The Use of Play in Speech and Occupational Therapy

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for the Bachelor of Science Degree in Child Development

by

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Sensory Processing Disorder and speech impairment affect millions of children in the United States. Sensory Processing Disorder (SPD) affects a child’s development leading to difficulties with “detecting, modulating, interpreting, and/or organizing sensory stimuli” (Miller, Nielsen & Schoen, 2012, p.804). Furthermore, these children may find it difficult to self-regulate their behavior. Speech impairment is typically described as speech sound disorders (SSD), which involves a child having difficulties with communicating or correctly producing their native language (Brumbaugh, Smit, Nippold & Marinellie, 2013). Brumbaugh et al. (2013) also found that these children were likely to develop a poor self-image which provides even more incentive to find effective therapies. Furthermore, children with SPD and SSD are likely to have other behavioral disorders such as Autism Spectrum Disorder (ASD) or Attention Deficit Hyperactivity Disorder (ADHD) (Carr, Agnihotri, & Keightley, 2010; Cheung & Siu, 2009).

Occupational therapy is often used to treat SPD and speech therapy for SSD. Occupational therapists may employ treatments such as sensory integration approach or Sensory Integrative Treatment Protocol, which has been found to have promising results increasing sensory integration in children (Case-Smith & Bryan, 1999; Paul et al. 2003). Speech therapists use play therapy as it has been proven effective in helping children improve their speech as well as helping children with autism (who tend to be seen in speech therapy) learn to interact with other children (Danger & Landreth, 2005). The interactive activities used in play therapy have been shown to improve multiple behavioral disorders, including SPD. This was the motivation behind creating an interactive game for children to play while in therapy sessions. Although
there have been proven tasks and activities that help children improve upon their developmental delays from their behavioral disorder, there has been little research on a formal game that can be used in therapy.

After researching and brainstorming, the interactive game developed in this project became known as *Hands Up, Speak Up!* The inspiration for the game was *Cranium*, an entertaining, but interactive board game. Melissa Quinn, teacher in a specialty classroom, and Nancy Koppl, speech therapist, were used as consultants for the game and allowed the children in their classrooms at C.L. Smith elementary school be used in the pilot of the game. Ms. Koppl recommended the use of the 80% rule as a main goal of the game, as this rule encourages learning and builds a child’s confidence. The 80% rule states that children should complete the task correctly 80% of the time; if the child is under then the task should be made easier, if the child is over then task should be made more difficult. The target audience for the interactive game was elementary school students in speech or occupational therapy with multiple behavioral disorders (SPD, SSD, ASD, etc).

The game consists of five sections: *Act Up, Build Up, Speak Up, Hands Up*, and *Community*, which are all aimed to benefit children in speech or occupational therapy. During the pilot of the game, which consisted of four rounds, one of the creators played the game with the children while the other observed. The 12 children ranged from first to fourth grade and were all apart of Ms. Quinn’s specialty classroom. Modifications made to the game after the pilot were the addition of a game master (a therapist or trained adult who could provide help during the game and scaffold the tasks to fit the child’s needs) and beginning the game with a *Community* game for increased engagement. After these modifications were made, a second
pilot was conducted and demonstrated these changes to be helpful in increasing interest and engagement. In the future, it would be noteworthy research to assess if *Hands Up, Speak Up!* holds statistical value in improving children’s fine motor skills, gross motor skills, articulation, or expressive vocabulary.
Chapter Two: Review of Literature

Introduction

Sensory Processing Disorder (SPD) and speech impairment are two common behavioral disorders that afflict children in the United States. Currently, three million children in the United States are affected by Sensory Processing Disorder (Walbam, 2013) and six million children from the ages 3 to 21 qualify for speech therapy (Castrogiovanni, 2008). Additionally, children with other disorders such as autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD) are likely to have a sensory processing disorder and are likely to be seen in speech therapy (Carr, Agnihotri, & Keightley, 2010; Cheung & Siu, 2009). Although there have been many therapies used throughout the years in occupational therapy, such as sensory integration and Sensory Integrative Treatment Protocol, an area of promise that has not been sufficiently researched is games or activities that would be easy to incorporate into a child’s play time. Furthermore, research has found that children with autism, in particular, can benefit from games during speech therapy because they are forced to interact with other children, which reduces their anxiety in a social setting (Danger & Landreth, 2005). Play therapy is a beneficial treatment which uses interactive activities to improve behavioral disorders. The children who qualify for speech therapy and sensory processing treatment need individual games based on their behavioral disorder. A game or activity that can be scaffolded to treat multiple behavioral disorders could be a crucial way to improve a child’s sensory integration and speech by allowing emotional expression and ending their session with a smile (Danger & Landreth, 2005).
Children with Sensory Processing Disorder and Speech Sound Disorder

Children of various disorders, such as sensory processing disorder and speech sound disorder, attend therapy to better improve their processing and communicating skills. Sensory processing consists of taking external stimuli, processing the information, and having an appropriate reaction to the stimuli (Byrne, 2009; Cheung & Siu, 2009). In certain children this process is not a simple task. These children have a disorder known as Sensory Processing Disorder (SPD) (previously known as Sensory Integration Dysfunction). Whereas children developing at a normal rate are capable of “detecting, modulating, interpreting and/or organizing sensory stimuli”, children with SPD will have trouble with these skills and self-regulation to the point “that it interferes with daily life routines” (Miller, Nielsen & Schoen, 2012, p.804). For example, a child with SPD may find it challenging to walk barefoot or difficult to work when there is background noise (Cheung & Siu, 2009).

Speech therapy can be described as the “management of disorders of speech, language, communication, and swallowing in children” (Mauro, 2013). Speech-language pathologists most commonly see children with speech sound disorders (SSD). Children with SSD have complications in producing their native language or their language is not produced or used correctly (Brumbaugh, Smit, Nippold & Marinellie, 2013). These complications cause a lack of communication with people the children interact with. Research also shows that a speech disorder can culminate in a child’s negative self-image and self-esteem (Brumbaugh et al., 2013). Although speech impairments and sensory processing disorders have the capacity to affect children without other disorders, there is overlap with these disorders among children with autism and ADHD.
Children with Autism Spectrum Disorder (ASD) are characterized by abnormalities in social behavior, language and communication skills, and unusual behaviors and interests (Mash & Wolfe, 2013). Common social behaviors include a lack of understanding of social scenarios and disinterest in pretend play. Communication impairments for those with ASD include social pragmatic language and pronoun reversals. Lastly, unusual behaviors and interests can consist of sensory abnormalities and over-sensitization. These deficits in children can be improved through speech and occupational therapy. Children with autism spectrum disorders receive significant help from speech pathologists with their social and communication impairments (Auert, Trembath, Arciuli & Thomas, 2012). Children in treatment are on a broad spectrum of behavioral disorders, and it is important to keep this in consideration when they are attending treatment.

**Treatments for Sensory Processing Disorder and Speech Sound Disorder**

Many therapies have been found to help children with Sensory Processing Disorder and speech and language deficits. Therapies that have been found to be effective are sensory integration and Sensory Integrative Treatment Protocol (SITP). Although there are numerous other therapies, “such as perceptual-motor training, kinesthetic training, hippo-therapy, vision therapy, auditory training”. as of now there has not been substantial empirical research on these therapies (Byrne, 2009). Sensory integration approach, which emphasizes activities that promote vestibular, tactile, and proprioceptive stimulation, is often used by occupational therapists to help children with SPD (Case-Smith & Bryan, 1999). One of “the principles of the therapy is the ‘Just Right Challenge’ to stimulate adaptive responses within a play environment that is child-directed and elicits active engagement” (Schaaf & Miller, 2005 as cited in Byrne, 2009, p. 317).
Case-Smith and Bryan (1999) examined the effectiveness of the sensory integration approach in three behaviors: non-engagement, mastery play, and interaction. The case study consisted of five preschoolers who were diagnosed with autism. The study began with a three-week baseline period (the control), and then moved into 10 weeks of treatments, which consisted of the children meeting with an occupational therapist. The study used videotapes to make ten-minute videos of the children in their classrooms and the videos were then watched in 30 second intervals to determine if the three behaviors were present or not. The results were successful as they showed positive behavioral changes in three of the five preschoolers in mastery play and four of the five in non-engaged behaviors.

