5-2012

The Effects of Early Intervention Therapy on Children with Developmental Disorders

Martha Ross
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Document Type

Thesis

Department

Education

Subject Categories

Education

Running Head: THE EFFECTS OF EARLY INTERVENTION

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Introduction

Children with Autism Spectrum Disorders (ASD) display deficits in social interaction, verbal and nonverbal communication, and repetitive behaviors and interests. ASD can also be classified as Pervasive Developmental Disorder (PDD), Asperger's Syndrome, Rett's Syndrome, or childhood disintegrative disorder. Research shows that early intensive therapy has been beneficial to children with these disorders.

Autism occurs in approximately one out of every 99 children and is four times more common in boys than in girls. There is a wide range of symptoms that are displayed by children on the autism spectrum. They range from severe deficits including nonverbal behaviors which control social interaction and a failure to develop age appropriate peer relationships. Children who are diagnosed may have delays in or a total lack of spoken language, which can have a severe impact on both verbal and nonverbal communication. Repetitive or stereotypic language is common in children with autism who do speak. This may include, but is not limited to, simple movements such as body rocking or finger tapping, complex movements such as self-caressing, crossing and uncrossing of the legs or jumping in place. Along with repetitive or stereotypic language, children may have repetitive and stereotypic play skills; as well as, lack of diverse, spontaneous imaginative play or social imitative play (CARD 2002). These deficits can have a large impact on the relationships that they form with peers or may be unable to form with peers. Children with ASD may have a difficult time communicating with others, therefore causing them to make fewer friends and shy away from simple conversation. In turn, peers may not make the effort to build relationships because they do not understand this child's language or behaviors.

Not only do children with autism display communication impairments, but they may also exhibit a wide range of behavioral deficits and excesses as well. Some of these may include hyperactivity, short attention span, impulsivity, aggressiveness, self-injury and temper tantrums. Children may demonstrate hypersensitivity or lack of response to noise and/or sensory stimuli; as well as, irregular or unusual sleeping and eating habits. (CARD 2002)

Early Intervention Services

Early Intervention services were first created by Congress in 1986 under the Individuals with Disabilities Education Act (IDEA). It is a federal grant program that assists states in operating a comprehensive statewide program of early intervention services for infants and toddlers with disabilities and their families. In order to be eligible for these services, children must be under 3 years of age and have a confirmed diagnosis of a disability or an established developmental delay in one or more of the following areas: physical, cognitive, communication, social-emotional and/or adaptive. The purpose of early intervention is to lessen the effects of the disability or delay. Early intervention programs may take place in a multitude of different settings. Programs may be home-based, center-based, hospital-based or a combination. According to Part C of IDEA, "*to maximize the extent appropriate to the needs of the child, early intervention services must be provided in natural environments, including the home and community settings in which children without disabilities participate*." (2004) By definition, natural environment refers to "*settings that are natural or normal for the child's age peers who have no disabilities*." (IDEA 2004)

Evaluations and assessments are provided, free of charge, as stated in IDEA. A multidisciplinary team, such as parents, Service Coordinators, Special Instructors, Speech Language Pathologists, Physical Therapists, Occupational Therapists, Music Therapists, etc, (qualified people with training and experience in all fields of development) collaborates to determine whether the child is eligible for early intervention services. This evaluation includes observation, interaction, and the use of other tools or methods to gather measurable information about the child. If the team determines that the child qualifies for services, an Individualized Family Service Plan (IFSP) is created. This document is the "road map" for the child and the family through their early intervention services. The document includes information about the services necessary to aid in the child's development and enhances the family's ability to facilitate the child's development. As a team (services providers and family members) this document is planned, implemented and evaluated specifically to the family's concerns, priorities and available resources. The family is assigned a service coordinator who supports them in coordinating the services outlined in the IFSP (IDEA 2004).

You may ask yourself, "Why is it important to intervene early?" There are three primary reasons for intervening early with a child with special needs. First, you want to enhance the child's development. Second, provide support and assistance to the family. Third, you want to maximize the child and family's benefit to society. Karnes and Lee (1978) have noted that "only through early identification and appropriate programming can children develop their potential" (p.1). Research has shown that the rate of human development and learning occurs most rapidly during the preschool years. Butter (2006) found that in eight different cases, children previously diagnosed with an autism

spectrum disorder and mental retardation, after early intervention, no longer met the behavioral criteria for mental retardation or pervasive developmental disorder. Amerine-Dickens (2006) found that in a three year prospective outcome study, researchers found that children receiving early intervention services obtained significantly higher IQ and adaptive behavior scores than the comparison group. In another study, Cassell (2009) found that after receiving three years of early intensive behavioral therapy concentrating on complex social skills and incorporating naturalistic teaching procedures combined with discrete trial teaching, children received scores in the normal range on assessment of IQ, language and adaptive behavior.

