Autism education and early intervention: what experts recommend and how parents and public schools provide

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A Dissertation

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Autism Education and Early Intervention:
What Experts Recommend and How Parents and Public Schools Provide

by

Lori A. Reffert

Submitted as partial fulfillment of the requirements for
The Doctor of Education Degree in
Educational Administration and Supervision

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An Abstract of

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Autism is a lifetime neurobiological disorder that is not curable. Children are being diagnosed with this affliction at an alarming rate, which is greatly affecting and overwhelming both families and school districts. The National Research Council recommends 25 hours a week, year around of one-on-one or small group early intervention as the key to overcoming many of autism’s limitations.

This research compared what rural, suburban, and urban school districts in the Midwest states of Michigan and Ohio do to meet these recommendations. Additionally, parental input was obtained regarding their children with autism spectrum disorder (ASD) and what services are received from both the school district and private sector.

The main findings of the research indicate that school districts are not following the recommendations set forth by the National Research Council’s 2001 study, *Educating*
**Children with Autism.** Intervention programs are severely lacking in the states of Michigan and Ohio as school districts are either not knowledgeable about what constitutes best practice regarding children with ASD, or do not have the resources necessary to implement these best practices.

Intervention based on ABA principles is shown to help change the core symptoms of autism, and it should be a sound and logical addition to a school district’s early intervention program. According to results obtained from this research study, a full 50% of the 74 school districts that responded indicated they used an intervention program that was not Applied Behavior Analysis (ABA), Discrete Trial Training (DTT), TEAACH (Treatment and Education of Autistic and Related Communication Handicapped Children) or Floor Time.

Additionally, of the 35 parents that responded to the research survey, 62.9% indicated that their child’s school did not use ABA, DTT, TEACCH or Floor Time as the program used for intervention. Furthermore, 57.1% (20) of the 35 parents that responded indicated that their child received ABA or DTT not provided by the school.

Understandably, the cost associated with small group intervention is expensive. Many school districts balk at one-on-one instruction and do not take into consideration that by utilizing an early intense behavioral intervention (EIBI), later education costs can be reduced.
Dedication

This dissertation is dedicated to my son, Lucas.

My work, effort, and advocacy have been for you and the others out there like you.

We will fight this battle and find the missing piece of the puzzle together.

Remember . . .

“Never, never, never give up.”
Acknowledgements

Nothing of this magnitude can be accomplished alone. This journey began three and a half years ago, with the urging of my advisor, Dr. Caroline Roettger. Somehow, she convinced me to join the Ottawa Hills Cohort. I thank her for her eternal optimism, support, and advice. She has become a good friend and mentor. I also extend my deepest thanks to Dr. Sandra McKinley, Dr. Lloyd Roettger, and Dr. Raymond Russell – your advice, support and guidance have been instrumental in finishing this monumental goal.

My family has endured many things during this time. Change of schedules and loss of “mommy time” are the two biggest. My husband Randy took charge and never complained about the sacrifices we had to make as a family. For this, and his immense amount of love, patience, support, and encouragement, I am so thankful. Ryan and Lucas, thank you for your love, understanding, and being patient for “just one more minute.”

Gratitude goes to the plethora of babysitters that allowed me to take classes, study, and work on my dissertation – my mom, Aunt Dee, Aunt Renee and Uncle Charlie, Susan, Shelly, “Coleman”, Tiffany, and others too numerous to mention.

Chelsea, thanks for being the “web detective” and helping me find email addresses!

Additional thanks to my mom, Mary Matheny. You stepped in when I needed you to help with the boys, juggling schedules, and finances. I hope you know what you mean to me.

To my dad – John Matheny. I know you are up there with a huge smile. I so wish you were here to share this major accomplishment with me. I know you are so proud.

My son, Lucas, was diagnosed with autism in December of 2004 at the age of 3 years and 7 months. With his diagnosis came much reading and research, thus the basis and topic for my dissertation.
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Chapter 1

Introduction

Introduction of the Topic

Autism has become one of the most prevalent childhood afflictions of our generation, the second most common developmental disability, next to mental retardation, affecting an estimated 1 in 150 children (Center for Disease Control and Prevention, 2007; Autism Society of America, n.d.). Autism is a lifetime neurobiological disorder and is not curable.