Another therapy that occupational therapists may employ is known as Sensory Integrative Treatment Protocol (SITP). Paul et al. (2003) examined the effectiveness of the SITP by using a quasi-experimental research design. In the 12-week treatment, children were involved five days a week in different activities for one hour a day. The activities included vestibular, proprioceptive, postural control, tactile, fine motor, and speech training and the treatment was implemented by special education teachers, occupational therapists, and speech pathologists (Paul et al., 2003). Examples of these activities were rolling on the ground, which the researchers referred to as “log roll”, to work on vestibular integration or washing arms or legs with a brush to help tactile integration. Two schools were used in the study and the experimental group consisted of 15 four year olds and the control consisted of 16 four year olds that had previously been diagnosed as pre-primary impaired children. Paul and colleagues (2003) used DeGangi-Berk Test of Sensory Integration (TSI) and Miller Assessment for Preschoolers (MAP) to measure the sensory integration dysfunction and development status of the children. As
compared to those in the control group, the experimental group demonstrated a significant increase in TSI and MAP scores. Thus, the treatment was successful as the experimental group showed improvements in sensory integration and school performance (Paul et al., 2003). Although it was not specifically referred to as play therapy, the treatments made use of play activities that could be helpful in therapy.

**Use of Play in Speech Therapy**

The success of using playful forms of activities in SITP is also valuable in speech therapy. The primary method of treatment in speech therapy is through play. The use of play in speech therapy can help improve linguistic deficits and social interactions through games and non-directive play. Non-directive play involves playing with each child in an environment that can be structured by an outsider, such as a parent or a therapist (Cogher, 1999). Cogher (1999) conducted a study to look at the use of non-directive play within children to foster appropriate social and linguistic reactions. The participants in the study included children from one classroom and the parent as the outsider. The parent provided each child with toys and they could randomly select which toy they wanted to play with. Each toy was related to language development, but only the parent and researchers were aware of this. Cogher (1999) also looked at the importance of imitation for a child’s development. The parent asked each child to make a sentence relating to the picture being shown, and then the parent corrected the sentence. The goal of the activity was for each child to absorb the correction. The study found that the use of non-directive play could be used throughout speech therapy and had positive benefits on the child’s linguistic reactions. Once a child is in a play routine, the parent can adjust it and allow the child to experiment with the language (Cogher, 1999).
As play is a significant aspect of therapy, it is important to acknowledge the play preferences of children with behavioral issues. It is crucial to best encourage them to push the boundaries of their comfort zone and have them enter a social environment with their peers. Play therapy provides positive benefits and attitudes for children. Some children start to feel nervous when they are forced to participate in speech therapy alone. This could occur because children who have language development disorders sometimes find it difficult to interact socially with others (Danger & Landreth, 2005). Children who have difficulties with communication have peer interactions that are negative as well as the experience of social rejection (Danger & Landreth, 2005). Danger and Landreth (2005) conducted a research study to determine the efficacy of child-centered group play therapy as an intervention strategy for improving in areas of articulation, expressive language, and receptive language. Participants included 21 children, ages four to six, who had speech impairments and issues involving social interactions. Each of the 21 children qualified for speech therapy in the school district being studied. The participants were randomly assigned to an experimental group of eleven children and a control group of ten children. The experimental group received 25 group play therapy sessions with their regularly scheduled speech therapy, whereas the control group only received their regularly scheduled speech therapy session. The study continued for seven months, and during the last month tests were administered to each participant in both the control and experimental groups. The study resulted in little significant differences in any of the tests, but found that group play therapy increased children’s receptive language skills, children’s expressive language skills, and reduced children’s anxiety (Danger & Landreth, 2005).
The positive benefits to play therapy were also researched in a study of 20 male and female children. Jäger (2013) examined the ability of play to facilitate children’s views of therapy. Participants ranged from age five to 13 and they participated in the ongoing study for two years. Six female therapists and one male therapist completed the study with two play methods, the Expert Show and the Miniature Playroom. These play methods were created by the researchers and are unique to this study. The Expert Show technique involved a child being invited to be an expert on a news show. The children talked about their experiences of therapy to the therapist. The Miniature Playroom method involved toys and a miniature dollhouse where the children showed the therapist what happened in therapy using the toys. The study found that the Miniature Playroom made the children highly engaged, increased the enjoyment of the props, and promoted non-verbal communication skills (Jäger, 2013). The Expert Show made the children highly engaged, highly dependent on language, and caused older children to show initial embarrassment. Despite initial embarrassment, the Expert Show method demonstrated positive outcomes. Jäger (2013) showed that children were able to fully express their feelings and engage in an empowering experience with the use of play therapy.

Children may feel hesitant to express their feelings when they know they are at speech therapy to work on specific issues. The use of play therapy allows a patient to have fun while treating a maladaptive behavioral condition. Louder, Thompson, and Battista (2012) looked at the correct incorporation of play for the stuttering king in the film, *The King’s Speech* (Louder, et al., 2012). The researchers looked at five analogies that came from the film, which included the crucial nature of relationship, the essential key to have fun, the reliance on others to facilitate the process, the interposition of pithy talk, and the usefulness of a little drama. An example the
psychiatrist discovered from the film was playing music while reciting a passage from Hamlet. As the music was blasting in the child’s ears, the children are unable to hear their speech flaws and do not become discouraged, thus they are able to complete the passage flawlessly. In the study, the participants were children ages four and five who were recent clients of the psychiatrist. The researchers had the psychiatrist play with the children using pretend play while working on their developmental issues. The results of the study demonstrated that the use of play therapy allowed the children to feel more comfortable when a doctor takes a playful approach. Play therapy works on the child’s developmental issues without the child even realizing it (Louder et al, 2012). Overall, play therapy has many beneficial effects on children with speech disorders.

**Use of Play for Sensory Processing Disorder**

Understanding the preferences of the child is crucial in order to receive the most beneficial outcomes in play therapy. Most of the treatments for Sensory Processing Disorder consist of varying activities between the occupational therapist and the child. Play preferences of children diagnosed with SPD were examined to determine how the children preferred to spend their free time. Play is such a pivotal part of a child’s development that Case-Smith and Kuhaneck (2008) aimed to see how play preferences differed among children with and without developmental delays. Parents of 166 children (ages 3-7 and half had developmental delays) answered a questionnaire about their child and the child’s preferences in play. As opposed to children without developmental delays, those with SPD were more likely to enjoy rough and tumble play, less likely to have “play scenarios because they avoid certain play experiences that cause sensory feedback discomfort”, and likely to take part in object exploration (Case-Smith &
In another study that looked at the play preferences of children, Engel-Yeger and Ziv-on (2011) looked at the play preferences of 29 boys diagnosed with ADHD and SPD, as well as 29 boys without a disorder. SPD was measured by the Short Sensory Profile. The child’s preference of activity was also evaluated by a 49-item instrument known as the Preference for Activities of Children. The activities were rated by what the boys really like to do, somewhat like to do, and do not like to do. The researchers concluded that children with SPD are less likely to participate in recreational activities (e.g. unstructured free time activities that are often done alone and with little social interactions such as watching TV), which could potentially deter development (Engel-Yeger & Ziv-On, 2011). To conclude, children with SPD are more likely than other children to engage in rough and tumble play and to not participate in recreational activities. As this was found to possibly inhibit normal development, more research should be conducted on what activities children would enjoy doing and how they can be incorporated to benefit specific behavioral disorders.

**Conclusion**

Research has shown that the use of play in speech and occupational therapy has tremendous benefits for children. The use of games and non-directive play allow the children to think they were playing games when they were actually working on their behavioral disorder. The children are then able to leave the session with a smile on their faces. The importance of games made for each individual’s need can help benefit children immensely in these therapies. The amount of children receiving proper therapy based on their individual need is low (Danger & Landreth, 2005), but focusing on a game for multiple disorders will help address their specific
needs. The purpose of this project is to create a game that will allow for scaffolding appropriate for multiple disorders in speech and occupational therapy. The scaffolding will emphasize the specific behavioral disorder being focused on, as well as the specific age groups in each session. The purpose is to create a challenging environment for each child’s specific needs. To fully understand how to incorporate multiple disorders into one game, specific activities were developed that are particular to the child’s developmental needs.
Game Development

The creation of the game board was based off of *Cranium*, but modified for the target audience (Alexander & Tait, 1998). The creators liked the idea of having each category be represented by a different color, but wanted the game to stand out more so five neon colors were chosen. Gender-neutral colors were chosen so all audiences could be included. The game track demonstrated a spiral shape to make it clear and easy to follow. Each space on the track was a geometric shape and corresponded to the colors of the five sections on the board. The five colors each represented a different category of the game: Hands Up, Speak Up, Build Up, Act Up, and Community. Instructional cards were created for each activity in all five categories. The instructions on the card were phrased in engaging and child appropriate language for the participants to understand. Each of the tasks described on the cards required specific tools that were brainstormed before purchasing them (See Appendix A).

