abilities.

**Initial Evaluation and Goals**

The following goals were set for Austin by the occupational therapist after being evaluated in November of 2007. These goals were utilized when determining which occupations to select during intervention with the child prior to the re-assessment administered by the student. The goals are as followed:

A. Austin will imitate a 10 cube tower.
B. Austin will pull his pants down/up for toileting attempts.
C. Austin will participate in play with adults for 3-5 minutes.
D. Austin will tolerate changes in head position without distress.

Prior to setting these goals the occupational therapist administered the Peabody Developmental Motor Scale, second edition (Folio & Fewell, 2000). The PDMS-II consists of six subtests. These subtests include reflexes, stationary, locomotion, object manipulation, grasping, and visual-motor integration. Each subtest contains tasks which are to be completed by the testee to determine whether or not the child’s abilities are at an age appropriate level. For the grasping aspects of the assessment, Austin scored in the 35
percentile, which is an average rating. For visual-motor integration, Austin scored in the four percentile rating, which is a rating of poor. Other clinical observations noted at this time were his decrease in auditory processing evidenced by his inability to follow and understand the directions; decreased ability to maintain attention during the tasks; increased visual stimulation on objects throughout the room; and decreased interaction with the therapist.

Austin’s mother had also completed Winnie Dunn’s Sensory Profile (2006). The Sensory Profile is made up of six areas. The six areas are general processing, auditory processing, visual processing, tactile processing, vestibular processing, and oral sensory processing. Each area consists of a number of behaviors where the parent is asked to rate how often the child engages in these behaviors. The ratings are: Almost Always, Frequently, Occasionally, Seldom, and Almost Never. The results concluded that Austin showed typical performance in sensation seeking, sensory sensitivity, sensation avoiding, tactile processing, and vestibular processing. Austin was reported to have a need for more than others with a definite difference in auditory processing and a probable difference in visual processing.

**Intervention**

**Occupational Form**

The occupational form for the intervention is as follows. There were two rooms which were utilized. The first room consisted of carpeted floors with large therapy mats; a variety of different swings along one wall; a ball bath at the far end of the room; an Intellesense System™ and a medium sized shelf with puzzles, games, and small toys.
The second therapy room consisted of a child height table with scissors, paper with a heart printed on it, small foam heart shapes, and a glue stick on it; four, colorful child height chairs pulled up to the table; a shelf with games, puzzles, craft supplies, cards and small toys; and a round jumper with poles with a variety of colored cubes inside the poles of the jumper.

There are a number of different types of occupations that are used as interventions when working with the child. Many of the occupations address matching; color recognition; verbalizing needs and wants; counting; cutting with scissors; and assembling puzzles. As mentioned earlier all treatment sessions begin by meeting Austin’s sensory needs during the first 20 minutes of his session. During these first 20 minutes, Austin swings and plays in the ball pit. The vestibular input from the swinging and the proprioceptive input from the ball pit help Austin meet his sensory diet.

**Occupational Performance**

The therapeutic intervention described is the making of a Valentine card for Austin’s mother. Austin was asked to cut out the heart from the red construction paper. He was then asked to retrieve the color of the requested foam heart to glue on the large, paper heart.

Austin required moderate physical assistance (hand over hand and stabilization of paper) while cutting out the heart from the construction paper. He required increased verbal (stating Austin’s name, stating “look here”) and physical cuing (pointing and tapping on table) to engage in any form of interaction with the occupational therapy student while retrieving the requested foam hearts. Austin also required moderate physical (hand over hand) assistance to glue the foam hearts onto the paper heart with a
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glue stick. He required moderate verbal and physical cues to remain on task during this tabletop, play occupation.

Changes Made During Occupation

There were some changes that were made while the occupation was taking place due to some of Austin’s difficulties. Austin had difficulty retrieving the appropriate colored heart requested by the occupational therapy student. So the occupational therapy student verbalized the color of the heart that Austin reached for, rather than Austin retrieving the requested colored heart. Due to Austin’s increased sensitivity to visual stimulation, the foam hearts not being used were placed to the side in order to keep him from visually fixating on them. Cuing was utilized to keep Austin engaged in the occupation (see above). Less hearts were glued on the paper heart than planned, due to Austin’s decreased attention span.