As many as 1.5 million Americans today are believed to have some form of autism, with this number increasing daily. Autism is a spectrum disorder, defined by a certain set of behaviors. Even though two people can have the same diagnosis of autism, the combination of behaviors and scale of severity can be vastly different.

There are generally three main characteristics used to determine an autism spectrum disorder (ASD), and are usually present by age three. These characteristics are deficits in social interaction, verbal and nonverbal communication, and repetitive behaviors and interests (Autism Society of America, n.d.; National Institute of Child Health and Human Development, 2005; U.S. Government Accountability Office, 2005).

Additionally, in the Individuals with Disabilities Education Act (IDEA), there is an educational definition for autism. Autism is defined as, “a developmental disability
that significantly affects verbal and nonverbal communication and social interaction. It is generally evident before age 3 and adversely affects a child’s educational performance” (Ohio Center for Autism and Low Incidence [OCALI], 2007). There are other characteristics frequently associated with autism. These include participation in repetitive activities and behaviors, inability to change especially the change in daily routines, and atypical responses to sensory experiences. Furthermore, autism does not apply to the child’s diagnosis if educational performance is negatively affected due to the child having an emotional disturbance (Ohio Center for Autism and Low Incidence).

Of the 1.5 million Americans living with some form of autism, 100,000 are school-aged children who have been diagnosed with an autism spectrum disorder (ASD) and are served under the Individuals with Disabilities Education Act (IDEA).

Federal legislation mandates educational programming for children with disabilities under the age of 5. Many educational leaders do not have training for this age group and may become involved in early childhood education as a building principal, program coordinator or district superintendent (Bartlett, Weisenstein & Etscheidt, 2002). According to data collected for the United States Department of Education (2005) over the last decade, the incidence of children aged 6-21 diagnosed with autism has increased by more than 500%, from under 20,000 in 1993 to almost 120,000 in 2002. These children are served under IDEA and have exponentially increased the costs of school districts servicing special needs children (U.S. Government Accountability Office, 2005).

Statistics from the U.S. Department of Education and other governmental agencies indicate that autism is growing at a startling rate of 10-17% per year (Autism Society of America, n.d.). At this rate, the Autism Society of America estimates that the
prevalence of autism could reach 4 million Americans in the next decade. A report by the Special Education Expenditure Project (SEEP) cited in the U.S. Government’s Accountability Office report on autism (2005) estimated that the average per pupil cost in the 1999-2000 school year for educating a child with autism was more than $18,000. This amount is approximately three times the average cost of educating a typical child.

According to a report issued by the Center for Disease Control and Prevention (2007), “in 2005, about 223,942 children ages 3–21 were served under the “autism” classification for special education services. Not all children with an ASD receive special education services under the classification of “autism,” so the education data underestimate the actual prevalence of the ASDs” (p. 32). With this report, it is important to remember that the classification of autism was added in the early 1990s and the increase in the number of children in this classification could be due to this new category in special education.

What is causing the increase in the diagnosis and identification of ASD? There is no consensus about the cause of ASD. Theories range from better diagnosis of the disability, to environmental means and genetics, to a combination of both. It is important to note that whatever the diagnosis, children with autism can learn and function normally and show improvement with appropriate treatment and education (Autism Society of America, n.d.).

The spectrum of autism is vast. Some individuals mildly affected by autism may display only minor delays in language and have greater challenges with social interactions. These individuals may have difficulty initiating and/or maintaining a conversation. Their communication abilities are often described as talking at others
instead of to them. People with autism also process and respond to information in unique ways with many having sensory issues. In some cases, aggressive and/or self-injurious behavior may be present.

Unfortunately, there is no cure for autism. However, there are a myriad of treatment approaches and nontraditional therapies identified for Autism Spectrum Disorders. An ongoing debate by researchers, professionals and parents of which treatments are best can add to the confusion. Many methods exist that promise remarkable improvement. While some of these strategies are successful for some, there is not one process that is effective for all people with Autism Spectrum Disorders (Sanford School of Medicine, 2006). However, there are a variety of treatment and educational approaches that may diminish various challenges associated with this pervasive developmental disability. Intervention may help to minimize disruptive behaviors while education can teach self-help skills that will allow the child to become more independent (National Research Council, 2001).