The target audience for the interactive game, *Hands Up, Speak Up!* were children in elementary school with multiple behavior disorders, such as autism, speech impairments, and sensory processing disorder. Nancy Koppl (See Appendix B), the speech therapist at CL Smith Elementary, was contacted to gain permission to use her classroom as a resource for the game. Melissa Quinn (See Appendix C) was also contacted to use her classroom to pilot the game with the children, where she and the children provided feedback regarding the game as well. *Hands Up, Speak Up!* was based off the game *Cranium* and the sections of the game were adapted to focus on speech and occupational therapy. *Cranium* has four sections: Creative Cat, Data Head, Word Worm, and Star Performer (Geek, 2012) and *Hands Up, Speak Up!* has Build Up, Speak
Up, Hands Up, and Act Up plus Community. These sections include trivia questions, drawing, sculpting, challenging definitions, and acting out scenes from a card. The activities pertain to either occupational or speech therapy or both. The activities are placed into the categories according to the individual goals for the activity. For example, the game “Jumbled Up” is placed in Build Up because children practice putting words in a specific order, but was originally planned to be placed in Speak Up. Although the original intent was to have separate sections pertaining to occupational or speech therapy, after creating the sections they were used as inspiration to organize the activities. Hands Up, Speak Up! had the same philosophy as Cranium, everyone shines (Tait, 2013).

The five sections of Hands Up, Speak Up! include occupational and speech therapy aspects intermixed. The games that target those with speech impairments were designed to benefit children with autism as well. The autism section included interactive games with peers to focus on pretend play and improve communication skills. The activities are integrated into other sections as well in order to create a variety in the game. The justification behind this section was research stating that including children with autism with peers of normal behavior allows the children to imitate and observe appropriate behavior (Sansosti & Sansosti, 2012). Research also indicates that children with autism lack a theory of mind, so demonstrating pretend play will allow understanding of others as well as predicting behavior of others (Baron-Cohen, Leslie & Frith, 1985).

The speech impairment section, Speak Up, includes different sets of cards with pictures of activities for children that asked them to guess how someone is feeling, as well as what will happen next based off of kitchen scenarios. While most of these games are speech activities,
they also benefit children with autism. It also includes Bananagrams in which the children had to place the letters together to come up with as many words as they could in a specific amount of time (Nathanson, 2011). The game master is encouraged to sound out the letters in order to help the children create the words. The final set of cards in the Speak Up section are the “Popcorn” cards. These cards included words with -ch, -r, -s, and -j sounds for the children to pronounce and shout out loud as best of their ability. The justification behind this section was based off Cogher’s (1999) study which consisted of a child being shown a card with a picture. Then, the child had to make a sentence related to the picture, which had positive benefits on the child’s linguistic reactions.

The two occupational therapy sections were designed to benefit children with Sensory Processing Disorder. The first section, called Hands Up, focused on activities that help children increase their vestibular sensory integration. These activities consisted of the different jumping exercises such as “Helicopter” which involves children spinning with their arms out, benefiting their gross motor skills. Hands Up also included a beanbag toss, an Etch-A-Sketch activity, and a catching fish game to help participants develop their fine motor skills. The second section, Build Up, focused on tactile sensory integration by using modeling clay to build an object from the card drawn. Children could also practice using fine motor skills in the activity “What am I drawing?” as they have to use a pen to draw the picture on the card (i.e. a house) drawn on a sketch pad. This section also included building a block tower and organizing a sentence from a group of jumbled words on a white board. These activities were recommended by an occupational therapy intervention strategy handbook that was used at the elementary school C.L. Smith and were used in the study done by Paul et al. (2003) to assess the effectiveness of the
STIP; (see Appendix D). The table in Appendix D describes the weekly treatment the children received in each sensory system for the first three weeks. The activities adapted from the STIP are shown to increase sensory integration for vestibular and tactile integration. These sensory systems were chosen as they were the easiest to incorporate into the game.

The fourth section was called *Act Up*. This section included games that focused on both speech and occupational therapy. The speech incorporation of the game was in “Who am I?” and “Face Off”. “Guess Who” worked on children describing what they saw on a picture to another teammate in order for them to guess who they are describing. “Face Off” worked on children defining emotions and acting out what a person looks like when they feel a specific emotion. The occupational therapy was incorporated into this section with the games using *Bop It* in “Twist and Shout” and a game similar to Simon Says. *Bop It* has children use fine motor skills in order to complete the task the toy was shouting (Klitsner, 1996). The Simon Says game focused on touching certain parts of the body as fast as they could.

The final *Community* section of the game incorporated both speech and occupational therapy methods. All of the players work together in order to accomplish a task. The games included tongue twisters, building block towers, turkey basters, and a beach ball. The turkey baster game focused on using motor skills to move cotton balls using the air from the baster. The beach ball activity included shouting out rhymes, which worked on speech, as well as throwing the ball to the teammates, which focus on motor skills. The block tower worked on motor skills and focused on really working together. The tongue twisters allowed children with speech impediments to practice correct sounds when the speech therapist, or game leader, stated the correction and shows the way their mouth moved to make the correct sound.
Guidelines and instructions were also provided in *Hands Up, Speak Up!* to ensure beneficial outcomes. Methods to scaffold were provided in the game, if necessary, and described each category and how each game worked individually. While creating the game, the creators consulted Nancy Koppl and Melissa Quinn with any questions that arose regarding the appropriateness of the game and how to adjust it, if necessary. Nancy Koppl is the speech therapist at CL Smith Elementary and Melissa Quinn is the teacher for the special day classroom at CL Smith. A main goal of the game was for children to always maintain an 80% accuracy level in order for them to be benefitting the most from the game and to not lose confidence in their abilities. The 80% rule was advice given from Mrs. Koppl as it is a rule that she uses while playing games with children in therapy.

**Benefits/outcomes of Hands Up, Speak Up!**

A game was chosen for use as a therapy method because of the numerous benefits that play therapy can offer a child. The goal in choosing to incorporate *Hands Up, Speak Up* into a therapy session was to create a fun and lighthearted environment where children can enjoy themselves. The creators wanted children to feel encouraged by their teachers to promote social behavior and feel less anxious when interacting with their peers. It was anticipated that the child will leave the therapy session with a happy and positive attitude in hopes the child will want to return again.

**Other Considerations**

There were some limitations to consider when creating the game. Many children seen in speech and occupational therapy are bilingual and are still learning their second language. This possibility created the option to translate the directions and practice our Spanish to use in the
game in order to apply to more participants. Due to time constraints, a Spanish version was not
created. Another limitation was if a child was not enjoying the game and wanted to move on to
another activity, a decision to discontinue or continue would need to be made. It is possible that
the reason the child is not enjoying the game is because the leader of the game is not
demonstrating a lively personality. In order to prevent this from happening, instructions were
included to encourage the facilitator to have an outgoing demeanor when participating in the
game to ensure an elated child during the activity.

**Pilot of Game**

The pilot of *Hands Up, Speak Up!* occurred in Ms. Quinn’s special day classroom. The
game was played four times, 20 minutes each round, with groups of four children at a time.
Some of the 12 participants played the game for more than one round. Each of the participants
ranged from first to fourth grade students from the special day classroom. All participants were
diagnosed with a variety of behavioral disorders, including speech impairments, Sensory
Processing Disorder, and Autism Spectrum Disorder. One of the creators played the game with
the children, while the other observed the game and took a running record, charting an 80%
accuracy goal. Afterwards, the creators asked Melissa Quinn for any feedback and evaluations.
This allowed for a chance to modify the game to better suit these children’s needs and interests
before the final game was presented and evaluated.

**Evaluations/ Modifications**

During the first three rounds of the pilot, a slow paced version of the game was
implemented with four children (two children on each team) and a fast paced game occurred
during the fourth and final round. A rule that the game master added when she began playing the
game with the children was that everyone puts their hands up when a team landed on *Hands Up* to create a more fun environment. The creators also made sure that the children played all the individual games (except “Popcorn”, “How are you feeling?”, “Kitchen Scenarios”, and “Who am I?”) so all games could be properly evaluated.

During the first round, the first card that was drawn was “Etch-A-Sketch”, and the child chose to draw a square. At first he had difficulties figuring out how to use the *Etch-A-Sketch*, but then he figured it out and gained two points for completing the task (Cassagnes, 1960). After the second team played “Twist & Shout”, the first team then played “Peel the Banana”. They worked on creating words together. The first team had much better cooperation and seemed to be enjoying the game more than the other team who seemed to always be competing against each other. This is common among children, so it is important for the game master to keep the participants’ attention on the game and not arguing with teammates. The second team then received “Stack Up,” where the game master needed to prompt them to rhyme. They seemed more interested at first with the blocks, but then they grasped the concept of the game and completed the task. They were proud of their accomplishment, and after completing and winning their first task there seemed to be more cooperation between them and they became more engaged. Next, was *Community* and they all had to do complete tongue twister. The children were excited to work on a task together as a team. The last game was the fishing game. The children were fascinated by the game and even said “this game is cool, kids really like this game”. The game master decided to let the children each take their own turn ‘fishing’ instead of letting both the teammates do it at the same time (she did this as the fish game is small and the children did not have the coordination to both play at once).
The second pilot began by introducing a *Community* game to see if children would become more engaged and have more pleasure in playing the game (creators felt a lukewarm beginning in the first round). The snowball game was drawn from the *Community* deck, which created excitement in the children. “That was a fun game,” one participant expressed about the snowball game. One of the children used the turkey baster different than what the game masters had originally planned (used whole hand instead of pointer and thumb). The creators concluded that the child used the turkey baster like this in order to be faster as it is easier to use the turkey baster with the whole hand. This is a time when the game master can ensure that children are properly using the materials in order for them to develop skills needed. The children again expressed excitement about the fish game. Having the *Community* section implemented as the start to the game was beneficial to create engagement and interest in the game. The game master in both rounds ended up being more of a guide for the children. It helped keep the game flowing because the children were better able to follow the rules and understand what the tasks were.

