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Intensive, Interprofessional Therapy: A Case Approach

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INTENSIVE, INTERPROFESSIONAL THERAPY: A CASE APPROACH

By

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ABSTRACT

EMMA SCHROTENBOER: Intensive, Interprofessional Therapy: A Case Approach

(Under the direction of Dr. Melinda Valliant)

This research looks at the impacts of intensive, interprofessional therapy for children with disabilities. There is very little literature currently published on this topic, although what is available generally finds that more intense therapy is more beneficial. The child who was studied was a camper at Adam's Camp therapy camp, a week-long program that involves six hours of therapy each day with therapists from five different fields. Her progress over the week, as well as her retention of skills several weeks later, were determined by pre- and post-camp surveys sent to the mother and the therapists' notes from during the week of camp. Her outcomes indicated that there was a great improvement of skills over a very short time frame. She showed progress in all three of her goals over the week, and her mom was especially impressed with her retention of communication skills. There is so much more research that needs to be done on this topic, but this study indicates that it is worth looking into an intensive, interprofessional approach on a larger scale.

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Chapter 1: Introduction

When people are diagnosed with a disorder that requires therapy, whether that is one or more of physical therapy, occupational therapy, speech therapy, or many others, it is often reported that they are receiving one to two hours of each recommended therapy per week (DeLuce et al., 2015; Bhogal, Teasell, Foley, and Speechley, 2003; Remington et al., 2007). There has been some research into intensive therapies for children, but since it is so uncommon, there is a lot left to explore. By doing more research into the efficacy of a more intensive treatment plan, it gives the parents of these children more options to decide what they think is best for their child and their families.

Since intensive therapy for children is not common practice here in the United States, it can be difficult to find a location that provides intensive therapy in order to study it. An exception is Adam's Camp, which is an organization in Colorado that provides intensive therapy, familial support, and recreation to children and adults with disabilities in the United States ("About Adams Camp"). One of their main programs is a week-long summer camp in the mountains that provides intensive physical, occupational, speech, music, and art therapy. Each child attending the camp is in therapy for six hours each day, which is significantly more time than the standard outpatient treatment of one to two hours each week, as seen in many of the previous studies (DeLuca et al., 2015; Langhorne, Wagenaar, and Partridge, 1996; Bhogal, Teasell, Foley, and Speechley, 2003).When the writer spoke with people who have worked with Adam's Camp and heard success stories from parents of prior campers, she got the idea to look

into research that had been done on the outcomes of children receiving intensive therapy, in order to see if there was empirical evidence to support personal anecdotes. The main theme repeated across the board was that in general, great improvements were seen in the goals set at the beginning of the week. This week of therapy is unique due to the amount of therapy offered each day and the interprofessional design, having therapists from five distinct fields all working together. These fields are occupational therapy, physical therapy, behavioral therapy, speech therapy, and music therapy. The author wanted to look further into this interprofessional approach to see if it was backed by evidence.

In the United States, the most common prescription for therapy is 30 to 60 minutes per week for children who are progressing but not ready to stop therapy completely (Houtrow et al., 2019). Many studies that took place in the United States have relatively small participant groups, leaving room for further inquiry (DeLuca et al., 2015; Schaff, Benevides, et al., 2012; Schoen et al., 2019; Fritz et al., 2011; Schaff, Hunt, & Benevides, 2012). However, the general consensus is that intensive therapy usually increases skills more rapidly than a conventional schedule (DeLuca, 2015; Schaff, Hunt, and Benevidez, 2012; Schoen, 2019; Park, 2016; Langhorne et al., 1996; Fritz et al., 2011; Bhogal, Teasell, Foley, and Speechley, 2003; Bhogel, Teasell, and Speechley, 2003; Linstead et al., 2017; Eldevik and Hasting et al., 2015; Remington et al., 2007; Kim and Park, 2018; Kwakkel et al., 2004; Hong et al., 2017; Lohse et al., 2014). In a study that did not show a significant increase in skills with more intensive therapy, they found that the more intense regimen was not detrimental to the participants (Fritz et al., 2011). The majority of the studies looked specifically at one type of intervention, as opposed to how several of them worked together (DeLuca, 2015; Schaff, Hunt, and Benevidez, 2012; Schoen, 2019; Park, 2016; Langhorne et al., 1996; Fritz et al., 2011; Bhogal, Teasell, Foley, and Speechley, 2003; Bhogel,

Teasell, and Speechley, 2003; Linstead et al., 2017; Eldevik and Hasting et al., 2015; Remington et al., 2007). Usually, the authors and researchers would not take other types of therapy into account when they would draw their conclusions, even if the patient was receiving other forms of therapy during the trial period. This could definitely have an impact on the results, and it is often not included in the papers.

In the field of occupational therapy, several of the studies that are looking at an intensive schedule focus on specific specialties and diagnoses (DeLuca et al., 2015; Schaff, Benevides, et al., 2012; Schaff, Hunt, & Benevides, 2012; Schoen et al., 2019). In children with cerebral palsy, there have been significant improvements seen with intensive constraint-induced movement therapy (DeLuca, 2015). Children with autism and sensory processing disorders have seen benefits from intensive sensory integration and STAR process therapies (Schaff, Benevidez, et al, 2012; Schaff, Hunt, and Benevidez, 2012; Schoen et al., 2019). The STAR process focuses on sensory integration, parent involvement, and relationship-based approaches, combined into one intervention (Schoen et al., 2019). In these studies, intensive therapy has allowed them to improve their personalized, preset goals more than they would have expected with a more traditional timeline.

Intensive physical therapy has been studied in a much wider range of diagnoses. Based on current research, more time spent in physical therapy led to better outcomes than patients who received significantly less time in intervention. These patients had diagnoses including cerebral palsy, strokes, and other neurological conditions (Park, 2016; Langhorne et al., 1996; Fritz et al., 2011). However, only the research that was done with children was about cerebral palsy, so there is much more to be discovered in regard to intensive occupational therapy for other diagnoses.

Speech-language pathology research has documentation of outcomes with various intensities and models of therapy outcomes. This research found that intensive therapy, meaning twice as much time in therapy in half of the usual timeline, is much more effective in helping patients who have had strokes resulting in aphasia than those who receive minimal therapy, which was less time spent in therapy overall and stretched out over more weeks (Bhogal, Teasell, Foley, and Speechley, 2003; Bhogel, Teasell, and Speechley, 2003). However, similar to the research in physical therapy, there has been little research done on the effects on children with other language disabilities. While the vast improvements in patients post stroke suggest that intensive therapy would be beneficial for people with diagnoses other than a stroke, more studies are needed to determine if the benefits of intensive therapy are applicable on a wider scale.