These services have shown a great impact on the parents and siblings of children with special needs. Early intervention can improve their attitudes about themselves and their child and develop information and skills in which to teach their child. These services also enable parents to provide a more supportive and nurturing environment for their child. As well as, teaching them to handle problem behaviors that they may not have been able to previously handle on their own. By providing these services early on, the child will have increased developmental and educational gains and decreased dependence on social institutions. The family will have increased ability to cope with the presence of a child with special needs, as well as, perhaps increased eligibility for employment and other life-skills related areas.

Applied Behavior Analysis

Applied Behavior Analysis (ABA) is the process of systematically applying interventions based upon the principles of learning theory to improve socially significant behaviors to a meaningful degree (Baer 1991); specifically evaluating and assessing

behaviors that are occurring, and the application of interventions to alter the behavior. ABA has been documented to be effective across a wide variety of populations, settings, behaviors, interventions and therapists putting the interventions into action.

Applied Behavior Analysis is an objective discipline focused on the reliable measurement and objective evaluation of observable behavior. Programs based upon ABA methodologies are grounded in the well established principles of learning and operant conditioning, as influenced by the works of researchers such as Edward L. Thorndike and B.F. Skinner. The use of single case experimental design to evaluate the process includes the following components which outline a reliable and accountable approach to behavior change (Sulzer Azaroff & Mayer, 1991):

1. selection of interfering behavior or behavioral skill deficit
2. identification of goals and objectives
3. establishment of a methods of measuring target behaviors
4. evaluation of the current levels of performance (baseline)
5. design and implementation of the interventions that teach new skills and/or reduce interfering behaviors
6. continuous measurement of target behaviors to determine the effectiveness of the intervention
7. ongoing evaluation of the effectiveness of the intervention, with modifications made as necessary to maintain and/or increase both the effectiveness and the efficiency of the intervention

Applied Behavior Analysis focuses on the development of adaptive, pro-social behavior and the reduction of problem behavior through the process of behavior change. Applied Behavior Analysis specifically looks at the socially significant behaviors that include academics, communication, social skills and adaptive living skills. These methods can be used to teach new skills, generalize or transfer skills, modify the conditions in which a child learns and reduce inappropriate behaviors (CARD 2002). This approach to teaching children with autism uses the management of antecedents, or

what happened immediately prior to the behavior occurring, and consequences of behavior to teach new skills and abolish problem and excessive behaviors.

The Discrete Trial is a particular ABA teaching approach which facilitates the learner to acquire complex skills and behaviors by first mastering the subcomponents of the targeted skill. For example, if the teacher is trying to get the child to request a desired item, "I want cookie," the teacher might begin by first teaching the child individualized sounds forming each word in the request, or simply labeling the item first, "cookie." By using these teaching techniques based on the principles of behavior analysis, the child is gradually able to complete all subcomponent skills independently. Once these individual components are accomplished, they are linked together to enable the mastery of the targeted complex and functional skill. This methodology is highly effective in teaching basic communication, play, motor and daily living skills.

Initially, ABA programs for children with autism utilized only Discrete Trial Teaching (DTT), and the curriculum focused on teaching basic skills as noted above. A complete discrete trial consists of a command or direction, followed by a response and appropriate reinforcement. Reinforcement for a correct response may include a tangible object, positive verbal praise, sensory input, etc. If the response in the discrete trial is incorrect, the child is reinforced with an informal "no" and the command or direction is repeated. If the response is then correct, the child is given the appropriate reinforcement for a correct response; if the response is again incorrect, the therapist gives the child another informal "no" and prompts the child through the correct response, again repeating the command or direction with the goal of a correct response. However, ABA programs continue to evolve, placing greater emphasis on the generalization and