The second team was excited to do the block rhyming game and were supportive of one another. The first team then completed “Twist & Shout” again. The children were able to participate in the task but could not complete it because neither of them were very familiar with the activity. They still wanted to continue playing with it, regardless of their previous knowledge regarding the specific task. The game master needed to prompt the team that received Simon Says in order to better facilitate an understanding of the concept of the game. After clarification, the team was able to complete the tasks on their own and enjoy the game. One of the aids who was watching the game stated that she wanted to play this game because she observed the children having fun while playing it. The children enjoyed the difficulty of the tongue twisters. It was encouraging
to see the children giving all of their effort to enunciate the words in order to participate fully in the game.

The third round started with the Community game of tongue twister. The children were quickly entertained and engaged. Team one first drew a “Sculpt It” card and the game master prompted the child to choose a basic object to sculpt. The child was only able to guess a ball not the specificity of a bowling ball. Team two then received Bananagrams and became interested in making as many words as possible. It was enjoyable to see the children sounding out the words as they were creating the words. Team one then got “Face Off”, where each team member drew a card from the corresponding deck. The team expressed confusion on how to start the task, so the game master needed to help prompt and give them hints. Although it was a bit difficult for them, they were able to learn from the cards. Team two then drew a jump card and they played “Helicopter”. The girl on the team had an enjoyable time completing the task, but the boy on her team seemed bashful. In the future, this would be a good moment for the game master to step in with high energy and encouragement in order for the child to properly complete the task.

The fast paced game was implemented in the fourth and final round. Having two dice also added a math component to the game. Some of the children were adding the numbers together in their head, while some counted the dots on the dice when it became more of a challenge. This round did not include a Community game in the beginning, which showed a decrease in engagement than when the Community game was implemented in previous rounds. The next task was beanbags and the children had fun completing the task as they continued to back up and hit the object. The team then completed in “Sketch It”, which also worked out well. The last game played was “Jumbled Up”. Instead of playing where a team member created and
jumbled up a sentence, the game master wrote a sentence and had the team work together to put
the words in the correct order. One girl on the team could not say a word, so the boy on her team
helped her sound out the word. After the pilot, the creators feel the game works best with a
game master, as this person can provide scaffolding, ensure children are focused, and benefitting
the most from the game. Furthermore, it is even more beneficial if the game master has worked
with the children previously and can easily modify the game to fit the child’s needs, such as
when the game master changed “Jumbled Up”.

Although scores were included in all games, emphasis was not placed on a ‘winner’ or
‘loser’. The children liked that they received a point for attempting the task. Almost all of the
children that played the game asked if it could be brought back in the following weeks. The
children were engaged in the game, despite it being the end of the school day. The substitute
teacher even mentioned that she was surprised that the children were so attentive, as they had not
been very cooperative the whole day. The children really liked the board game and the teacher
also commented that the layout of the board was beautiful. Children were easily able to follow
the spaces around the board and liked the colors and shapes.

Overall, specific recommendations are as follows. In general, a better debriefing of the
rules of the game should be given as well as how to play each of the individual games before
starting (there was one girl who has never played Bop- It). To make the game more accessible,
all letters from Bananagrams need to be out before beginning the task. Another reminder is for
the game master to make sure to wind up the fish game completely so children can have full time
to try and fish. The game master should scaffold wording/activities for the children, i.e. say
“mistake” instead of “error” as it is easier for children to understand. Although it was not
originally meant for the game master to have such a significant role, it was best for the game as it makes the game run smoother and enables the children to have a more enjoyable learning experience. Another modification is to start with a *Community* game as it promotes engagement and encourages enthusiasm for the game. Everyone receives two points for participating in *Community* activities regardless of whether they are completed accurately.

The presentation of the board game was easy for the children to follow. The colors were bright, welcoming, but not too distracting. The spiral direction from the start to finish was easy for the children to follow. The teacher complimented the creators on the professionalism of the game and the lamination kept it from bending as well. The board is easy for traveling and fits perfectly on a desk.

Once the game was modified, the game was played another time to make sure the modifications were correct. The game flowed much better than the first pilot. The children continued to enjoy the game and once again asked if it could be brought back in the future. Moreover, having a game master ensures the children are properly performing the tasks to ensure practice and development of skills.
Chapter Four: Product

After all of the changes to *Hands Up, Speak Up!* a travel-sized bag was purchased to place all of the supplies, including the game board, in an organized fashion. In the final product, the materials consisted of instruction/game cards, color pieces, “Who am I?”, timer, two dice, blocks, *Bananagrams*, beach ball, bop it, cotton balls, three bean bags, sketchpad, fish game, two turkey basters, whiteboard, modeling clay, an Etch-A-Sketch, pen, and whiteboard markers. The five categories in the game were divided into five separate plastic bags. Each bag was labeled and color coordinated for the specific category. All of the bags contained supplies needed for each task as well as the instruction cards. In the travel-sized bag, we included the organized plastic bags, instructions, as well as the game board. The bag was labeled with *Hands Up, Speak Up!* and is easy to carry around to different game locations. The instructions included a detailed description of how to move along the board and each task for all five categories.

**How to Move Along the Board**

Before beginning the game, decide if a fast paced or slow paced game is preferred. For a slow paced game, use one dice and for a fast paced game use two dice. To begin the game, each team will choose a color piece and place it on the start mark. All teams will roll and whoever receives the highest number will go first. If a team rolls the same number, continue until a difference is made. Each team will roll and whichever shape/color they land on, they pick an instruction card from that category and complete the game/task given on the card. Once the task is complete the next team gets a turn and same rules apply. The game will continue until both teams reach the finish in the star stating “*Hands Up, Speak Up.*” The winners of the game will be the team with the most points. This will emphasize that it does not matter which team finishes first, but which team was most engaged and worked the best together. It will increase
engagement in the game and boost self-confidence in the other teams to help finish, so a winner can soon be determined.

There are four categories for each team and one category where all teams work together. The four categories include Act Up, Build Up, Hands Up, Speak Up. The fifth category where all teams participate is called Community. Each category is represented by a color. When a team lands on a certain color, they must grab an instruction card from the designated category. Each category has multiple games and each instruction card explains the purpose of the games. When a team completes the game, the next team takes their turn on the board.

When a team lands on a green square they grab a card from Speak Up, yellow diamond is Build Up, orange triangle is Hands Up, blue circle is Act Up, and purple star is Community. When each team completes a task at a category they receive two points. When the team attempts the task but does not necessarily complete it, they receive one point. In order to promote working together and gaining excitement for the game, have all of the players participate in one Community game before rolling the dice to decide who goes first. Whichever team reaches the finish first receives ten points to add to their final score. The team can keep track on the drawing pad or on a separate sheet of paper, whichever is preferred by the players.

The Five Categories

Speak Up involves activities where team members work on their speech and communicate with others. “How are you Feeling?” will have the team draw cards from the How are you feeling? deck and describe how they think each character on the given card feels to other team members. The goal is to have each team member complete at least two cards each before moving on. “What’s Cooking?” will have the team draw cards from the kitchen and as a team
guess what should happen next based on the given scenario. The picture of the cards is the cause and the effect is one of the options on the card. All of the options on the card are valid responses, but more options are still correct if stated. “Peel the Banana” will have the team create as many words as possible from the letter choices in the banana. The time limit for the game is until the timer runs out. It is helpful to sound out the letters in order to create words. The words must have at least three letters in order to count when the timer runs out. Make sure to lay out all of the pieces with the letters facing up before starting the timer. “Pop the Popcorn!” will have each team member go around and read a piece of popcorn. The goal of the game is to read all of the popcorn cards before the timer runs out. It is okay if the team does not finish the cards, just as long as they tried their best.