With autism being diagnosed at such a staggering rate, school districts are struggling to find space in their special needs classes, especially for young children with ASD. Children diagnosed with autism are protected under the Americans with Disabilities Act, and by law, educational services must be provided by the local school district. School districts need guidance in how children with autism can best be helped.

Research Validation

The National Academies was established in 1863, to provide advice to national leaders on specific technical and scientific issues that permeate important policy decisions. The National Research Council was created to conduct most of the National
Academies research of science policy and technical work. What is unique about these non-profit organizations is that they provide an important public service by working outside the government structure to guarantee independent advice on matters of science, technology, and medicine (National Academy of Sciences, 2007).

The National Academies recruit the nation's top scientists, engineers, and other experts to volunteer their time to examine specific matters important to the nation. The results of their discussions and deliberations have inspired some of the nation’s most important and long-term efforts to improve the health, education, and welfare of the population. Over the years, the Academies’ service to our government has become so vital that Congress and the White House have issued legislation and executive orders that confirm its irreplaceable role regarding the research it conducts. Approximately 2,000 members and 350 foreign associates, with more than 200 having won Nobel Prizes, make up the membership of the Academy. Members and Academy associates are elected in acknowledgment of their continual and illustrious achievements regarding original research (National Academy of Sciences, 2007).

In 2001, The National Research Council’s report, *Educating Children with Autism*, recommended several key components as critical when educating children with autism. These components are entrance into intervention programs as soon as an ASD diagnosis is being considered and active participation in an intensive instructional program for a full school day, 5 days a week for a minimum of 25 hours a week, for the entire calendar year. Additionally, instruction should be one-to-one or in a small group in order to meet each student’s individualized goals with a low student to teacher ratio of not more than two children with ASD per adult in the classroom.
It is important to note that the report did not specify a specific treatment for autism as treatments must be individually tailored to the child's behaviors and special needs. Just as there is no one single symptom or behavior that identifies children with autism, there is no single treatment.

Statement of the Problem

With autism being diagnosed at such an alarming rate, school districts are struggling to find space in their special needs classes and the funds to pay for these programs. Under federal laws, specifically the Individuals with Disabilities Education Act (IDEA) (originally passed as the Education for All Handicapped Children Act enacted in 1975 and implemented in 1977); Section 504 of the Rehabilitation Act of 1973; and the Americans with Disabilities Act of 1990 (ADA) (as cited in Bartlett et al., 2002), children with autism are guaranteed a free and appropriate public education. These federal laws allow children diagnosed with a disability free educational services and devices that allow them to learn as much as possible (National Institute of Child Health and Human Development, 2005). By law, these educational services and devices must be provided by the local school district from the age of 3 through high school, or the age of 21. When discussing autism education and intervention approaches to work with students with ASD, there is much debate as to how this should be accomplished.

The recommended treatment for autism is 25 hours a week of one-on-one or small group instruction year round as the most effective way to educate those on the autism spectrum (U.S. Government Accountability Office, 2005). However, intervention and treatment programs are expensive and are routinely not covered by private insurance; providing this intensive level of intervention is a challenge to most families and local
This research will investigate the hypothesis that school districts in Michigan and Ohio are not meeting the recommendations for intervention as established in the National Research Council’s report, *Educating Children with Autism*. In order to validate the hypothesis, this research will address the following questions:

1. How many hours a week of intervention are the public school districts surveyed providing students on the autism spectrum?
2. Which programs are school districts in Michigan and Ohio using for early intervention?
3. Are parents bridging the gap between intervention hours provided by the public school district and the number of recommended hours, and if so, how?

To answer these questions, a survey of public school districts in Ohio and Michigan was conducted to ascertain what programs are being used and how many hours of intervention a week are typically provided to their students on the autism spectrum. Additionally, parents were surveyed to learn if and how they bridge the gap between hours recommended by experts and hours provided by the school.