Of the types of therapies mentioned in this study, research into intensive applied behavioral therapy for children has received the most attention in the realm of intensive therapy in pediatrics. Due to this, there has been research done from many different angles, and the proven results have led to increased support in the education and rehabilitation community. The success that has been seen in studies of applied behavioral therapy creates possibilities of a variety of intervention approaches in different intensive disciplines.

The literature identifies research on less frequently used therapies, such as neurodevelopmental treatment, which has been studied in Greece and South Korea (Tsorlakis et al., 2004; Lee, 2017). Intensive neurodevelopmental treatment has been shown to make functional differences in children, but especially those with cerebral palsy (Tsorlakis, 2004; Lee, 2017; Zanon et al., 2015).

When it comes to studying the effects of multiple disciplines of therapy, the research studies with meta-analyses that address the patients' intervention models rather than one type of

therapy show a more complete image of why they made the changes that they did. In this study, this author will focus on research that looks at co-treatments in occupational and physical therapy. For example, Park and Kim (2018) looked at physical and occupational therapy in children with cerebral palsy, finding that more intensive therapy regimens produced better results. Other studies of children with cerebral palsy or other diagnoses, such as a variety of other developmental delays, also suggested that more time spent in physical and occupational therapy led to better outcomes at the completion of intervention services.

Finally, there is a minimal amount of research addressing the feasibility of intensive therapies, especially when it comes to children. When the patient is a child, keeping up with a schedule of intensive treatment appointments can be extremely stressing on the family. Two studies have shown that mothers of the children receiving intensive therapy had positive improvements in stress and contentment (Johnson & Hastings, 2002; Eikeseth et al., 2015). Another study looked at the effects on siblings, but did not find any negative correlation with an increase in the intensity of therapy (Hastings, 2003). The impact on the other members of the family is important to consider when evaluating the results of the therapy. It is wonderful to see a dramatic increase in skills in a child, but if the toll on the family is too high, intensive therapy may not be worth it.

A review of the current literature confirms gaps that need to be addressed when looking at intensive therapy and treatment options for children, especially when it comes to an interdisciplinary approach. Many studies do not have a control group, which impedes the ability to draw strong conclusions from their findings. For example, Tsorlakis et al. was not able to have a control group due to it being deemed unethical to withhold treatment from some of the children due to random selection (2004). This seems to be a recurring theme, as the majority of the

studies referenced in this paper did not have control groups for a comparison of final results. This author wanted to continue to address the efficacy of intensive therapy, as well as the skills and therapy outcomes in different types of therapy. It is suggested with further research, children and their families may have more options and understand the outcomes of those options when choosing treatment plans.

Chapter 2: Literature Review

Intensive Occupational Therapy

Occupational therapy mainly focuses on activities of daily living and developing the skills needed to perform them (American Occupational Therapy Association, n.d.). Research into intensive occupational therapy has mostly been done with regards to specialties within the field, such as constraint-induced movement therapy for cerebral palsy (DeLuca, 2015), sensory integration therapy for children with autism (Schaff, Benevidez, et al, 2012; Schaff, Hunt, and Benevidez, 2012), and the STAR process for children with sensory processing disorders (Schoen, 2019). Overall, the results have shown that more intensive occupational therapy treatments lead to greater advancements in skills.

The usage of constraint-induced movement therapy (CIMT) has been proven to be one of the most effective treatments for children with hemiparetic cerebral palsy. Conventional cerebral palsy treatment consists of one to two hours of treatment once or twice each week, but it has repetitively been proven ineffective. CIMT, on the other hand, puts the child's less impaired limb in a cast for three weeks, which requires the usage of the more impaired limb, as well as 6 hours of therapy every day for the entirety of the casting period. The improvements made during CIMT periods have shown great improvements in study after study. DeLuca et al. decided to see if there was any evidence of significant improvements by using following the CIMT protocol multiple times (2015). Their findings were published in an article entitled "Multiple Treatments of Pediatric Constraint-Induced Movement Therapy (pCIMT): A Clinical Cohort Study". They

studied 28 children whose parents decided to try CIMT for second and third times according to the ACQUIRE model. Data was collected before, during, and after the program, and measurements were made using the Emerging Behaviors Scale and Pediatric Motor Activity Log. The children showed no negative side effects from the intensity of the treatment. Although the greatest gains were made during the first CIMT period, the majority of patients showed statistically significant improvements and attained new skills after both the second and third implementations of CIMT. This study suggests that repeating CIMT is something that families should consider in order to help their children with hemiparetic cerebral palsy.

Sensory integration is an aspect of occupational therapy for children with autism. Schaff, Benevides, et al. published "Occupational therapy and sensory integration for children with autism: a feasibility, safety, acceptability and fidelity study" to determine if intensive sensory integration was a feasible option (2012). Ten children on the autism spectrum between four and eight years old were selected to undergo one-hour sessions three times a week for six weeks. After completing the six-week session, parents and therapists agreed that it was a feasible timeline and not too much of a burden to schedule and keep up with. No injuries were reported by the parents or the therapists, so it does not seem to have any safety problems. Parents were satisfied with their children's improvements, and an outside party confirmed that the occupational therapist delivering treatment fell within the proper guidelines for sensory integration therapy. By determining that intensive sensory integration therapy is safe, feasible, and acceptable, this study has shown the need for further research trials looking into how this may help children with autism.

A case study by Schaff, Hunt, and Benevides, focused on one child going through ten weeks of intensive sensory integration therapy. Their findings were published in "Occupational

Therapy Using Sensory Integration to Improve Participation of a Child with Autism: A Case Report" (2012). The patient was a five-year-old boy who had been diagnosed with autism and attention deficit disorder. His mother was interviewed and he was assessed before treatment and two weeks after treatment had ended. The measurements used were well-established assessments in both sensory processing and behavioral measures. When assessed by a professional at the end of treatment, it was noted that the boy did make improvements in almost all categories. His parents were interviewed again, and they said he had made significant improvements in his daily life. Although it is limited by only following one child, this study shows that intensive sensory integration therapy could be incredibly beneficial for children with autism.

The STAR process of treating is reviewed in an article entitled "Use of the STAR PROCESS for Children with Sensory Processing Challenges" written by Schoen et al (2019). The STAR process is unique in that it combines three important variations of occupational therapy, which are sensory integration, parent involvement, and relationship-based approaches, into one intervention. The study involved four children who were in a STAR program, which consisted of 50-minute sessions three to five times each week. This schedule is more often than a typical intervention, so it would be considered an intensive approach. The children were evaluated every week. Improving play level is a very important aspect of the STAR process, and noticeable gains were made in that area throughout this intervention. This study concludes that the STAR process can be an effective version of therapy for children with sensory processing disorders.