Build Up involves the creation of objects using many different supplies. “Jumbled Up” consists of the team using a whiteboard to write a jumbled up short sentence about an animal or person and describe something they are good at. Then, a teammate will arrange the pieces of the sentence in the correct order before the timer runs out. If the first teammate cannot order the sentence correctly, then another teammate can try and the timer will be started. “Sculpt it” will have the team sculpting one of the objects listed on The Artist card drawn from the deck with the modeling clay. If none of the listed interest you, you may draw one other card. Have your teammates guess before time run out. “Stack Up” will have the team member who drew the card gets to choose a word to start. Then every team member has to say a word that rhymes with the chosen word. After saying a correct rhyming word, blocks are added. The team is trying to continue rhyming until a tower is created with all the blocks. For teams of 2-3 members, each member adds four blocks after each rhyming word. For teams of 4+ members, each member
adds three blocks. Continue rhyming until all blocks are used. In “What am I drawing” the team will draw on the sketchpad one of the objects listed on *The Artist* card picked from the deck. If none of the listed interest you, you may draw one other card. Have your teammates guess before time run out.

*Hands Up* involves activities where teams can work on their motor skills. Make sure the team puts their hands up when they land on orange! “Jump!” will have a team draw a card. After drawing this card, decide on one of the listed jumping exercises for you and your teammates to do. The options are helicopter, jump in place, hop on one foot, or your choice and follow the leader. Helicopter involves spreading your arms out and spinning around. Free Choice and Follow the Leader is anything the team leaders want to do. All team members must follow whatever the leader decides. The team must continue the jumping exercise for the length of the timer. “Gone Fishing” will have the team grab the fishing game try to get all the fish out of the pond before the timer finishes. In order to start the time, wind it up and let the children begin. If it is too difficult for two children to do at once, have one child complete it at a time. If one child completes the task by getting all of the fish, then the two points are still earned even if the other members on the team could not fish them all. “Sketch It!” will have the team using the *Etch-A-Sketch* and drawing either a staircase, triangle, square, pentagon, or hexagon (the team decides) before the timer runs out. “Toss the Beans” will have the team chose an object (such as someone’s shoe) and take three steps back. Then the team will try to hit the target with the beanbag or get the beanbag closest to the object. If someone hits the object then two points are awarded.
Act Up involves team members understanding the expression of others and performing various acts for each other. “Simon Says” will have one member of the team act as Simon. Simon will shout tasks for other team members to participate in. The first round is basic: head, shoulders, knees, toes, and ears. The second round becomes a bit more challenging as Simon must speed up what was stated in round one. The final round makes Simon close his or her eyes while shouting these commands to the others. Once the third round is complete, the team can be finished and the next team can complete their assigned category. “Who am I?” is similar to “Guess Who?” and consists of the team splitting off into groups. One group will receive the red set of cartoon characters and the other will receive the blue set. The object of the game is to describe each character in detail so the other team can guess who the player is talking about. The group that guesses the character first wins. “Face Off” will have each team member grab a card from the face card deck. Each member will look at their own card and then each member will one-by-one act out the emotion expressed on the card. The participants are only allowed to use facial expressions and actions, no talking is allowed. When all of the emotions of each player in the team is guessed, the team can complete the task and move onto the next category when it is their turn. “Twist & Shout” will have each of the players take a turn with the Bop It device. Each member will play with the device until an error has occurred, this means when they did an action other than what the device told them to do. Once an error occurs, the player will pass it on to his or her team member. Once all of the players on the team have had a turn, then the game is complete.

Community involves all teams working together to complete specific tasks in high pressure situations. It requires teamwork and positive encouragement from all teams. Each team
earns two points when they participate in community. “Beach Speech” will have all of the teams create a circle together and toss a beach ball around it while exchanging rhyming words. The beach ball will need air in order to get a good speed on it. One player in the circle will start the toss by saying a rhyming word, such as “hat.” Once the ball goes around the circle once, a new rhyming scheme can begin. When the ball goes around the circle three times, the game is over. If a player cannot think of a rhyming word then they must start it over with a different rhyming scheme, but the circle does not count and restarts at the team member who could not come up with a rhyming word. “Snowball Race” will have each team compete against each other in a snowball race. The snowballs are the cotton balls and they will be blown across with a turkey baster. The object of the game is to see who has the most snowballs moved by the time the timer runs out. The teams can decide on the same start and finish for the race. Once the timer begins, each team will choose a player from their team to compete. The other team members are cheerleaders and are present for encouragement. “Tongue Twisters” will have all players partake in this activity. One player will choose a card from the twister deck. Every member must go around and repeat the tongue twister without any errors before the timer runs out. The goal of the game is to complete as many tongue twisters as a team before the timer runs out. If a player makes an error, they must start over, but the whole team does not have to repeat what they have already stated. “Block Tower” is a game when there are two teams divide the blocks by assigning a team two colors. If there are more than two teams, evenly separate the blocks among the teams. The goal is to alternate the colors as each team adds a block to create a tower. When playing with multiple teams, if the team does not have a different color from the last added they are skipped until the tower is completed. If all the teams only have one color left than they
continue to add the last of their blocks in order. Make sure the tower doesn’t fall.

All of the detailed instructions above allow for a successful game. The participants can reference what is provided in the travel-sized bag for any questions that may arise before or during the game.

Images of *Hands Up, Speak Up!*

![Hands Up, Speak Up! game board](image.png)

*Figure One: The Hands Up, Speak Up! game board.*
Figure Two: Travel-sized bag with all tools for the game

Figure Three: Instructional cards for all tasks in Hands Up, Speak Up, Act Up, Build Up, Community.
Figure Four: Sample cards.

Figure Five: Playing the “Snowball Race” from the Community section.
Figure Six: The game master and children landed on *Hands Up!* section.
Chapter Five: Conclusion

*Hands Up, Speak Up!* was very successful during the two pilots of the game. The creators achieved what they set out to accomplish—creating a game that allowed for an 80% accuracy rule. Introducing a new game firsthand creates an excitement that may not demonstrate an 80% accuracy. When the game is continuously played with, the 80% accuracy can be accomplished because children become more familiar with the tasks included with the game. The instructions and board are also easy for the children to follow and enjoyable to play, while incorporating occupational and speech therapy. The sections consisted of fun, but challenging games that enable the children to learn, work on occupational/speech therapy, and have a good time. Although the children seemed to be learning from the games, it is beyond the scope of the project to assess whether playing *Hands Up, Speak Up!* has statistically significant value. However, as the activities that are included in *Hands Up, Speak Up!* are a part of therapy sessions, they have been shown to help individuals improve on their developmental delays. During the pilot, the children were visibly working on, but challenged by tasks such as tongue twisters or using their pointer finger and thumb to use a turkey baster. These are tasks that many children in speech or occupational therapy need to further develop; though some offer opportunities to an entertaining, and engaging manner.

One of the main goals for *Hands Up, Speak Up!* was to create a game that permitted scaffolding to help children with multiple behavioral disorders. According to Danger and Landreth (2005) games that allow scaffolding to treat multiple behavioral disorders could be a crucial way to improve a child’s sensory integration and speech by allowing emotional expression. The game includes tasks that are used in both speech and occupational therapy, which allows a variety of behavioral disorders to be incorporated into the activities. The
participants were unaware of his or her differences during the game but they are still able to complete the tasks. However, it is in the game master’s hands to modify the activities based on the individual need of each participant. Some participants may need to focus on speech where other participants need to focus on his or her motor skills. Each child playing the game shined and excelled in their specific behavioral disorder. The game incorporates activities to improve participants who have these focuses, such as children with autism.

Mash and Wolfe (2013) characterized children with autism as having abnormalities in social behavior, language, and communication skills. Activities such as “What’s Cooking?” and “How are you Feeling?” were created to address these areas. These activities have participants express social skills and also allow them to practice picking up on social cues of others. During the pilot of the game, one of the participants was diagnosed with autism. The participant was able to understand the feelings of others when acted out by his or her teammates. The participant also communicated this to the game master regarding how the other teammate was feeling.

Nancy Koppl (See Appendix B) recommended a goal for children to maintain an 80% accuracy level in order keep a high level of confidence throughout the game. The game incorporated the 80% rule by giving children the opportunity to always receive at least one point after completing each task. If children completed the task accurately and in the specific amount of time, the team received two points. The children always wanted to do their best to achieve the goal of receiving two points. If they received one, they did not lose self-confidence and were still thrilled about gaining a point. In order for all team members to cooperate together in Community tasks, each team received two points regardless of accurate completion of the given task. This point system allowed children to feel successful and confident throughout the entire
game process. Our 80% goal did not meet consistently with the pilot population, however the creators felt it was still a realistic goal.

The creators decided to incorporate a *Community* game into *Hands Up, Speak Up!* for increased engagement where the children work together in order to complete a challenging task. The goal of *Community* is to promote social skills, as children with communication difficulties often experience social rejection (Danger & Landreth, 2005). For example, one of the *Community* games, “Snowball Race,” involves a representative from each team to use a turkey baster to blow as many cotton balls as possible across the table before time runs out. The other team members are included in this game by cheering their team member on. Thus, the children work on their social skills while using their fine motor skills to make the turkey baster blow the cotton balls across the table. According to Paul et al. (2003) fine motor skills are an important learning task for children with SPD and a skill they need to work on.