**Purpose of Research**

After reviewing the research on autism, a gap was discovered in the literature regarding early intervention recommendations and an analysis of what programs school districts use for intervention. There is research regarding the efficacy of intervention programs (Ben-Itzchak & Zachor, 2007; Freeman, 1997; Green, 1996; Greenspan & Weider, 2006; Kasari, 2002; National Research Council, 2001), such as Applied Behavior Analysis (ABA) and TEACCH (Treatment and Education of Autistic and...
Related Communication-Handicapped Children), but nothing directly related to school districts and what is being done regarding intervention for students with ASD. This descriptive research will seek to bridge this gap and begin a discussion on what is being done by school districts and parents to educate children on the autism spectrum.

Autism is increasing at alarming rates and school districts are being greatly affected by this in many forms including the need for additional staff trained in autism, classroom space, and increasing costs for services. According to “1995 administrative counts from the Individuals with Disabilities Education Improvement Act (IDEA), 6,109,569 children ages 6–21 received services through 13 special education categories in public special education programs . . . Autism made up about 3% (193,637)” (Center for Disease Control and Prevention, 2007, p. 32).

With the increase of children being diagnosed with autism and the influx of these students into the public school system, the percentage of students receiving services for autism will grow substantially in the next decade. Educators and school leaders will be expected to provide the best intervention for children with autism. However, many educational leaders have received little or no formal education or training regarding autism and are completely unaware of the spectrum and the vast differences of each student.

Autism experts recommend a certain number of hours of intervention for maximum results and today’s educational leaders need to know what is effective and what is expected (National Research Council, 2001). These requests obviously need to be balanced with what is good for the child and the district. This is vital as the parents of children with autism often know these recommendations and will be requesting particular
interventions. As one educational leader eluded, nothing is more protective than a parent of a child with a disability (Kolber, 2003). This research will examine the interventions provided by school districts and perceived gaps parents find in the interventions.

Significance of the Study

The increase in the number of children diagnosed with autism and the determined need for early intervention to best address the needs of these children necessitates research to address this topic. The lack of existing research addressing current practices in school districts and perceived gaps in intervention services makes this study even more important, especially regarding educational implications.

Knowledge of what intervention protocols are provided by schools and the extra services parents feel they must provide will be determined by this descriptive study. This research will be useful for school leaders, special education directors and special education teachers who seek to provide the best possible services for the children diagnosed with autism in the district while balancing the needs of the other students in the district.

Research Predictions

A research prediction of this study is that school districts are not providing the recommended year around 25 hours a week intervention. A second prediction is that parents are not satisfied with the services provided by the districts as measured by the Survey for Parents of Children with Autism Ages 3 to 6 Not Yet in Kindergarten Survey. A third prediction is that parents are providing additional interventions that are not provided by the school district.
Data Collection Procedures

Quantitative data was collected through the use of two different surveys. The survey for school districts was sent via email to either the person responsible for special education or the superintendent. A separate survey designed for parents was posted on the Autism Society of Northwest Ohio and Autism Society of Ohio websites. All research was conducted via the internet to increase the response rate from participants.

Limitations, Delimitations, and Assumptions of the Study

There are several limitations to this research study. One limitation is the sample size itself. Unfortunately, due to time and costs issues, this study could not be conducted over a larger part of the country. Another limitation to this study was the lack of a response from some school districts. Data cannot be considered if it is not received.

Additionally, the ability of the responder to determine and gather the correct requested information is a limitation. Many times, gathering this type of information is difficult for several reasons. For example, in Ohio preschoolers are labeled as preschoolers with a disability and do not receive a specific label, such as cognitively disabled, medically handicapped or autistic until entering school as a kindergartener. Unless the district has a specific diagnosis for such children and is willing to share this specific information, determination of exact numbers may be difficult.

Another limitation to the research was the researcher created survey which was not norm-referenced. This non-norm referenced survey was deemed more appropriate than a norm-referenced one in order to collect research specific data. Survey validation was accomplished socially by a panel of experts.
This research assumes that all school districts have students on the autism spectrum which is not always the case, particularly smaller districts that can be found in rural areas. Another assumption of this research is that all districts specifically identify preschoolers as being on the autism spectrum and not just as a preschooler with a general disability. The final assumption of this research is that districts will complete and return the survey in order to help with the research.

Definition of Terms

Unless someone is familiar with the disorder of autism, there are many terms used regarding the disorder that need to be defined. Many people use terms interchangeably giving different meaning to different words. Therefore, it is beneficial to the understanding of this research that the terms used here are understood by all readers.