Despite the various approaches, intensive occupational therapy in multiple capacities has been shown to improve skills. The amount of time spent in therapy has consistently shown to be effective across several different interventions. It is also important to recognize the importance of

real-world applications for many of these interventions, such as sensory integration. Schaff, Hunt, and Benevidez had results in the child's daily life, which is incredibly important for reaching goals (2012). While being able to complete baseline tests in sessions is great, it is necessary for the skills to be applied to the real-word in order to make a difference in the child's life. Overall, there were varying levels of success in intensive occupational therapy interventions, but they all increased the child's skills.

Intensive Physical Therapy

According to the American Physical Therapy Association, physical therapy, also called physiotherapy, generally works on gross motor function and strength building exercises with the patient. Intensive therapy regimens have been studied in patients with a wide range of diagnoses, such as cerebral palsy (Park, 2016), stroke (Langhorne et al., 1996), and other chronic neurological conditions (Fritz et al., 2011). These studies found that increased time in physical therapy led to greater gains in function and are a feasible option to implement with patients across a multitude of diagnoses.

"Effect of Physical Therapy Frequency on Gross Motor Function in Children with Cerebral Palsy" by Dr. Park (2016) answered questions of the correlation between physical therapy and gross motor function outcomes and if there were any noticeable differences in different frequencies of therapy. This study was done in South Korea with 161 children with cerebral palsy between the ages of six and fifteen years old. Data was collected using the Gross Motor Classification System to determine scores at the beginning and end of the year. Their results concluded that higher frequencies in therapy improved the crawling, kneeling, standing, and overall GMFM score in children who were in GMFCS Levels I through IV. For children in GMFCS Level V, only standing had a significant increase with more intensive therapy. Overall,

they concluded that higher intensities of physical therapy led to larger improvements in gross motor function in children with Cerebral Palsy.

Stroke patients are often treated with physiotherapy, though the level of intensity of therapy has been debated. For the most part, randomized controlled studies are too small to be considered statistically significant. Langhorne, Wagenaar, and Partridge did a meta-analysis of seven different randomized controlled studies of a more intensive program compared to a less intensive program with a total of 597 patients in order to try to find statistically significant values (1996). Their analysis was compiled in "Physiotherapy after stroke: more is better?". Although the definitions of "normal" intervention and "intensive" intervention changed in the different studies, those in the intensive group tended to receive 1.5 to 2 times more time in treatment than the other group. The researchers found a correlation between more intensive therapy regimens and improved outcomes. However, they suggested that a larger scale, more well documented study is needed in order to confirm this finding, as many of the studies were not very precise in describing exactly what therapy the patients were receiving.

Intensive mobility training (IMT) is a type of physical therapy intervention that focuses on gait, balance, and mobility. A team of researchers studied four patients with different chronic neurological problems, and they published their work in an article entitled "Feasibility of Intensive Mobility Training to Improve Gait, Balance, and Mobility in Persons with Chronic Neurological Conditions: A Case Series" (Fritz et al., 2011). For this project, the four patients received three hours of therapy for ten consecutive weekdays. The researchers took measurements both on improvement in a variety of skills and on the fatigue, pain, and time they were actually able to participate in therapy to see if it was feasible to put people through such a difficult and intense regimen. As far as feasibility, the patients did not report large increases in

pain, although they all had very different changes in level of fatigue. Overall, it is feasible for patients to be able to undergo a treatment of this caliber without a significant decrease in comfort or quality of life. All of the patients saw improvement in at least one category: gait, mobility, and balance. Most of them demonstrated these skills at a higher level than they did during the pretest when they were reevaluated one to six months after the two-week study. This shows that the skills were maintained even without continuing intensive therapy. Between the improvement in skills and the lack of severely increased pain levels, this type of intensive therapy is a feasible option for those with chronic neurological conditions.

Through research on intensive physical therapy in patients with physical or neurological deficits, it has been found that intensive therapy leads to great improvements in skills and is maintained over a period of time after no longer continuing intensive treatment. It is important to remember that different age groups may have different results when it comes to this treatment schedule. It is promising, however, that some treatments, such as IMT, can be applied across several diagnoses and still show improvement.

Intensive Speech Therapy

Speech therapy helps patients to be able to communicate through a variety of interventions (Speech-Language Pathologists, n.d.). It is used to help with a wide variety of disorders, both in children and adults (Santos-Longhurst, 2019). There has been a lot of research on the efficacy of intensive speech therapy in stroke patients with aphasia. From these studies, intensive therapy has been proven to be very effective in helping improve communication skills in these patients, while less intensive therapy produces little to no results (Bhogal, Teasell, Foley, and Speechley, 2003; Bhogel, Teasell, and Speechley, 2003).

Although there is still no unanimous decision on the best treatment for aphasia following a stroke, several studies have now shown that intensive speech therapy has impressive results. Bhogal, Teasell, Foley, and Speechley looked at eight separate studies done on the efficacy of intensive therapy in their article “Rehabilitation of Aphasia: More Is Better” (2003). They found that overall, intensive speech therapy programs that provided around 98 hours of therapy over 11 weeks, twice as much and in half the time of what is considered conventional, had the most success in helping to treat aphasia. Those who received conventional treatment saw very little improvement after 22 weeks. They also looked at constraint-induced language therapy, and it was also only effective when done at a higher intensity over a shorter period of time. In another study, they found that the outcomes from language therapy with professionals compared to volunteers were similar, so it is plausible to have it implemented by volunteers when professional help is not feasible. Using family members and other volunteers also makes it easier to follow a more intensive program, which as stated above has been proven to be the most effective. The researchers concluded that more intensive therapy for aphasia is the best way to see results, whether it is speech therapy or constraint-induced therapy, provided by a professional or a volunteer.

Aphasia is the inability to use language to communicate, and it is a possible side effect of having a stroke. There is still research being done in how to best treat aphasia in stroke victims and others who suffer from it. There has been conflicting data on the efficacy of using speech and language therapy (SLT). Researchers Bhogal, Teasell, and Speechley (2003) looked into why this is and noticed that in trials with better outcomes the therapy was more intensive, while negative outcomes usually came from less intensive therapy plans. In their article, “Intensity of Aphasia Therapy, Impact on Recovery”, they pulled together the write-ups of several clinical

trials of SLT as treatment for aphasia. They compared outcomes to overall time spent in therapy, how much therapy was received each week, and how long therapy was received in each session. A Pearson correlation test was used to assess the relationship between Porch Index of Communicative Abilities and Token Test scores and the amount of SLT received. According to the results, SLT has actually been quite helpful to patients suffering from aphasia. When speech and language therapists are able to provide intensive therapy over the course of a few months, the patients see improvement. If intensive therapy is not available, however, SLT becomes much less effective, and it is not the most effective option.