**Intended Use, Limitations, and Future Work**

*Hands Up, Speak Up!* is intended to be used in a therapeutic setting or in a classroom environment. The game can be used at home if a game master has background on specific behavioral disorders. The game was intended to help children who were also bilingual in Spanish, but with the short amount of time only an English version was created. For future use, the game could be translated into Spanish and played with more children in a therapeutic or classroom setting. Another qualification for the game to be most beneficial is for the game master to scaffold when necessary, based on the individual's specific needs. The objectives of *Hands Up, Speak Up!* were for children to have fun and stay engaged during the game, build on their skills, scaffold, and integrate activities to benefit groups seen in speech and occupational therapy.
There is not enough research to make a conclusion that the game helped increase skills that children were working on in therapy. Integrating the game more frequently and taking notes on the child’s progress could be done in future research. The novelty of the game may have hindered children’s abilities to meet 80% accuracy. If they had played more frequently, the goal likely would be achieved. For future work, it would be interesting to use Hands Up, Speak Up! in research to find out if the game has statistical significance in regards to improvements in fine motor skills, gross motor skills, articulation, expressive vocabulary. In order to do so, the game would need to be played more frequently, which would also research whether the 80% accuracy rule is an appropriate cut-off for demonstration of mastery.
References


Walbam, K. M. (2012). The relevance of Sensory Processing Disorder to social work practice:


Game Board References


Reflection One: Game Development

CD 462 “Hands Up, Speak Up!”

Game art:

- Each section is a different neon color
- Purple, yellow, green, blue
- Logo: multiple hands with microphones around them
- Each item on board game is either a hand or microphone
- Community/Wild card is logo
- Game pieces: people, cars, etc. (open to more ideas)

Format of game:

- Based off Cranium
- Include instructions of each category and game involved
- Create deck of cards to explain each game w/creative and fun instructions
- Split into 4 categories/sections
- Creative Cat, Data Head, Word Worm, Star Performer =
- 2 categories speech, 2 categories occupational
- Possible games/activities:
  - Cards with pictures of people/activities and ask the children “how the people are feeling,” and “what is going on in this picture?”
  - Given a card with an item, make a sculpture with clay in certain amount of time and have other team members guess it
• “Simon says”: provide cards with picture and words of specific body parts
• Wild card: every activity involves all teams (to promote community)
• Have a turkey baster and blow it on cotton balls as a race
• Magnetic fish and pick them up in a certain amount of time (possibly to pick up in certain color order)
• Have recording of challenging riddles (tongue twisters), have team repeat them
• Have to go around each team and first person to mess up is eliminated
• Kitchen scenarios: shows words and picture to describe how they feel or what they should do next
• Show picture and scenario in text
• Categories for possible answers
• Jumping activity: imitate a helicopter, airplane, car, jump in place, hop on one foot, follow the leader, hop scotch
• Get Etch a Sketch and have them draw what is seen on the card
• Use Bananagrams to build words on chart and articulate each word on chart
• “Popcorn cards”: have words with –ch, -th, -s, -r, -j sounds
• Use beach ball and throw in a circle exchanging rhyming words (community game)
• Bean bag toss: have a target for participant to hit
• “Guess who”: Make cards and have children guess who they are talking
Instructions:

- Base off of cranium instructions
- Separate by each category
- Describe individual games and age-based
- Translate basic instructions into Spanish
- Include materials (for example: timer, game pieces, clay, dice, etc.)

Reflections outline:

1. First meeting of outline of games involved with Cranium
2. Choosing materials for individual games
3. First meeting with children (choose 1-5 games to play with them) and get feedback
   a. Continue until all games are distributed and edited (if necessary)
4. Come up with cards for each section (explains directions in cute riddle)
5. Create game (laminate and look extra professional)
6. Use game with students and get feedback

Goals:

- Create board game and buy materials by 2-1-14
- Complete reflections (1-2) each week
• Create cards by 2-8-14
• Evaluations/Feedback completed 2/8-2/22
• Final project and reflections done by 3-1-14
• Evaluation and completion 3-1-14
Reflection Two: Shopping for Toys and Supplies

After creating our list of supplies needed, our next planning session consisted of Jodi and I going out to toy stores, Michael’s, and Target to get all the supplies needed for our game. We spent a lot of time carefully selecting every item we needed before buying it, to ensure that it would be acceptable for our age group with their developmental delays as well as being gender neutral. The supplies we needed to buy were an Etch-A-Sketch, white board, sketchpad, turkey baster, beanbags, Bananagrams, cotton balls, fish games, beach ball, timer, blocks, dice, Bop It, and paper for the board and cards. It took a while for us to find the supplies, as we were very specific. For example, we kept coming across colored Etch-A-Sketch and ones that used pens instead of knobs to etch the picture. We wanted the original red color, as it was gender neutral and the knobs to help with fine motor skills. We also tried to get the small version of toys so that it would be less bulky in our game box. For our game board and cards we decided to buy neon colors so they are bright and fun. In Jodi’s experience, neon colors were interesting to children with developmental delays and held their attention. We decided to use purple, green, yellow, light blue, and orange as they were all vibrant colors that were gender neutral.

Our goal for next time is to put everything together and officially make the game. We will first need to figure out how we want to make our cards and what will be written on them. Then, we need to create our board, put the spaces for the game pieces on the board, and create the instructions. Everything will need to be cut and glued carefully before it is all laminated to look professional.
Reflection Three: Categorization

The process of separating each game into five categories was quite challenging. We wanted to reflect the categories used in *Cranium*, but make it relate to our game as best as possible. The four categories are *Act Up*, *Speak Up*, *Build Up*, and *Hands Up*. Our fifth category is *Community*, where all members of the game participate in one activity during the same time.

The *Act Up* category is represented with the blue in the game and includes games where players must act out activities and imitate actions from specific cards. The four games in this category include “Simon Says”, “Who am I”, “Face Off”, and “Twist and Shout”. “Simon Says” has one team member act as Simon and tell the other players on their team to touch certain body parts. There are three rounds to the game, each getting more challenging. This game helps children with their listening skills as well as motor skills. “Who am I” is essentially guess who, which forces the teammates to communicate and describe what they see on the pictures. “Face Off” includes a group of cards with different emotions. The team has to act out what they see on the picture to the other members of the team. “Twist and Shout” uses a bop it and the team must take turns using it. When one team member does an action incorrectly, they must pass it on to another team member.

*Build Up* is represented in yellow and includes games that create and build things as well as objects. One game includes blocks. The object of the game is to find a way to build a block tower using all of the pieces in a certain amount of time. The next game is based off Pictionary and the team is given a set of cards and must draw some of the items and have the other team members guess. There is another game using clay, which the team has to create something from the *artist* cards and have their team guess what they have created. All of these games focus on
occupational therapy and work on the child’s motor skills. The last game in this category is scrambled up. Some of the team members choose a few words and scramble them up on a white board. The other team members must put them in an order that makes a sentence. The team must say the words allowed to help them create a sentence. This is something that is seen in speech therapy.

The *Speak Up* category is represented in green and includes games that are mainly used in speech therapy. The first game “How are you Feeling” includes scenarios and the team must figure out how the person in the picture is feeling. The next is “Kitchen Scenarios,” which shows a picture of a scenario on a card and then options on what should happen next. It focuses on cause and effect. The next game uses Banagrams. The team must come up with words using the letters from the banana. The final *Speak Up* game is the “Popcorn” game. There are *Popcorn* cards, which include cards with specific sounds that are difficult to pronounce for children in speech therapy. The team will read as many cards as they can accurately before the time runs out.

The *Hands Up* section is represented in orange and includes games that focuses on occupational therapy. The first game is a fishing game where the team must grab all of the fish from the pond in a specific amount of time. The jumping activity has each team participate in a specific jumping task stated on the instruction card. The third game includes an Etch-A-Sketch. The team must draw a certain picture for the other team to guess. The final game is a beanbag toss, where the team creates greater distance from each other after each successful toss. All of these games include teamwork and help to work on motor skills.