When using the term autism, all of the disorders in the spectrum are being considered: Autistic Disorder, Asperger’s Syndrome, Pervasive Developmental Disorder (PDD), and Pervasive Developmental Disorder Not Otherwise Specified (PDDNOS).

Early intervention is a term used to describe the services that young children (3-6 years of age) with disabilities receive through the public school system Part B, Section 619 of IDEA.

Many of the intervention programs used to treat children on the autism spectrum are based on the concepts of Applied Behavior Analysis (ABA) where behavior that it ultimately rewarded is more apt to be repeated than behavior that is ignored (Zachor, Ben-Itzchak, Rabinovich, & Lahat, 2007). Applied Behavior Analysis (ABA) makes use of techniques that are based upon the scientific principles of behavior allowing for the building of socially useful and acceptable routines while reducing the challenging ones.
Even though ABA is a theory, people tend to use the term to describe a treatment approach that also includes discrete trial training. While the terms discrete trial training and ABA are often used interchangeably, both are different treatments with specific implementations (Weiss, 2005),

Discrete Trial Training (DTT) is based upon the principles of Applied Behavior Analysis (ABA), which may also be referred to as behavior modification, behavior therapy, or behavioral intervention. Discrete Trial Training consists of a succession of specific repeated lessons or trials taught one-on-one. Each trial includes a “directive” or request to perform an particular action; a response from the participant; and a reaction from the therapist based upon the participants. Positive reinforcers for participants are selected after evaluating the participant’s likes and dislikes. Many DTT participants initially respond to concrete reinforcers such as a favorite food (Lovaas, 1981; Lovaas, Koegel, Simmons, & Long, 1973). These concrete rewards are faded as fast as possible and replaced with rewards such as verbal praise, hugs, high-fives, and even tickles (Sanford School of Medicine, 2006)

TEACCH (Treatment and Education of Autistic and Related Communication Handicapped Children) was developed in the late 1960’s by Eric Shopler at the University of North Carolina School of Medicine. The TEACCH approach employs a focus on the individual with autism while developing a program around this person's skills, interests, and particular needs. Priorities of this program center on the individual and their particular needs, the adoption and use of suitable adaptations that enable them to function in and out of the educational setting, and broad-based intervention strategies that build on their already acquired skills and particular interests (Marcus, Schopler, &
Floor Time is an educational model that was developed by Stanley Greenspan, a child psychiatrist. Floor Time builds a progressively larger circle of interaction between a child and an adult in developmentally-based sequences. In his research, Greenspan has described a developmental ladder of six stages of emotional development that children must meet to develop a foundation for more advanced learning. In order to reach advanced learning, this ladder must be climbed one rung at a time. Children with autism may have trouble with Greenspan’s developmental ladder for numerous reasons, such as reaction to sensory input, trouble processing information, inability or difficulty to have their body move the way they want it to move. By using Floor Time, adults can help children move up the developmental ladder by playing with the child and following their lead while playing. Adults then build on what the child does and encourage more interaction through play. This approach does not provide for separate speech or occupational therapies, but imbeds these within the context of the interaction with the child (Greenspan & Weider, 2006)

School services refer to speech therapy, physical therapy, occupational therapy, classroom aides, transportation services and special devices used to help the student with autism, such as communication systems, calming instruments, therapy balls and tools, and various other items needed in order to help the student in the educational setting.

Typical children are ones without special needs while non-typical children are those with some type of disability or special need, such as autism.

Based on the state definitions, rural school districts are constitutively defined as districts that tend to be small towns located in rural areas of the state. These school
districts are inclined to have median income levels similar to those in a suburban district but with lesser rates of both college participation and managerial/professional occupations among adults. Rural districts also tend to have a poverty percentage that is also below average. Operationally, for the purposes of this study, rural districts will be districts with small populations that are located away from urban areas and are likely to have agriculture as the primary occupation of the adults. (Ohio Department of Education, 2007, Typology of School Districts section).