spontaneity of skills learned. As children progress and develop more complex social skills, the strict DTT approach allows for other treatments to be used including other components. The strict DTT method is primarily teacher initiated and typically uses reinforcers that increase appropriate behavior unrelated to the target response. The downfall to this is that it can often result in rote responses. For example, a child may not be able to generalize the answer to the question, "What is your mom's name?" if asked in a different context, "Who is your mom?" These are questions that are important to be able to generalize in an emergency situation. When looking at deficits in areas such as the understanding of emotions, perspective taking and executive functioning (problem solving skills), the DTT method is not always the most effective approach. Although the DTT method is a fundamental part of ABA based programs, other teaching strategies based on the principals of behavior analysis, such as Natural Environment Training (NET), may be used to address these more complex skills. Natural Environment Training is also used when children are ready to generalize the skills that they have mastered within discrete trials. These complex skills are taught in a natural environment in a more playful manner. Reinforcers that are used are always directly related to the task at hand. For example, if a child is taught to say the word "computer" to request the use of the computer, the reinforcer would be that the child is given access to the computer contingent on making that request. Natural Environment Training is just one of the many different teaching strategies used in comprehensive ABA based programs to teach complex skills.

Relationship Developmental Intervention

Relationship Development Intervention (RDI) is a treatment program proposed for children with autism spectrum disorders. It was developed and trademarked by Steven Gutstein, Ph.D. and Rachelle K. Sheely, Ph.D. (clinical associates). RDI's main focus is to teach parents and others how to encourage and facilitate those with autism to experience self-motivated social relationships through social and emotional development activities, such as active play and imitative play. RDI is not a behavioral approach to treating children with Autism Spectrum Disorder (ASD) and does not view ASD as a behavioral disorder. RDI is therapy focusing on a child's inability to form true social and emotional relationships, done by exposing them in a gradual, systematic way. Its main focus is to teach parents and others how to encourage, motivate and enable these children to experience dynamic social relationships. This is done by systematically building up motivation and tools for interacting in these social relationships. It's a program designed to remediate experience-sharing deficits. Based on cognitive and developmental systems to teach children to evaluate and adjust to their actions to others as they participate in ongoing interactive processes, and not simply providing instruction in discrete skills. Parents participate in the Relationship Developmental Assessment (RDA), which is designed to carefully evaluate the child's current experience-sharing competencies and limitations. The RDA is also used to develop appropriate treatment objectives and to identify potential child-parent obstacles.

Within this family-based program, consultants help to educate and support families to modify interaction and communication styles. This is done through parent education, followed by assessment of child and child-parent relationships. The

consultant helps to develop specific objectives to build relationship between the child and the parents. Once this relationship is in place, the family can begin working on specific cognitive remediation objectives for the child. While working through these objectives, there are seven goals of RDI (Gutstein 2005):

- Dramatic improvement in meaningful communication
- Desire and skills to share their experiences with others
- Genuine curiosity and enthusiasm for other people
- Ability to adapt easily and "go with the flow"
- Amazing increase in the initiation of joint attention
- Powerful improvement in perspective taking and theory of the mind
- Dramatically increased desire to seek out and interact with peers

While there is not a significant amount of research conducted on RDI, Dr. Steven Gutstein has conducted two studies within the Connections Center, finding that children with ASD who participate in RDI therapy achieve improvement on the Autism Diagnostic Observation Schedule (ADOS 2007). There have not yet been any independent studies conducted, although the University of Sydney, Australia is currently conducting a study.

Son-Rise Program

The Son-Rise Program is an Early Intervention Program developed by Barry Neil Kaufman and Samahria Lyte Kaufman in 1974. It is a program that provides effective treatment for adults and children with Autism Spectrum Disorder (ASD), Pervasive Developmental Disorder (PDD), Asperger's Syndrome or other developmental difficulties. It teaches a specific and comprehensive system of treatment and education. The Son-Rise Program was designed to help families and caregivers enable their children to dramatically improve in all areas of learning, development, communication and skill acquisition. It is a one-on-one, home-based, child-centered program. This program looks

at parents as the key teachers, teaching them how to educate their child and utilize their home as the most nurturing environment to help their child learn and grow.

The Son-Rise Program believes that Autism is not a behavioral disorder; that in fact it is a neurological challenge in which the child has difficulty relating and connecting to those around them ("About the" 2009). Each child has limitless potential; while some children may progress at faster rates than others, each child is given the ability to develop and learn at their own rate. Motivation is the key to this program, not repetition. By uncovering what motivates each child, educators can use this motivation to teach them the skills they need to learn; which in turn keeps learning fun and exciting for the child. Self stimulatory behaviors are important to a child's learning and they have meaning. By joining in on these behaviors, rapport building and connection occurs. This opens the doors to interaction between the child and the teacher. The Son-Rise Program believes that parents are the child's best resource. No professional can match the connection and emotion that a parent shares with their child. This program also believes that every child can make progress in the right environment. By creating an optimal learning environment where distractions are minimized and interactions are facilitated, the potential for learning is endless. The Son-Rise Program teaches parents and professionals to be confident and optimistic about their child's capabilities and future. This program can also be effective integrating complimentary therapies; such as, biomedical interventions, sensory integration therapy, dietary changes, auditory integration therapy, as well as others.