The final category of the game is *Community*. This category includes all teams in the game. There is a game with a turkey baster and cotton balls. The teams must race and see who
can get all of the cotton balls to the other side using the turkey baster. There is a game with a beach ball where all members sit in a circle and exchange words that rhyme while they pass around the beach ball. The third game includes tongue twisters. Each member of the game must go around and say the tongue twister on the given card without errors, and each member must say it without an error before moving onto the next tongue twister. The final community game includes blocks. The team must make a tower but each team is designated to certain colors. They can only use the colors they have to help contribute to the tower. Each of these games includes working together in a high-pressure situation, and both include speech and occupational play therapies. Coming up with these categories were challenging, but we are excited they came together as well as they did.
After getting all of our materials, our next meeting consisted of us putting everything together. We decided to use Microsoft Word templates to create our cards and use our chosen colors for the different categories: *Speak Up, Build Up, Act Up, Hands Up*. We decided to make the board a simple collection of the four colors with the fifth color as a small square in the middle. Then we used different shapes with colors matching the categories to indicate which cards to pick up. We used different shapes as spaces as we thought it add fun and help children to practice their shapes. The shapes were positioned into a spiral as we though it would entertaining and an easy way to determine the start and stop position. Originally, we were going to have our game in the shape of a star instead of a spiral, but we thought that the star path was harder to follow than the spiral path. Furthermore, with the spiral the direction the players had to move around the board was easier to notice. We spent a lot of time carefully cutting everything out to ensure that all our materials look professional and representative of a real game. After all the materials were cut and glued together, they were taken to the store to get laminated to prevent damage to the game.

Our next goal, is to pilot our game in Jodi’s internship at C.L. Smith. The classroom consists of children who are special needs and the teacher agreed to allow us to come in and teach the children are game. Jodi will also play the game with the children while I observe and take notes on what went well and what needs to change.

**Evaluation of Pilot of the game:**

We decided to play the slow paced version of the game with four children (two children on each team) for our first three pilots and fast paced during the last. A rule that Jodi added when she began playing the game with the children is that everyone puts their hands up when you land
on *Hands Up* as it makes everyone have more fun. We also made sure that the children played all the individual games (except “Popcorn, How are you feeling?, Kitchen Scenarios, and Who am I?”) so we could properly evaluate them.

During the first game, the first card that was drawn was *Etch-A-Sketch*, and the child chose to draw a square. At first he had a bit of trouble figuring out how to use the Etch-A-Sketch, but then he figured it out and got the two points for completing the task. After the second team played “Bop it” the first team got Banana grams. They worked on creating words together. The first team had much better cooperation and seem to be enjoying the game more than the other team who seem to always be at odds with one another. The second team then got “Stack Up” and Jodi needed to prompt them to rhyme. They seemed more interested at first with the blocks, but then they got the hang of the game and finished the task. They were very proud of one another and after completing their first task and winning there seems to be more cooperation between them and they became more engaged. Next, was *Community* and they all had to do a tongue twister. The children were excited to do a task all together. The last game was the fishing game. The children were fascinated by the game and even said “this game is cool, kids really like this game”. Jodi decided to let the children each take their own turn ‘fishing’ instead of letting both the teammates do it at the same time (she did this as the fish game is small and the children did not have the coordination to both play at once).

The second pilot we decided to first try playing a community game and seeing if children would be more engaged from the start and have more pleasure in playing the game (we felt we had a lukewarm beginning in the first trial). The children were really excited to play snow ball game, the *Community* game that Jodi drew from the deck. “That was a fun game” one kid said
about the snowball game. The children used the turkey baster different than planned (used whole hand instead of pointer and thumb). The children again were very excited about the fish game. Having the *Community* game before starting was a fun way to get children already engaged and interested in the game. Jodi in both rounds ended up being more of a game master which was good to keep the game going, have the kids follow the rules and to understand what the tasks were. The second team was excited to do the block rhyming game and was very supportive of one another. The first team then got “Bop it” again. The children did okay with it, neither of them had played “Bop it” before. They did want to continue playing with it though. Jodi needed to do some prompting with the team that got “Simon Says.” Then they got the hang of it and had fun. One of the aids who was watching said she wanted to play this game and thought it seemed like a lot fun. The children were having fun with the tongue twisters and it was good to see them really trying to enunciate the words to participate fully in the game.

The third round started with the *Community* game of tongue twister. The children quickly were entertained and engaged. Team 1 first drew an *artist* card and Jodi prompted the child to choose an easy object to sculpt. The child was only able to guess a ball not that it was a bowling ball. Team 2 then got Bananagrams and was very interested in making as many words as possible. It was really good to see the children sounding out the words as they were making the words. Team 1 then got face off, each team member drew a face off card. They were a little confused on how to do it and Jodi needed to help prompt them and give them hints. Although it was a bit difficult for them, they were able to learn from the cards. Team 2 then drew a “Jump” card and they played helicopter. The girl had a fun time doing it but the boy seemed bashful.

The fourth round we decided to play the fast round. Having two dice seemed to also add a
math component to the game. The children were adding the numbers together and some that were not as advanced as the others would just count the dots on the dice. This round a Community game at the beginning was forgotten, and the children did not seem as engaged as the rounds when we remembered to do it. The next one was beanbags and the children had fun doing it as they continued to back up and hitting the object. [It is okay for the game master to scaffold and make things easier or harder for the children] Then the team got “Sketch It” which also worked out well. The last game played was “Jumbled up.” Instead of playing that a team member created and jumbled up a sentence, Jodi wrote a sentence and had the teamwork together to put the words in the correct order. It was really good to see that the girl could not say a word and the boy helped her sound out the word. We feel that our game works best with a game master, especially if the game master has worked with the children previously (like Jodi) and can easily modify the game to fit the child’s needs, such as when Jodi changed jumbled up.

In all the games, we did not really focus on a ‘winner’ or ‘loser’ though we did keep score. The children liked that they received a point for attempting the task. Almost all of the children that played the game asked if Jodi could bring the game back next week. The children were pretty engaged in the game, despite it being the end of the day. The substitute teacher even mentioned that she was surprised that the children were so attentive as they had not been very cooperative the whole day. The children really liked our board game and the teacher also said commented that our board was beautiful. Children were easily able to follow the spaces around the board and liked the colors and shapes.

In general, we felt that we should give a better debriefing of the rules of the game and
how to play each of the individual games before starting (there was one girl who has never played Bop-It). To make the game more accessible, before starting we need to make sure that all letters from Bananagrams are out. Another reminder, is for the game master to make sure to wind up the fish game completely so children can have full time to try and fish. The game master should scaffold wording/activities for the children, i.e. say “mistake” instead of “error” as it is easier for children to understand. Although we did not originally mean for the game master to have such a significant role, we decided that it would be best for the game as it makes the game run smoother and enables the children to have a more enjoyable learning experience. We also decided to add to our instructions to start with a Community game as it promotes engagement and encourages enthusiasm for the game. We also decided to add to the instructions that if everyone participates in community then every team gets two points.

The presentation of the board game was easy for the children to follow along. The colors were bright but welcoming, not too distracting. The spiral direction from the start to finish was easy for the children to follow. The teacher complimented us on our board and the lamination kept it from bending. The board is easy for traveling and fits perfectly on a desk.

Appendix B
Letter of Consent – Nancy Koppl

“Yes, you are welcome to use my speech classroom to test out your senior project game. As always, my only request is that the names of the students be kept confidential.

I would be happy to answer any questions related to speech pathology that you might have. I know of many occupational therapy resources, however, if a question is beyond my scope, I will refer you to a district occupational therapist.”

Sincerely,

Nancy Koppl

Nancy L, Koppl

CCC-SLP

San Luis Coastal

596-4094
Appendix C

Letter of Consent - Melissa Quinn

“‘To Whom it May Concern:

I, Melissa Quinn, give my permission for Jodi and Caroline to pilot their game, "Hands Up, Speak Up" with my class at CL Smith Elementary School.”

Thank you,

Melissa Quinn
LI SDC Teacher 2-4
C.L. Smith
805-596-4094
mquinn@slcusd.org
**Appendix D**

*Figure One*: Reproduced from (Paul et al, 2003)

<table>
<thead>
<tr>
<th>Sensory System</th>
<th>Week #1</th>
<th>Week #2</th>
<th>Week #3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vestibular</strong></td>
<td>“Log Roll” – student lays on floor and rolls 15 to 20 feet one way and then rolls back to the starting position</td>
<td>“Helicopters” – students get their “wings” out and turn one way, then the other, take off and land</td>
<td>“Bear Hug Rug” – student is rolled in blanket or sleeping bag, given deep pressure, and unrolled</td>
</tr>
<tr>
<td><strong>Proprioception</strong></td>
<td>“Bowling Ball Name Call” – children sit in a circle – take turns rolling ball to one another – call out the name of student receiving the ball</td>
<td>“Push-ups” – wall or floor; knees bent – 10 times</td>
<td>“CH, CH, CH Train” – students on hands and knees form a train and follow the leader</td>
</tr>
<tr>
<td><strong>Tactile</strong></td>
<td>“Don’t forget to wash” – using paper towels/scrubbies/brushes – wash arms, hands, legs, feet, back</td>
<td>“Carpet Zips/Writing” – on hands and knees, make strokes/letters/words with pointed index finger and erase</td>
<td>“Bear Hug Rug” – also provides tactile stimulation</td>
</tr>
<tr>
<td><strong>Oral Motor</strong></td>
<td>Eating activities, snacks that stimulate oral motor skills – cereal, pretzels, Tootsie Rolls, taffy, peanut butter, crackers, gum, water bottles, etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E

Hands Up, Speak Up! Game Instructions

Instructions:

“Welcome to Hands Up, Speak Up, the interactive game for four or more players that gets your team acting, building, speaking, and even putting your hands up!