In conclusion, intensive speech therapy has been shown to be much more effective in the treatment of aphasia than less intensive or low intensity schedules. However, it must be done within a specific timeline in order to replicate these results. When it comes to children with disabilities, speech pathologists work on many skills, not just aphasia. It is important moving forward to look into the effects of intensive speech and language therapy that is focused on other goals, such as swallowing and linking words.

Intensive Applied Behavioral Therapy

There have been an extensive number of research projects about the outcomes of intensive applied behavioral therapy in children with autism. Applied behavioral therapy teaches children how to respond to real life situations in a more positive way, and it has had great success (Gotter, 2018). Due to this treatment becoming more popular, it has been considered from many more angles than some of the other disciplines of intensive therapy.

Applied behavior analysis (ABA) treatment is a well-established intervention for children with autism (Gotter, 2018). One common question surrounding it, however, is what intensity of

therapy yields the best results. There have been studies to show that higher intensity leads to greater outcomes, but there are then concerns about how much therapy becomes too much, leading to burn out or plateauing. The study behind "Intensity and Learning Outcomes in the Treatment of Children with Autism Spectrum Disorder" by Linstead et al. sought to look into this question (2017). They selected a retrospective group of 726 individuals between the ages of 18 months and 12 years old who were receiving at least 20 hours of ABA each week. The researchers looked at what skills the children acquired over a 12-month period, even though not all patients were in intensive therapy for all twelve months. They found that both the greater number of months in intensive therapy and the greater amount of time spent in therapy each month had a significantly positive impact on skill acquisition. This research supports the theory that intensive ABA treatment is a good option for children on the Autism spectrum.

In "Using Participant Data to Extend the Evidence Base for Intensive Behavioral Intervention for Children With Autism" by Eldevik and Hasting et al., data was pulled from 453 patients who received behavioral intervention (2015). The majority of them were in intensive programs, some were in control groups, and others were in a comparison group. They looked at the children's intelligence and adaptive behavior using various reputable scoring tests to determine the efficacy of each intensity of treatment. In line with other studies conducted, Eldevik and Hastings et al. found that more intense treatment yielded more growth in intelligence and adaptive behavior. They mention in the discussion that it is important to remember that there is more that goes into receiving intensive therapy than results, such as affordability and availability, which need to be researched further.

"Early Intensive Behavioral Intervention: Outcomes for Children with Autism and Their Parents After Two Years" (Remington et al., 2007) compared two groups of preschool children,

one receiving intensive behavioral therapy (average 25.6 hours of intervention per week) and the other receiving treatment as usual according to their local provisions. They were evaluated at the beginning of intervention, after one year, and after two years by an expert who did not know which group each child was in and exclusively interacted with participants and their families at these evaluations. Evaluations were made using several well-established scales in the categories of intellectual functioning, language, adaptive skills, rating scales for child behavior, and nonverbal social communication. There was also a self-report section for parents to fill out the Hospital Anxiety and Depression Scale in order to measure their well-being. When comparing results after two years, the research showed that children receiving intensive intervention made much larger improvements in the areas of study. The parental responses did not show any adverse mental health effects when in a more strenuous and intensive program. It concludes that intensive intervention is more effective compared to less intensive treatment, but the long-term implications and who would and would not benefit from such an intensive program still need to be studied.

While most therapies are provided by a licensed therapist, sometimes parents act as the interventionist for their child. In a study by Bibby et al. (2002) the results of intensive parent-led behavioral therapy were compared with intensive therapist-led therapy for children with autism. The findings were published in “Progress and outcomes for children with Autism receiving parent-managed intensive interventions”. Parent-led behavioral therapy is when the parents of the child are the ones who perform the interventions usually made by a licensed therapist. They usually have a consultant or some other form of help in order to guide them through the proper implementation of this therapy. In general, it is recommended to do 30 to 40 hours of treatment in the home each week. The children were measured on cognitive development, language skills,

adaptive behavior, and ratings of behavior. Parents were also interviewed regarding treatment personnel, supplementary treatment, and other aspects that could have affected their child's performance. The patients were evaluated twice, once for initial data and then twelve months later. The IQ changes after one year of parent-led intensive therapy was similar to those found in a study of non-intensive therapy. However, the children did show a larger improvement in their adaptive scores with intensive therapy. Overall, parent-led intensive behavioral therapy helped in some categories, but it was not as effective as therapy led by professionals in others.

While many studies look at the efficacy of intensive therapy interventions, Eldevik, Eikeseth, Jahr, and Smith looked at low-intensity behavioral treatment. Their findings were documented in the article "Effects of Low-Intensity Behavioral Treatment for Children with Autism and Mental Retardation" (2006). They pulled the records of 28 children in Norway who were under six years old at the beginning of treatment, diagnosed with autism and mental retardation, and who received ten to twenty hours of one-on-one treatment each week. Some children were receiving eclectic treatment while others were receiving behavioral treatment. IQ and ABC scores were used to categorize the children, and measurements were taken at the onset of the intervention and two years later. Overall, the children in the low-intensity behavioral group saw significant improvements in intellectual functioning, language comprehension, expressive language, and VABS communication, as well as more improvement overall. The increase in scores was not as large as those documented in other studies of more intensive therapeutic approaches, but it is important to note that this may be due to lower entrance IQ scores or the specifics of each eclectic treatment. Overall, this study concluded that while low-intensity intervention, especially behavioral treatment, was successful, it was not as successful as higher intensity programs.

Intensive Neurodevelopmental Treatment

Neurodevelopmental treatment is a type of intervention that focuses on solving the problems faced by the patients. It is a holistic, less standardized approach to therapy. Neurodevelopmental treatment has been used extensively in children with developmental delays, especially cerebral palsy (Zanon, 2015). Studies done with this intervention have shown great improvements when it is implemented in a more intensive manner (Tsorlakis et al., 2004; Lee, 2017).

Neurodevelopmental treatment is a type of intervention that can be used for children with cerebral palsy. A study was done in Greece on the efficacy of the treatment in both an intensive program, in which children received treatment five times each week, and a less intensive program, with children receiving treatment twice per week. The research was published by Mr. Tsorlakis, Dr. Evaggenlinou, Dr. Grouios, and Dr. Tsorbatzoudis in their article "Effect of Intensive Neurodevelopmental Treatment in Gross Motor Function of Children with Cerebral Palsy" (2004). The study included 34 children from 3 to 14 years old and lasted 16 weeks. The children were measured on the Gross Motor Function Measure before and after the 16-week trial period by someone who did not know what group they were in and were otherwise separate from the study. They found that the children in both groups improved greatly, but those in the more intensive program improved significantly more than the children in the other group. There was no control group of children not receiving therapy due to ethical issues, but the improvements seem to be due to more than just maturing over the trial period. This study showed that neurodevelopmental treatment is a worthwhile intervention for children with cerebral palsy, and intensive therapy regimens should be considered due to their steep increase in improvement.