The Son-Rise Program believes that social development and the ability to socially interact is the most important thing to focus on first. By focusing on these two areas first,

a child will be socially successful ("About the" 2009). In order to improve social development and social interaction, one must improve eye contact, communication, interactive attention span and flexibility. Once these areas are developed, then skills such as self-help tasks, cognitive skills, gross motor and fine motor skills can be developed ("About the" 2009).

The Son-Rise Program takes the traditional discrete trial method and makes learning more adapted to the home environment. Delprato (2001) reviewed eight studies looking at normalized behavioral language interventions, defined as consisting of loosely structured sessions of indirect teaching with everyday situations, child initiation, natural reinforcers and liberal criteria for reinforcer presentation. In all eight studies with children with Autism, this method of language training was found to be significantly more effective than discrete trial teaching. Kaiser and Hancock (2003) found similar outcomes. They found that teaching parents to implement naturalistic language intervention strategies at home can be highly effective. Furthermore, in a study of families using the Son-Rise Program in their homes, Williams (2004) found that the families felt generally more positive since implementing the Son-Rise Program and reported that interaction among the whole family had improved.

Methods

This study contained participants from New York, California and Arizona. These participants were selected randomly based on clientele of a private autism agency. The headquarters of this agency is based out of Tarzana, California, but has offices located all over the United States, as well as, England, Australia and New Zealand. The office

located in Rochester, New York was able to randomly select one hundred participants to send surveys to; 55 from New York, 35 from California and 10 from Arizona. Participants included parents of children who qualified or have qualified for early intervention services, both in Monroe County and outside of Monroe County. These parents were located in Rochester, NY (Monroe County), as well as, in neighboring counties and states. A confidential survey was sent out to parents. Enclosed in the envelope was a cover letter to participants stating who I was and what I was doing, the survey for parents to complete and a self addressed stamped envelope, to ensure an easy return of the survey for parents. Confidentiality is extremely important in research such as this and was established in the following ways:

- All of the surveys remained in my possession at all times and were only seen by myself or my advisor.
- All surveys were maintained in a manner that allows me to deny others access to them.
- Any/All names used in the reporting of this information were replaced with pseudo names.

Clearly stated at the top of each survey, in bold print read: ***This survey will be totally confidential and by filling out the survey, you are providing your consent**.

In the cover letter for the survey, it clearly explains that in no way will any information from the survey be shared with school districts and/or will not determine students services in any way. It also clearly states that by filling out the survey they are providing their consent. The letter asks parents, if they so choose, to fill out the survey and use the self addressed stamped envelope to return the survey by a specific date which was stated in bold (Appendix A). The survey was a minimum of one page. Parents were asked to select which group they fell under: currently live in Monroe County or currently live outside of Monroe County. Parents were asked to provide how long that

had been or have been receiving early intervention services for and how many hours per week they were receiving, including ABA, RDI, speech, OT, PT, or any other services. On a scale of one to five (one being highly unsatisfied and five being highly satisfied), parents were asked to state their satisfaction of the quality of services their child was receiving or had received. Parents were given room to describe improvements that they have seen in their child since services began, if any. The last two questions asked parents to provide information as to whether or not they have received services other than Monroe County and if so, how they differed from the services offered within Monroe County, whether it was positive or negative (Appendix B).

Results

Out of 100 surveys sent out, 31 were returned—21 from participants whom live in Monroe County and 10 from participants who live outside of Monroe County. On average participants that live in Monroe County receive 16 hours of ABA, three hours of speech therapy, one and a half hours of occupational therapy, one hour of physical therapy and one hour of music therapy per week. On average participants living outside of Monroe County are receiving 31 hours of ABA, one and a half hours of speech therapy, one hour of occupational therapy, one hour of physical therapy and one and a half hours of music therapy per week. All parents, with the exception of one, were satisfied with their early intervention services ranging from a three (neutral) to a five (highly satisfied). All parents, both in Monroe County and outside of Monroe County, reported to have seen drastic improvements in receptive and expressive language, communicative speech, fine and gross motor skills, peer relationships, social and

cognitive skills, compliance and self-help skills, such as eating and dressing; as well as, a decrease in problem behaviors and self-stimulatory behaviors.