Object of the game:

Be the first to move around the spiral board and into the star that states “Hands Up, Speak Up.”

Creating a Team:

There can be up to four teams in the game, and each team must have a minimum of two players.

Materials Included:

- Instruction/game cards  - Color pieces  - Who am I?  - Timer
- 2 Dice  - Blocks  - Bananagrams  - Beach Ball
- Bop it  - Cotton Balls  - 3 bean bags  - Sketch Pad
- Fish game  - 2 Turkey Basters  - Whiteboard  - Playdough
- Etch-A-Sketch  - Pen  - Whiteboard markers

How to move along the board:

Before beginning decide if a fast paced or slow paced game is preferred. For a slow paced game, use one dice and for a fast paced game use two dice. To begin the game, each team will choose a color piece and place it on the start mark. All teams will roll and whoever receives the highest number will go first. If a team rolls the same number, continue until a difference is made. Each team will roll and whichever shape/color they land on, they pick an instruction card from that category and complete the game/task given on the card. Once the task is complete the next team gets a turn and same rules apply. The game will continue until a team reaches the finish in the star stating “Hands Up, Speak Up.”

There are four categories for each team and one category where all teams work together. The four categories include Act Up, Build Up, Hands Up, Speak Up. The fifth category where all teams participate is called Community. Each category is represented by a color. When a team lands on a certain color, they must grab an instruction card from the designated category. Each category has multiple games and each instruction card explains the purpose of the games. When a team completes the game, the next team takes their turn on the board.

When a team lands on a green square they grab a card from Speak Up, yellow diamond is Build Up, orange triangle is Hands Up, blue circle is Act Up, and purple star is Community.
When each team completes a task at a category they receive two points. When the team attempts the task but does not necessarily complete it, they receive one point. In order to promote working together and gaining excitement for the game, have all of the players participate in one community game before rolling the dice to decide who goes first. Whichever team reaches the finish first receives ten points to add to their final score. The team can keep track on the drawing pad or on a separate sheet of paper, whichever is preferred by the players.

**Categories:**
For all games, adapt them to best meet the children’s needs.

**Speak Up (Green):** This category involves activities where team members work on their speech and communicate with others.
- “How are you Feeling?”: The team will draw cards from the *How are you feeling?* deck and describe how they think each character on the given card feels to other team members. The goal is to have each team member complete at least two cards each before moving on.
- “What’s Cooking?”: The team will draw cards from the kitchen and as a team guess what should happen next based on the given scenario. The picture of the cards is the cause and the effect is one of the options on the card. All of the options on the card are valid responses, but more options are still correct if stated.
- “Peel the Banana”: The team will create as many words as possible from the letter choices in the banana. The time limit for the game is until the timer runs out. It is helpful to sound out the letters in order to create words. The words must have at least three letters in order to count when the timer runs out. Make sure to lay out all of the pieces with the letters facing up before starting the timer.
- “Pop the Popcorn!”: Each team member will go around and read a piece of popcorn. The goal of the game is to read all of the popcorn cards before the timer runs out. It is okay if the team does not finish the cards, just as long as they tried their best!

**Build Up (Yellow):** This category involves the creation of objects using many different supplies.
- “Jumbled Up”- On the whiteboard write a jumbled up short sentence about an animal or person and describe something they are good at. Then, a teammate will arrange the pieces of the sentence in the correct order before the timer runs out. If the first teammate cannot order the sentence correctly, then another teammate can try and the timer will be started.
- “Sculpt it”- Sculpt one of the objects listed on *The Artist* card drawn from the deck with the playdough. If none of the listed interest you, you may draw one other card. Have your teammates guess before time runs out.
- “Stack Up”- The team member who drew the card gets to choose a word to start. Then every team member has to say a word that rhymes with the chosen word. After saying a correct rhyming word, blocks are added. The team is trying to continue rhyming until a tower is created with all the blocks. For teams of 2-3 members, each member adds four blocks after each rhyming word. For teams of 4+ members, each member adds three blocks. Continue rhyming until all blocks are used.
“What am I drawing”- Draw on the sketchpad one of the objects listed on The Artist card picked from the deck. If none of the listed interest you, you may draw one other card. Have your teammates guess before time run out.

**Hands Up (Orange):** This category involves activities where teams can work on their motor skills. Make sure the team puts their hands up when they land on orange!
- “Jump!”- After drawing this card, decide on one of the listed jumping exercises for you and your teammates to do. The options are helicopter, jump in place, hop on one foot, or your choice and follow the leader. Helicopter involves spreading your arms out and spinning around. Your choice and follow the leader is anything you want to do and you become the leader! All your team members must follow whatever you decide. Do the jumping exercise for the length of the timer.
- “Gone Fishing”- Grab the fishing game and a teammate and you will try to get all the fish out of the pond before the timer finishes. In order to start the time, wind it up and let the children begin. If it is too difficult for two children to do at once, have one child complete it at a time. If one child completes the task by getting all of the fish, then the two points are still earned even if the other members on the team could not fish them all.
- “Sketch It!”- Pick up the Etch-A-Sketch and decide which of the listed (staircase, triangle, square, pentagon, or hexagon) you will draw before the timer runs out.
- “Toss the Beans”- Chose an object (such as someone’s shoe) and take three steps back. Then try to hit the target with the bean bags. See which team member can get their beanbag closest to the object. If someone hits the object then two points are awarded!

**Act Up (Blue):** This category involves team members understanding the expression of others and performing various acts for each other.
- “Simon Says”: One member of the team will act as Simon. Simon will shout tasks for other team members to participate in. The first round is basic; head, shoulders, knees, toes, and ears. The second round becomes a bit more challenging and Simon must speed up what was stated in round one. The final round makes Simon close his or her eyes while shouting these commands to the others. Once the third round is complete, the team can be finished and the next team can complete their assigned category.
- “Who am I?”: The game is similar to “Guess Who.” The team will split off into groups and one group will receive the red set of cartoon characters and the other will receive the blue set. The object of the game is to describe each character in detail so the other team can guess who the player is talking about. The group that guesses the character first wins.
- “Face Off”: Each team member will grab a card from the face card deck. Each member will look at their own card and then each member will one-by-one act out the emotion expressed on the card. It is all through facial expressions and actions, no talking is needed. When all of the emotions of each player in the team is guessed, the team can complete the task and move onto the next category when it is their turn.
• “Twist & Shout”: The players will each take a turn with the “Bop It” device. Each member will play with the device until an error has occurred, this means when they did an action other than what the device told them to do. Once an error occurs, the player will pass it on to his or her team member. Once all of the players on the team have had a turn, then the game is complete.

Community (Purple): This category involves all teams working together to complete specific tasks in high pressure situations. It requires teamwork and positive encouragement from all teams. Each team earns two points when they participate in community.

• “Beach Speech”: All of the teams will create a circle together and toss a beach ball around it while exchanging rhyming words. The beach ball will need air in order to get a good speed on it. One player in the circle will start the toss by saying a rhyming word, such as “hat.” Once the ball goes around the circle once, a new rhyming scheme can begin. When the ball goes around the circle three times, the game is over. If a player cannot think of a rhyming word then they must start it over with a different rhyming scheme, but the circle does not count and restarts at the team member who could not come up with a rhyming word.

• “Snowball Race”: Each team will compete against each other in a snowball race. The snowballs are the cotton balls and they will be blown across with a turkey baster. The object of the game is to see who has the most snowballs moved by the time the timer runs out. The teams can decide on the same start and finish for the race. Once the timer begins, each team will choose a player from their team to compete. The other team members are cheerleaders and are present for encouragement.

• “Tongue Twisters”: All players will partake in this activity. One player will choose a card from the twister deck. Every member must go around and repeat the tongue twister without any errors before the timer runs out. The goal of the game is to complete as many tongue twisters as a team before the timer runs out. If a player makes an error, they must start over, but the whole team does not have to repeat what they have already stated.

• “Block Tower”: If there are two teams divide the blocks by assigning a team two colors. If there are more than two teams, evenly separate the blocks among the teams. The goal is to alternate the colors as each team adds a block to create a tower. When playing with multiple teams, if the team does not have a different color from the last added they are skipped until the tower is completed. If all the teams only have one color left than they continue to add the last of their blocks in order. Make sure the tower doesn’t fall!”