Neurodevelopmental treatment can also be an effective intervention for children with other developmental delays. Dr. Lee et al. (2017) did a study in South Korea on the intensity of treatment, the results of which were published in an article entitled "Efficacy of Intensive Neurodevelopmental Treatment for Children with Developmental Delay, With or Without Cerebral Palsy". In order to determine the efficacy of intensive therapy compared to conventional therapy, they chose 42 children, 24 of whom had cerebral palsy, who had undergone intensive therapy followed by a period of conventional therapy. Intensive therapy was a period of three months during which they received neurodevelopmental treatment for one hour three times each week. It was immediately followed by three months of 30-minute treatments one to two times each week. The Gross Motor Function Measure was used to evaluate their progress before treatment started, after the three months of intensive therapy, and after the three months of conventional therapy. They found that there were statistically significant improvements after intensive therapy in both groups of children, with and without cerebral palsy. The scores after conventional therapy were not statistically different than they were at the end of intensive treatment, which means there was no significant improvements, but they were able to retain the skills learned during the intense neurodevelopmental treatment. These findings support periods of intensive neurodevelopmental therapy for children with developmental delays, whether related to cerebral palsy or not.

Intensive Multidisciplinary Therapy

In many cases, patients who are receiving one type of rehabilitation therapy, such as physical therapy, are simultaneously receiving other types of intervention as well. In the following studies, the researchers looked at the larger picture of receiving intensive therapy across more than one discipline. Because of this, they did not have to try to assume what benefits

came from one specific therapy and were not affected by input from other sessions. These studies looked at patients undergoing different combinations of therapies and how patients improved or declined from beginning to end.

An article by Park and Kim entitled “Effect of the Frequency of Therapy on the Performance of Daily Living in Children with Cerebral Palsy” discusses research on the improvement in completing activities of daily life for children with Cerebral Palsy receiving different intensities of physical and occupational therapy (2018). This study took place in South Korea, but used the internationally accepted Gross Motor Function Classification System and the Pediatric Evaluation of Disability Inventory (PEDI), which was developed in the United States, to measure the children in the study. The study included 162 children between three and fifteen years old who were receiving one of four levels of therapy: intensive (three to eleven times per week), weekly or bimonthly (one to two times every week or every other week), periodic (once per month or fewer), and sporadic (only on an as-needed basis). The results showed a positive correlation between increased time in physical and occupational therapy and ability to perform measured activities of daily living. PEDI skills were shown to increase with more intensive physical and occupational therapy. Mobility and social function also increased in those receiving more intensive physical therapy, though no significant changes were made in these areas with occupational therapy. This research concludes that intensive occupational and physical therapy interventions result in an increased ability to perform activities of daily living in children with cerebral palsy when compared to children receiving less frequent therapy.

Dr. Kwakkel et al. (2004) performed a meta-analysis entitled “Effects of Augmented Therapy Time After Stroke”. They pulled the data and results from thirty-two different studies, with a total of 2,686 stroke patients. The group of patients that received more physical and

occupational therapy on average spent twice as much time in therapy each day. They also received approximately 16 more hours of exercise therapy. The data concluded that more intensive therapy in the first six months following the stroke resulted in small improvements in activities of daily life, which while statistically were relatively small may be related to the Barthel Index's stronger focus on lower limb improvement. The researchers acknowledge that there are limitations in this type of study due to differing goals for patients and their personal motivation and time spent practicing. However, based on the results of several studies, they believe that increased therapy leads to improved outcomes.

In Korea, it is very common for children with developmental delays to receive intensive rehabilitation therapy while in the hospital. Due to this increase in popularity, a study was done to determine what kinds of patients benefitted most from these programs. The results were published by Hong et al. in their article "Factors Influencing the Gross Motor Outcome of Intensive Therapy in Children with Cerebral Palsy and Developmental Delay" (2017). Participants in this study were under seven years old and had a developmental delay that required physical and occupational therapy. They underwent 8 weeks of intensive therapy at a hospital, which included two hours of therapy conducted by a therapist and one hour of self-therapy every day. They were evaluated at the beginning and end of treatment using the Gross Motor Function Classification System (GMFCS), Bayley III, and the developmental quotient. They found that the main factor for improvement of gross motor function through intensive therapy was the GMFCS level of the patient. Those with a GMFCS level of I-III improved more than those with a GMFCS level of IV-V. They also found that those with a seizure disorder did not improve nearly as much as those without a seizure disorder. Finally, they did find more improvements in the motor skills of children under three than those over three, but they are hesitant to say that it is

completely due to therapy, as children under three are developing more gross motor skills in general. From these findings, they concluded that intensive therapy is a good option for children with developmental delays, especially if they are in GMFCS levels I, II, or III.

"Is More Better? Using Metadata to Explore Dose–Response Relationships in Stroke Rehabilitation" by Lohse et al. pulled data from 37 articles in order to determine how intensity of therapy impacted results (2014). The studies included several different types of therapy interventions, including, but not limited to, exercise therapy, physiotherapy, and constraint induced movement therapy. The findings were similar to other studies in that more time scheduled for rehabilitation therapy generally led to more improvements by the patients. However, this article said that intensive therapy may still be beneficial even years after the stroke takes place, which is a less common recommendation, as other researchers have encouraged starting as soon as possible for optimal results.

The idea of intensive therapy is very controversial, especially when it comes to children. There are so many factors that play into how therapy fits into a family's life, and there are opinions everywhere from people in all different positions. Patients and families view it one way, therapists from a different angle, and businesses such as hospitals, insurance companies, and schools have opinions on it, too. Because of the differences of opinion and the differing circumstances and goals, it is difficult to make a blanket statement that one intensity of therapy is best. Palisano and Murr realized this problem and took a new approach to looking at the intensity of therapy in their article "Intensity of Therapy Services: What are the Considerations?" (2009). They gave a longitudinal commentary on the intensity of physical and occupational therapy as it may benefit children with developmental conditions at different periods in their lives. They took into account five broad concepts: episode of therapy, readiness for activity and participation,

method of delivery, the difference in application of skills during therapy and in normal life, and how the method of delivery impacts acquired skill level. Their overarching point was that there is no one correct answer. Each child's case needs to be considered as an individual, and it needs to be continually reworked and reorganized as they grow in order to best help them. When opinions on intensity of therapy gets very polarized, it is important to remember that each child is different, and each stage of their life is different and may require different types of interventions and intensities.