One parent noted that in order to get good "quality services to improve her child's development", she needed to privately pay for services because her county would not provide enough hours for her child. Another parent reported that before moving to Monroe County, services were only delivered within a school setting and any at home teaching was to be delivered by the parent. A parent that moved from an outside county to Monroe County noted that it was difficult to receive as many hours in Monroe County as they were receiving outside of Monroe County; however, the model of the services provided in Monroe County was different and the quality of the services were far better and more intensive than the services they were receiving outside of Monroe County.

Discussion

The surveys completed by parents of children who qualify for early intervention services reported that, despite the number of hours that were received both in Monroe County and outside of Monroe County, there were significant gains in areas of cognitive, social and physical development. Decreases in problem behaviors and self stimulatory behaviors were also reported. Previously discussed research has proven that early intervention therapy has been beneficial to children with autism spectrum disorders. It also proves that these services benefit and assist the family on how to aid in the child's development. After analyzing the number of hours that families reported their children were receiving and finding that the hours being delivered were not the main contribution to the child's success, it was proven that the enrollment of early intervention services was

what impacted the development of these children. All parents reported in their surveys exactly what the research shows: providing children with special needs with early intervention services increases developmental and educational abilities.

Early intervention services can include a number of different teaching styles; however, research has shown some to be more effective than others. The findings that were examined within the confines of this study solely looked at children receiving Applied Behavior Analysis as their primary intervention. After reviewing several research articles about different interventions, Applied Behavior Analysis was the intervention that deemed itself most successful; as found by Cassell (2009), Butter (2006) and Amerine-Dickens (2006). Other interventions, such as the SonRise Program reported improved family interaction and a generally more positive attitude (Williams 2004). Though no published studies have been conducted, improved ADOS scores were reported of those children who participated in Relationship Developmental Intervention (RDI). However, all interventions working together as team of trained professionals to come up with a plan that best supports the child is crucial to accommodate the needs of children with autism spectrum disorders.

Despite the correlation of the findings and the research, there were still limitations found within this study. Some of these limitations included that the surveys were sent out to participants receiving Applied Behavior Analysis treatment only. Another limitation found was that the parents were not asked to provide any test scores of their children, limiting them only to give their observational results. Due to the limitations of this study, it opens the door to future research opportunities. This study could be replicated looking at parental input of children receiving other types of early intervention treatment

methods, such as the ones discussed in this study. Also, added to the survey could be a section for parents to provide their child's test scores at the time of their diagnosis and again when they were re-tested or when they aged out of early intervention. Overall, the findings of this study indicate that early intervention services play a critical part in the development of a child with special needs, especially those diagnosed with autism spectrum disorder.

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Appendix A

Cover Letter:

Dear Survey Participant,

My name is Martha Ross. I am working on completing my Masters in Special Education at St. John Fisher College in Rochester, NY. The culminating project of my last course is a capstone research project. I will be looking at research regarding early intervention treatments, as well as, surveying parents of children who qualify or have qualified for early intervention services.

This survey is completely confidential and the information collected will in no way be shared with the school district and/or will not determine students services in any way. By completing this survey, you are providing your consent. Provided with the survey is a self addressed stamped envelope in which you can return the survey. If you give your consent, please fill out the survey and return to me by **January 30th 2009**. Your participation is greatly appreciated. Thank you for you time.

Sincerely,

Martha E. Ross

Appendix B

Survey:

* **This survey will be totally confidential and by filling the survey, you are providing your consent.**

*Please fill out and return by **January 30th 2009***

☐ Currently live IN Monroe County ☐ Currently live OUTSIDE Monroe County

How long have you been receiving or did receive early intervention services?

How many hours per week does/did your child receive? (please list all that apply: ABA, RDI, speech, OT, PT, or any other services)

1	2	3	4	5
highly unsatisfied	unsatisfied	neutral	satisfied	highly satisfied

How satisfied are you with the quality of services your child receives/received? ____

Have you seen improvements in your child's performance since you began services? Please describe, feel free to continue to the back if necessary.

**Please fill out if you have received early intervention services in Monroe County, as well as other locations:*
Where else have you received early intervention services?

How did the services differ from Monroe County (positive or negative)? For example, did the number of hours your child qualified for differ, did the types of services qualified for differ, etc.