Meaning and Purpose

There were a number of different inferred meanings and purposes during this occupation. Austin completed the tabletop play occupation because he was asked to do so by the occupational therapy student. The occupation was selected by the occupational therapy student, however Austin was free to place the foam hearts the way that he chose to. His goal was to make a Valentine for his mother. Austin was unlikely to understand that he was making it for her due to his decreased auditory processing, unpredictable speech, and limited social skills such as engagement and relationships.

Assessment/Observational Information

Observations during this occupation revealed that Austin had difficulty cutting the heart shaped pattern on the paper. He required hand over hand placement in order to hold
the scissors correctly. Austin was unable to stay on the line while cutting out the heart. He also had difficulty staying on task and interacting with those around him. Austin was distracted by others in the room and by the items that were on the table and engaged in increased visual stimulation.

**Adaptations/Compensations Made By Child**

Austin made adaptations throughout the occupation. Rather than holding the paper with his left hand and cutting with the right, Austin stabilized the paper on the table to improve his control of the paper while cutting. Austin had difficulty utilizing the glue stick to glue on the foam hearts. He started to use his fingers to spread the glue due to the fact he had decreased fine motor coordination and decreased pinch strength to hold the foam hearts while applying glue to them. At one point, Austin displayed tactile defensiveness because of the glue on his fingers so he started to wipe his hands with tissues after each foam heart.

**Re-synthesis**

If I were to utilize this occupation again with Austin, I would begin by naming the colors of the foam hearts, rather than having Austin retrieve the requested one. Another way of doing this would be to utilize a communication strip. I could utilize the Picture Exchange Communication System (PECS) to help Austin identify the color that he wants to use. There would be a PEC that stated “I want…” as well as PECS for all of the different colors. Another thing I would change would be to make the outline of the heart larger, making it easier to cut out. The line that I used for this occupation was extremely thin which made it more difficult to follow. I may also offer other types of supplies to
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use such as stickers and glitter glue. This would allow Austin to make more decisions on what items to utilize.

Re- Evaluation

The Peabody Developmental Motor Scale was once again administered to Austin by the student. Austin was 47 months-old at the time of the re-evaluation. Following are the results of the PDMS-II which was administered in March of 2008.

Results of standardized assessment:

i. Grasping:
   1. Raw Score: 47
   2. Standard Score: 9
   3. Percentile Rank: 37
   4. Age equivalency in months: 43
   5. Rating: Average

ii. Visual-Motor Integration
   1. Raw Score: 101
   2. Standard Score: 5
   3. Percentile Rank: 5
   4. Age equivalency in months: 28
   5. Rating: Poor

iii. Fine Motor
   1. Sums of standard scores: 14
   2. Quotient Score: 82
   3. Percentile Rank: 12
   4. 95% interval: 72-92
   5. Rating: Below average

Austin’s rating for grasp is average. But his visual-motor integration was rated at poor and his fine motor at below average. Austin’s visual-motor integration scored at a 32-month-old level and his fine motor at a 40-month-old level.

There are a number of relevant observations made while observing Austin during his occupational performance. Austin required increased verbal and physical cues to maintain attention during occupations. He has decreased awareness of his environment
due to deficits in his proprioceptive system, which is evidenced by him bumping into objects while walking. When the vestibular or proprioceptive system is impaired, individuals may have impairments in body scheme (1979). Austin also has decreased social interactions and eye contact with others, as well as decreased verbalization. Austin engages in increased visual stimulation and requires frequent breaks during tabletop occupations to seek out proprioceptive input. When the vestibular and proprioceptive systems are not working properly, other relationships also may suffer (Miller-Kuhaneck, 2004). He is able to maintain attention for a short period of time after engaging in proprioceptive input.

**Outcomes**

Austin needs continued occupational therapy to help him reach his goals related to cutting and fine motor occupations. The just mentioned intervention worked towards improving his fine motor impairments which were identified by the PDMS-II results that was administered to Austin in November of 2007. Deficits in Austin’s fine motor coordination were once again identified when the PDMS-II was re-administered in March of 2008.

Austin was able to complete some of the tasks in the Peabody during this assessment compared to the last. During this assessment he was able to build a 6-cubed tower which worked on figure ground and fine motor abilities. He was also able to string beads on a string and lace shoe string through holes. Austin did make progress but he was still not at age appropriate level; they were below age at the 32 month-old level.
Austin is unable to state his personal goals due to his inconsistent speech. One of the major goals that his mother has set for him is toilet training. Another goal set by his mother was that he would follow directions when she asked him to do something.