Past the Patient's Results

Without a doubt, the results that come from intensive therapy are important when a patient and their family are making the decision about what intensity of therapy to do. Any form of intensive therapy for children comes with a toll for the family, and that is something that is very important to consider when comparing treatment options. Many studies have shown that parents of children with autism are more stressed in general, so adding significantly more stress would not be ideal. Intensive therapy takes a lot of time and effort on the part of the parents. Since it takes so much time, it also has an effect on siblings of the patient. With more time being focused on the child receiving intervention, it has the potential to cause problems. If intensive therapy reduces quality of their personal lives and their family lives too much, the child making great strides may not be worth the sacrifice. The following research projects look at the overall practicality, how it effects the stress levels of the parents, and how it impacts social support of siblings.

Johnson and Hastings (2002) sent out a survey to parents involved with a support group based in the UK for families who have children with autism in intensive behavior therapy. They received 141 responses from parents, and the data from these answers was compiled in

"Facilitating factors and barriers to the implementation of intensive home-based behavioral intervention for young children with autism". The questionnaire asked about barriers they faced while trying to qualify for this type of program and what facilitating issues they came across during therapy. Some factors were shown to have been both a barrier and a facilitating issue. For example, one of the biggest problems faced by the families was forming and maintaining a team. This was difficult to do while trying to start the process and while doing the therapy. Other barriers included problems working with the school system, lack of resources, and not enough time and energy. Overall, the parents did see the improvements that their children were making and thought that the struggles with intensive behavioral therapy was worth it for the results.

In "Stress in parents of children with autism participating in early and intensive behavioral intervention", Eikeseth et al. (2015) did research into the stress levels of parents whose children were in an early and intensive behavioral intervention (EIBI). Forty-three parents of children living in England or Wales who were in these programs were evaluated on the Parenting Stress Index before EIBI began and after one year of treatment. During EIBI, at least one parent is often highly involved in the therapy with their child and therapist, so they are learning many new skills and interacting with their child in a way that they had not done previously. Through this study, it was found that the average stress level of parents decreased after one year of EIBI, although it was only statistically significant for the mothers. They also saw that the abilities of the children did not have an impact on how much stress levels in the parents changed, so there are not certain types of children whose therapy would significantly change the outcome of the parents' stress level. Finally, they noticed that mothers, who had a significant amount of stress reduced, were usually the parent that was more involved in therapy.

It leaves the door open for further research into how the role of the parent in therapy affects their stress levels.

"Behavioral Adjustment of Siblings of Children with Autism Engaged in Applied Behavior Analysis Early Intervention Programs: The Moderating Role of Social Support", an article by Richard Hastings, discusses the implications of intensive therapy on the family unit, specifically the impact on siblings of the patient (2003). His study looked at 78 families who were participating in ABA early invention in the United Kingdom. Mothers were interviewed using the Strengths and Difficulties Questionnaire (SDQ), and a dimensional score was pulled from the answers. This was then compared to SDQ scores from over 10,000 British children during a mental health study. They found that intensive therapy did not have adverse effects on the siblings of the participants. The results may be skewed due to bias from having mothers evaluate their own children and most respondents having a relatively high socioeconomic status. It leaves room for further study, but is a good first look into sibling behaviors and adjustments during intensive therapy.

While results are the main goal of various therapies for children with disabilities, it is also important to remember that therapy takes a toll on the family. This is especially true when considering a significant increase in the amount of time spent in therapy each week. The results need to be significant enough to justify the extra time and effort that has to be put in for a more intensive schedule. The cases above have shown that most parents and siblings found the extra commitment to be worthwhile, especially due to a decrease in familial stress as the child improved. This is something very important to keep in mind as studies continue to look at intensive therapy. There is more to the feasibility of intensive schedules than just the ability of the child to reach goals.

Research Questions

After reviewing all of these previous studies, we have come up with two research questions that we would like to explore further. First, is there improvement in a patient's communication or motor abilities when following an intensive period of therapy, at least twice as much time spent in conventional therapy, compared to a standard therapy intervention of one to two hours each week? Secondly, are there differences in the improvement of skills practiced in occupational therapy sessions, commonly called activities of daily life, when receiving daily multidisciplinary intervention which includes occupational, physical, music, speech, and behavioral therapy?

Chapter 3: Methodology

Participants

The participant in this study was the mother of a 6-year-old child who was enrolled in therapy camp at Adam's Camp's during one week of the summer of 2021. The camp sent out information about this study to the parents of the child who attended therapy camp this summer. They were then able to read about the study and choose whether or not to join the study, which this mother chose to do. Although the child is being evaluated, it is her parent who filled out the questionnaire and is involved with the study.

Instrumentation

This study utilized a survey to measure qualitative data. The parent was given a questionnaire after camp in order to give background information on their child and then to explain changes that they noticed afterwards. The survey asked about the child's therapy schedule and progress prior to camp, as well as changes that they have noticed since their time at therapy camp. The parent completed it and then sent it to an Adam's Camp employee.

The therapists' charting notes were also included. The protocol of the camp is for parents and therapists to work together to set goals for the next week. The therapists then evaluate the current skill level of each child and form a baseline. The children are evaluated again at the end of the week to see what improvements have been made. Therapists take baseline evaluations at the beginning and end of camp, as well as continual notes each day of the program. Every

evening, the entire therapy team debriefs about each child's progress from the day, and therapists will update their notes. These notes are used to track progress from a professional perspective instead of just the parental viewpoint.

Chapter 4: Outcomes

In order to understand the data, it is first crucial to understand the way that therapy camp works. Adam's Camp has various teams each week that are made up of five therapists and five campers. The team of therapists the week this child attended consisted of an occupational therapist, physical therapist, speech-language pathologist, music therapist, and an art therapist. These therapists work with campers during the week to meet three individualized goals. These goals are set ahead of time through a phone call between the parents and one of the therapists, and then are refined and finalized by Tuesday morning after they are able to evaluate the campers in person. The campers arrive in the mornings at 8:30 and stay with the team until 2:30 in the afternoon. The schedule is broken up so that they each spend individual time with every therapist. Sometimes that time is blocked out for traditional therapy, and they spend it working with each camper at their station. Other times, they may be partnered up for lunch time, music circle, or an afternoon outing, during which they implement aspects of therapy into these activities. After the campers are picked up in the afternoons, the therapist team meets for several hours discussing what they did, what progress was made, and how they can each work towards the goals during the next day. Part of what makes this set up unique is how each therapist is able to help the campers work towards their goals in other disciplines. For example, the art therapist and the occupational therapist are able to talk about the camper's fine motor goal so that it can be integrated into art therapy that day. It is very team-based and runs on a very intensive schedule, as there are five consecutive days of six hours of therapy.