Based on the definitions from both states, suburban school districts are generally defined as the districts that typically surround major urban centers. While a suburban district’s poverty level may range from low to above average, these districts are generally characterized as communities with high median incomes and high percentages of college graduates and members of the professional/administrative workforce. For the purposes of this study, suburban districts are ones that surround major urban centers and usually have larger student populations than do rural districts. However, suburban districts also have smaller populations than the nearby urban district. (Ohio Department of Education, 2007, Typology of School Districts section).

Urban school districts tend to be defined as ones with a high population density that also encompass medium size towns and large cities. These districts are characterized by low median incomes and very high poverty rates. Population densities are very high in urban districts and usually have a very high percentage of minority students. For the purposes of this study, urban districts are those districts in highly populated areas and usually have larger populations of students than rural or suburban districts. (Ohio Department of Education, 2007, Typology of School Districts section).
Conclusion

The increase in the diagnosis of autism in the United States has caused a need for greater awareness of educational providers of the expectations for intervention. This research will examine the current interventions provided by school districts and gaps perceived by parents of this service. This descriptive research addresses a gap in the current research.

An analysis of the literature in Chapter 2 focuses on five main sections: the history of autism, possible reasons for the increased number of children diagnosed with this disability, the importance of early intervention for all children, types of treatments recommended for early intervention and the costs of autism. Chapter 3 will explore the research methodology used in this research. In Chapter 4, an analysis and interpretation of the study data will be provided. Finally, Chapter 5 will provide recommendations and implications for future study and will include a discussion and conclusions regarding the research study.
Chapter 2

Literature Review

Introduction

This research explores the services provided by school districts for preschool aged children diagnosed with autism and any perceived gaps in this service by the parents of these students. A focus of the literature review will be the history of the diagnosis of autism, the major treatments recommended for early intervention, the importance of early intervention for all students, and recommendations for evaluating these interventions.

History of the Disorder

Leo Kanner first described autism as a developmental disorder of the brain in 1943 (Jacobson et al., 1998; Corsello, 2005). In his landmark paper, Autistic Disturbances of Affective Contact, Kanner described a special group of children who had failed to develop typical social relationships, were easily upset by changes in their routines, and showed irregularities in speech and language development. Thus, “the "autism" or self-centeredness in these children was recognized as the primary deficit and the terms "autistic" and "autism" came to denote their disorder. Similar patterns were soon identified in children throughout the world” (Freeman, 1997, p. 641).

Diagnosis of autism is done through observations of behavior for impairments in
three areas: social interactions, communication ability, and range of activity and interests (Jacobson et al., 1998). The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (2000) states “the central features of Autistic Disorder are the presence of markedly abnormal or impaired development in social interaction and communication and a markedly restricted repertoire of activity and interest. The manifestations of this disorder vary greatly depending on the developmental level and chronological age of the individual” (p. 71). Autism may also be called *early infantile autism, childhood autism,* or *Kanner's autism* (DSM IV).

In the 1950s and 1960s, autism was generally believed by the medical profession to be a psychological disturbance that was caused by uncaring, detached mothers. For many years, legions of mothers of children with autism were unjustly and uncaringly accused of causing their child's affliction. In the early 1960s, a few doctors in the medical community began to challenge this view. In 1964, Dr. Rimland provided a definitive review of evidence that established autism as a biological condition – thus demonstrating the earlier theory of uncaring and detached mothering was incorrect (National Alliance for Autism Research, 2005).

When autism was first described, little was known about the affliction and what it entailed. According to Turnbull and Turnbull (2000), "early interventions were the exception, not the rule. Placement in private programs was encouraged because it relieved the school of any responsibility for serving children whose families were able or desperate enough to pay for private school opportunities" (p. 19). Parents were often told there was nothing that could be done for their child and were recommended to send their child to an institution that provided little more than a roof over their head and food to eat.
Interventions were not common and these children were left in their own little worlds – lost to the rest of society. Thankfully, this is not the case anymore as autism has come quickly into the public light due to increasing awareness and diagnosis.

In his study, Freeman (1997) explains the impact of this childhood diagnosis. As taken into consideration with all diagnoses made in childhood, the expression of symptoms fluctuates based on the age and developmental status of the person affected. Therefore, autism is experienced through the lifespan. “Although symptoms fluctuate, abate, change, and some may even disappear; once autistic, always autistic. Autistic persons have a normal life expectancy and the majority requires lifelong social support systems due to their developmental handicaps” (p. 642).