**Goal Setting**

The following goals were set after the PDMS-II was administered in March of 2008. Austin’s mother’s goals for Austin were also considered during the writing of these goals:

LTG #1: Austin will be independent with toileting.
   STG #1: Austin will indicate in gestures, words, and/or behaviors when he needs to go to the bathroom.
   STG #2: Austin will unzip and zip his pants independently when using the bathroom.
   STG #3: Austin will pull down/up pants independently when using the bathroom.
   STG #4: Austin will flush toilet independently when using the bathroom.
   STG #5: Austin will wash his hands independently when using the bathroom.

LTG #2: Austin will remain engaged during tabletop occupations such as cutting or color sorting without verbal or physical cuing to maintain attention for 10 minutes.
   STG #1: Austin will remain engaged during tabletop occupations with moderate verbal or physical cuing for five minutes.
   STG #2: Austin will remain engaged during tabletop occupations with minimal verbal or physical cuing for 10 minutes.

LTG #3: Austin will demonstrate fine motor skills required to cut along a square pattern within ¼ inch of line pattern.
   STG #1: Austin will cut within ¼ inch of a straight line pattern.
   STG #2: Austin will cut within ½ inch of the line pattern when cutting out square.
Conclusions

There are a number of recommendations that I have included for Austin and his family. The first recommendation is to continue outpatient occupational therapy services once per week. I also recommend the continued use of SI techniques to be used during treatment sessions as well as when at home. Some of the SI techniques to be utilized include swinging, brushing, and deep pressure input. These techniques will help meet vestibular, tactile, and proprioceptive sensory needs. It is important for the family to find time in their schedule for these SI techniques. It is also important for them to learn the correct ways for administering the SI techniques. Another recommendation is the continued use of verbal and physical cues to aid Austin during occupations. Because of his deficits in auditory processing, cuing cannot be completely faded out. The use of visual strategies, such as PECS, can also be beneficial. Utilize a communication strip to help Austin identify his needs and wants. This will also increase the interactions that Austin engages in with others. Austin’s family needs to be educated on the different benefits of PECS and how to use it effectively. It is also recommended that Austin’s family be educated on useful toilet training techniques. Please see Appendix A for toilet training techniques.
References


Appendix A

Toilet Training Tips

Signs of Readiness

- Child is dry through the night
- Child indicates when his diaper is wet or soiled
- Child asks to be changed

Prior to Beginning

- Keep track of when the child is going in his diaper. How long after he eats? At a certain time during the morning, afternoon, etc? Keep track of when the child goes in his diaper and note whether it is a bowel movement, a bladder movement, or both.
- Does the child exhibit any types of behaviors (hiding, facial expressions, etc.) when going in his diaper? Make note of these behaviors.
- After keeping track for a couple days, you should see some what of a pattern regarding the child’s toileting times and behaviors.
- Decide whether to conquer bowel or bladder training first.

The Reward System

- Primary reward: a small treat
- Secondary reward: a simple statement of appreciation such as “good job.”
- After the child has had some success, you eliminate the primary reward. From then on, you use the secondary reward in its place.

And So You Begin…

- Use the information that you gathered in the beginning and decide what times of day the child is more likely to use the bathroom.
- Take your child to the bathroom at those times and explain that it is time to go to the bathroom like mommy and daddy do.
- Use the reward system when the child goes to the bathroom…make it a big deal!
- Begin dry pants checks: at mid point between sitting times, ask the child: “Are you dry?” Have the child feel his pants. If pants are dry, give a reward.
- Reward periods of staying dry in addition to rewarding elimination in the toilet.
- Use the more powerful reward for staying dry.
Building Success

- Gradually eliminate rewards for urinating in the toilet.
- Gradually lengthen the time between pants checks.
- Eventually the child should receive one reward for staying dry all day.

Accidents

- Remain calm
- Say firmly: “No. Pants are wet.” And frown.
- Take the child to the bathroom and sit him on the toilet.

Additional Tips

- Make it fun:
  - For boys put floating, circular, cereals in the toilet so that he can aim at them.
  - The child can sit backwards on the toilet seat and utilize the toilet lid as a surface to place a piece of paper on to draw while waiting.
- Remain calm
- Avoid blame, shame, or anger
- Don’t scold, punish or act upset
- Be positive and encouraging
- Don’t give up!