Outcomes for this study are based on a variety of questionnaires sent to the mother and the therapists' charts from the week of camp. During registration and preparation for camp, the family of the child completed several forms regarding her basic information, including her background, therapy schedules, what she had been working on, and her strengths and weaknesses. The majority of the content of "General Background" was pulled from these forms. The mother also received a questionnaire for this specific study several weeks after the camp finished that addressed where she was before attending camp and after, in order to determine if the changes were maintained after the fact. Her responses to this section are included in "General Background" and "Post Camp". Finally, the daily charting from the therapists on the child's progress in each of her goals is used for the information about what happened during her time at camp (Appendix A).

General Background

This child is a 6-year-old girl who has been diagnosed with Down Syndrome. She is enrolled in school and receives occupational therapy (OT), physical therapy (PT), speech therapy, and mental health therapy during the school day, as well as private OT, PT, and speech through their insurance. Her parents said that her strengths included independence, strength, and a desire to learn new things. She has become more independent, but needs to work on personal safety and awareness in order to be safe. She generally struggles with frustration when things get hard and then communication once she gets frustrated. She thrives off of routine and clear expectations for her daily activities.

The child is currently working on speech skills, as well as gross and fine motor skills. When it comes to communication, the child is better with receptive language than expressive. She loves to talk to her family, but it can be difficult to her understand her, which makes her

frustrated. While she knows many words, she can struggle to use them in a sentence. She utilizes a simple sentence strip with four or five words to help her express her thoughts as a sentence. Prior to camp, she attended speech therapy three times each week, once privately and twice at school. She has been working on combining sentences into words, beginning and ending sounds, and multisyllable words with those therapists. Her gross motor skills are currently being worked on in physical therapy weekly with a private therapist and once a month with the school therapist. The child is able to complete many basic gross motor tasks, including being able to transition between various positions, walk up and down stairs, handle uneven terrain, and run. They are currently working on core strengthening, fluidity in her movements, and general strength and coordination. She also sees a private occupational therapist once a week and a school occupational therapist monthly. She is able to use both hands independently as well as bring both of them to her midline, so she has advanced to working on more complicated tasks. They are working on fine motor tasks with small objects, such as buttons and zippers.

All of her weekly therapy sessions are 30 minutes long. Her mom says that she is a willing participant in all three therapies that she is receiving, and they have continued to see improvement in all areas of intervention. Her mom is unsure if it is due to her current therapy schedule or just being in a classroom, but they have not yet plateaued. When asked about the current therapy schedule, her mom said that her daughter sometimes struggles with going to therapy after school. All of her private therapies have to be done during the school week, and it makes for very long days when she is in school and additional therapy after school hours.

Adam's Camp Goal #1: Communication

[Child] will intentionally use her device to comment and request 5x per session to expand expressive communication.

On Monday, the SLP worked with her locating buttons on her communication device. With prompts and models, she was able to respond to the SLP with five different words on her communication device. On Tuesday, the therapy team relied mostly on verbal prompting and occasionally modelling when needed. She used “open please” on her device two times during her OT session after being prompted. After initial prompting, she began to request “help” from the physical therapist without having to be asked. She used many more words with the art therapist, music therapist, and SLP during the day, from asking “more” to requesting specific colors for her activities. The SLP worked with her on language expansion, such as requesting “more *activity*” instead of just more. She was also more attentive to her device that day. The art therapist noted that she would notice when the screen would go black and would turn it on again. Wednesday morning was a bit rougher for the child, and she refused to answer questions at all, or just continuously responded “no” during her time in OT. Later in the day, however, she was more consistent and willing to use her device. She could introduce herself by using the device to say “My name is” and then saying her name. She also made several requests and comments in her other therapies. The therapists continued to use verbal prompting and modeling, though she required less intervention than usual, as well as making sure she was on the correct page of icons to be able to answer questions. On Thursday, she continued to make requests and comments using her device, including following two-word combinations when modeled. She needed quite a bit of prompting to use her device appropriately, as she would push a variety of buttons, but not with the goal of communicating. The SLP also helped her by narrating the pages that she was on in order to help her find the correct words. Friday was a shorter day, but she required minimal prompting from the therapists to use her device, although narration of her pages was continued.

Adam’s Camp Goal #2: Play Skills

[Child] will engage in reciprocal interactions with peers 5x per day with no more than 1 prompt to increase socialization with peers.

On Monday, the child did not choose to interact with her peers. She would sit next to them and say hi if prompted, but did not want to converse or do an activity with them. The team tried to put her in positions to allow her to communicate, but she chose not to. On Tuesday, she was more involved with her peers. She high-fived and said thank you to one of them, and she rolled a ball back and forth with a peer. After beginning the game, she was smiling and didn't require any other prompts to keep playing, but they did not talk. During art therapy, she had a reciprocal conversation with the therapist and a volunteer (teenager or young adult), but did not converse with peers her own age. By Wednesday, the child was more willing to interact with peers following prompting. She would ask questions on her device and give time for her peer to respond. After a prompt to engage and another to respond, she took turns with a peer while doing a chalk activity outside, requesting specific colors from them and then responding when they asked her. The end of day activity on Wednesday was rock climbing, and by this point she was enthusiastic about interacting with her peers. Following verbal prompting, she would give them suggestions and cheer for them while showing appropriate facial expressions. On Thursday, the child was communicating with peers, therapists, and the camp nurse following verbal prompts. She also used her peers' names during an activity to get their attention. At the end of the day, she high-fived multiple peers in the pool and followed one of them in the water following a peer prompt. The child was less interested in engaging with her peers on Friday. She would communicate with them when prompted, but she was not interested in playing with them.

Adam's Camp Goal #3: Self-Regulation

[Child] will identify and utilize 1 self-regulation tool 5x a day independently to increase self-regulation throughout the day.