Furthermore, Freeman (1997) found that the early diagnosis of autism is crucial as the prognosis for children diagnosed with autism has changed noticeably since the initial work of Kanner in 1943. By diagnosing autism early, access to appropriate services can provide a better outcome during the lifespan of the individual. In addition, parents are helped when a label is assigned to their child. This label allows the opportunity for parents to finally understand why their child is having difficulties and facilitates the ability to focus treatment efforts.

Reasons for Increase in Number Diagnosed

What is the reason for the increase in individuals diagnosed with autism? Although the prevalence of autism spectrum disorders appears to have amplified in recent years, it is not clear if there is a genuine increase or the result of improved recognition and changes in diagnostic criteria. There is no known cause for autism, but it is commonly established that it is caused by an abnormality in brain structure and/or
function (National Research Council, 2001). Several theories are being investigated, which include finding a connection between heredity, genetics and underlying medical problems. While there has yet to be a single gene identified as causing autism, researchers are searching for abnormal genetic codes that children with autism may have been born with.

Some claim that the increase in autism is due to increased knowledge regarding the disorder, others claim environmental factors, and there are others that think the increase is due to vaccinations, most particularly the measles-mumps-rubella (MMR) vaccine. This cause has been the most prevalent one argued over the past several years. The main evidence cited for this possible association is that the occurrence of autism has been increasing along with the increase in infant vaccination coverage (deStefano & Chen, 2001).

In 2004, the Immunization Safety Review Committee from the Institute of Medicine issued their eighth and final report. This report investigated this theory and found that the body of epidemiological evidence favored rejecting the fundamental relationship between vaccines containing thimerosal and autism.

This proposed link between autism and the MMR vaccine occurred after a 1998 study by a group from the Royal Free Hospital in London. This group published an early report of 12 children with bowel symptoms and subsequent behavior problems. In 8 of the children, the parents or physicians recollected that the behavioral symptoms appeared 24 hours to 2 weeks after receiving the MMR vaccine. In this study, the authors suggested a possible link between these bowel symptoms and the MMR vaccine. This study had many method limitations. The children were self-selected, no control group
was used and the potential for recall bias was possible. However, the most significant limitation was the age at which the vaccine was typically given also would normally correspond with the age of the onset of the described behavior problems, even if there were no causal link to the vaccine (Sengupta, Bedford, Elliman, & Booy, 2004).

However, keeping these limitations in mind, the authors of this study were careful to indicate that they had not proven any link between the MMR vaccine and the described bowel symptoms and that additional research was needed. One of the authors publicly stated there was sufficient concern over the safety of the MMR vaccine to propose the use of single vaccines prescribed at intervals instead of the combination vaccine. This statement received a large amount of publicity which caused anxiety among parents and professionals, resulting in uncertainty and a decline in vaccinations. (Sengupta et al., 2004).

In spite of the lack of evidence by numerous scientific investigations in several countries using different methodologies, the public fear of vaccines by parents of young children as a cause of the apparent increasing rates of autism is a major problem (Chez, Chin & Hung, 2004). This study reviewed and discussed the facts about immunization safety by reviewing various theories of immunization as a risk factor for autism, including exposure to thimerosal. Thimerosal is an organic compound containing mercury that has been used as a preservative in many vaccines since the early 1930’s (U.S. Food and Drug Administration, 2007). The authors also review theories of autoimmunity as a predisposing genetic risk in patients with autism. The information in this study was summarized from numerous population-based studies and a comprehensive review of committee reports indicating that neither immunization nor
thimerosal exposure has been conclusively linked to autism.

Additionally, the Chez et. al., 2004) study discussed how various epidemiologic studies supporting the safety of the MMR vaccine have been published since 2000. In this study, even though initial research articles described comparisons of pre and post MMR rates of autism diagnosis, or the age of diagnosis in relation to age of the MMR, no link was found between autism and MMR or gastrointestinal disease in children with autism. Even though many parental and professional groups referred to an increased diagnoses of autism-related diseases, increase “were not epidemiologically linked to the rate of MMR vaccination” (p. 214).

Whatever the reason for the increase, autism has increased and educators need to know how to most successfully educate this special population.