The first day of camp required some self-regulation from the child. She struggled with transitioning to non-preferred tasks and appropriately transitioning between activities during the day, as well as refusing to move when frustrated. Verbal prompts, visual timers, and blowing flowers all helped her to regulate and reengage with her activities. On Tuesday, the child became frustrated during PT and growled, but after prompting she was able to breathe through it and ask for help. During the rest of the day, she communicated her needs, including breaks from certain tasks, instead of getting angry. She also utilized a visual schedule during OT, which helped her to transition smoothly, so she did not need to use self-regulation techniques. On Wednesday, the child was more dysregulated. She asked for breaks when she felt she needed them, but she struggled to return to the original task after a visual prompt. She screamed and cried during OT, and she did not respond to various visual and verbal cues to calm down or self-regulate. However, when she melted down again later in the day, resulting in coughing and gagging, she utilized deep breathing and was able to regulate enough to continue the activity. Thursday required less self-regulating during activities, and she did a much better job when it was required. She requested various activities and breaks, usually listening to instructions. She eloped one time to take a break without asking, but was able to reengage with the original task after using a visual timer. On Friday, she eloped from the table, but transitioned back well when told her break was over. A few minutes later, she appropriately requested and identified a sensory break activity.

Post Camp

Approximately two months after camp, the study participant filled out a questionnaire about her daughter's current skills and abilities related to Adam's Camp. She said that her daughter's communication skills have improved immensely. She also said that she herself learned quite a bit about using the communication device, allowing her to help her daughter continue to improve. The mom also noticed increased confidence in trying new skills after doing so many new things with a new team of therapists during her week at camp. She believes it would have taken her daughter significantly longer to make these improvements during her regular therapy schedule because the intensity supported her confidence. She did not notice any negative effects on the child during or after camp from following a more intensive schedule.

Chapter 5: Discussion

Overall, there were improvements seen in all three of the goals set for the child. None of the skills were mastered, and she often still required prompting, but significant strides were being made. By the end of the week, the child was using her device more frequently and with more words than she originally was able to. She also went from having zero interest in peer communication or interaction to having reciprocal conversations and playing games with them multiple times each day. On her third goal, she improved her ability to self-regulate and transition between activities. She would redirect back to her original activity and would remember to ask the next time instead of continually eloping or melting down. For one week of work, these results seem to be much more impressive than one would expect had the child been in her normally scheduled therapy. There are two main variables that were different during therapy camp: intensity and interprofessional practice.

Intensity of Therapy

The intensity of therapy camp is a massive change to her usual schedule. For the rest of the year, the child receives 30 minutes of each therapy most weeks, and once a month has one hour in a week. During camp, she averaged 45 minutes with each therapist, adding up to approximately 3.75 hours in each specialty, not including overlap during other sessions, which will be addressed in the next section. In these 3.75 hours, each therapist was able to really work hard on specific skills to engrain them without having to rely on at-home practice. For example, the SLP worked with the child to navigate on her communication device and expand her

vocabulary on it. It would take about 7 weeks for her regular SLP to spend this much time with her, so regression between sessions would be highly likely. As her mother said in the questionnaire, this constant practice also helped her to be more confident in her usage of the device, which is very important if the goal is to have her using it regularly. Her mother also said that two months later they were still seeing the improvements that she made at camp, meaning regression after such an intensive period was minimal. The improvements seen here seem to support the hypothesis that intensive periods of therapy yield improvements in communication skills.

Interprofessional Approach

While the intensity of therapy was beneficial, many of those benefits come from the interprofessional approach that Adam's Camp offers. The time the therapists spend teaming allows them to plan together how each of them can incorporate aspects of every goal into their sessions. Since they are all working together, they are clear on what the goals are and are able to implement similar interventions in order to best help the child. There are several different ways that this approach impacted the therapy this week.

The first major impact is that the child received even more intensive therapy than they appear to be based on time stamps. She may have spent 45 minutes each day with an SLP, but she spent the other 5.25 hours with therapists using the same methods during their sessions, just not in as direct of a way. This can be seen in her communication goal through the approach to encouraging her to use her device. All of the therapists prompted her to use the device during their sessions, whether that was to ask for help in OT or request a specific color in art therapy. Using a device does not formally fall under either of those to fields of practice, but they were able to implement it in order to get her more repetitions. The therapists were also able to remain

consistent in how each goal was approached because they were in constant communication with each other.

The close communication and teamwork was also beneficial because the therapists were able to ask questions and give advice quickly and easily among themselves. For example, self-regulation goals usually would fall under the scope of occupational therapy. However, the other therapists were able to implement aspects of self-regulation into the time they were spending with the camper. If another therapist needed help to come up with or implement strategies for teaching the camper to self-regulate, the occupational therapist was in the room to be able to assist. Teaming after the campers went home each afternoon also allowed time to discuss what did and did not work for each goal and talk about the day as a whole. This is quite different compared to a traditional model, where an occupational therapist would have to decide the next best steps solely based off of their 45 minutes with a patient.

Another benefit of an interprofessional set-up is being able to effectively work on skills that fall under multiple fields of practice. A great example of this is play skills. Playing requires the speaking skills from speech therapy, as well as the ability to do shared activities that are commonly taught in occupational therapy. Having the skills from one discipline but not the other makes it difficult to be able to play with peers. When the SLP and occupational therapist are working this closely together, they are able to strategize and plan the best approach to make sure the skills they are each working on complement each other. This is not just limited to "traditional" therapies either. Art and music therapy both give the camper the opportunity to practice these play skills and reciprocal interactions with peers in a natural, less intimidating environment. They are able to interact with each other in a way that may come up in a classroom,

so there is more real-world application than the child just associating play skills with her therapists.

Finally, along these same lines of thinking, it is important to consider that in an intensive environment multiple therapies may be necessary. As stated above, the aspects from speech therapy and OT work together to create play skills. This is often also true with OT and PT, as both work on motor skills, although it was less pertinent in this specific case study. If there is an intensive schedule with one and not with the other, it would likely not be as beneficial. For example, if a child has had intensive OT and mastered tying a model shoe but has not worked with PT to have the strength to sit in a way that allows them to bend down and reach their feet, they are not able to tie their shoes any more effectively than they were before the intensive OT intervention. It is important to consider the impact various therapies have on each other.

Implications and Further Research

This case study showed a correlation between a more intensive, interprofessional approach to therapy and great improvement in multiple skills. If this were to be confirmed by further research, there is a potential to make this more commonplace, allowing families more access to an intensive approach if they are interested. The participant in this study said that she would be extremely interested in an intensive private therapy schedule for her daughter if it became available. She believes that it could be more helpful to do intensive therapy over school breaks a few times a year instead of short periods each week.

Moving forward, there is a need for larger scale studies on this model of practice. There are many unknowns about this realm of study, and there are many interesting research questions that still need to be asked. It is important to consider which therapies, if any, need to be paired

together in order to make the outcome worthwhile. Are there any consequences to the child or the family members to implementing such an intense schedule? Also, what are the outcomes of occasional intensive therapies compared to consistent but short sessions? There are many aspects to look into before making it more available, but there is good reason to begin research in this direction.

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