_Early Intervention_

Early intervention services are the key to help children have a successful future, both in and out of school. When children receive educational interventions at an early age, they gain the skills necessary to successfully enter school. Early educational opportunities are important for all children, but especially important for children with special needs, such as autism.

_Importance for all Children_

In order to have a competitive and successful nation and workforce, there is an increasing national movement to provide more educational opportunities at an earlier age for all children (Bailey, 1997; Bartlett et. al, 2002; Shonkoff & Phillips, 2000). Even typical children benefit from some form of early intervention to learn how to socialize
with their peers, complete everyday living tasks such as getting dressed and using the restroom, and to recognize letters and numbers.

This is usually accomplished in the preschool setting. Participation in early childhood programs, such as pre-kindergarten, helps prepare children for school. Attendance and participation in early childhood care and education programs such as Head Start, nursery school, and pre-kindergarten can help a child prepare for elementary school and beyond. (Barnett, 1998; Bredekamp & Copple, 1997; Ramey, 2004). Efforts to increase early educational opportunities are not limited to non-typical children.

The National Center for Educational Statistics (2004) reported that during the 2000–01 school year, approximately 19,900 public elementary schools, or roughly 35% of all public elementary schools, offered some type of preschool classes. Thirteen percent of public elementary schools offered full-day classes, 19% offered half-day classes, while 3% offered both. During the 2000-2001 school year, there were 822,000 children in public school preschool classes.

Children of all ages need to be taught the skills necessary for later academic success (Jacobson et al., 1998). The importance of early childhood education is also addressed in the No Child Left Behind Act of 2001 with the inclusion of the Early Reading First program. This is a program designed to "create early childhood centers of excellence that prepare young children to enter kindergarten with the necessary language, cognitive, and early reading skills for learning success" (U.S. Department of Education, 2005, Introduction, bullet 2).

Researching the effects of different “dosages” of preschool intervention for disadvantaged youth, Reynolds (1995) found that “preschool children with any preschool
participation significantly outperformed those without preschool. Not surprisingly, the largest effect of preschool was on cognitive readiness at school entry” (p.14). Additionally, children in this study had consistently lower overall rates of grade retention and placement in special education through the third grade. However, the effects of years of preschool attendance versus non-attendance varied over time. By the sixth grade, even though the two year attendees consistently outperformed the one year attendees, the differences were not educationally significant. Additionally, Jacobson et al. (1998) noted in that sample children in their study who did not reach normal skill levels nevertheless made sizeable, purposeful gains in many core areas, which include communication and everyday living skills. If this much emphasis and importance is placed on the need for early childhood education for typical children, early childhood education is that much more important for non-typical children.

Importance for Children with Special Needs

Considering the importance of the early years on a child’s development, most people concur that it is the responsibility of a society to provide the early interventions necessary for children with disabilities. Along with this responsibility comes the goal for interventions based on preventing and minimizing developmental problems for at risk children along with children already diagnosed with a disability (Guralnick, 1997).

Does early education and intervention really make a difference? While one to two years of special education and/or early intervention cannot begin to offset the effects of the majority of risk factors and disabilities for many non-typical children, when these children have the experience of early intervention, they do fare better in educational achievement later in their lives than children who do not receive early intervention
Providing intensive early intervention is critical to amplify outcomes for children with autism spectrum disorder (ASD), and evidence suggests that the earlier the intense intervention can begin, the better the result (Woods & Wetherby, 2003). Several researchers have found that early intervention for children with disabilities in the preschool years results in later academic success, especially in improved outcomes including speech in 75% or more and considerable increases in the rates of developmental progress and overall academic performance (Dawson & Osterling, 1997). In particular, early intervention allows for taking full advantage of the children's capability to keep up with peers later in school and allowing these children and their families to experience more positive early educational and life experiences (Odom & McLean, 1996).

Children with autism are very capable of learning, socializing and becoming an integral part of society. Research indicates that when children with autism receive early intervention services based on Applied Behavior Analysis (ABA) principles, they have an improved chance of achieving functional levels of normal or near-normal ranges of intelligence and development (Jacobson et al., 1998). Steele (2004) acknowledges that experts recommend that the focus of the early intervention program be on building a strong foundation instead of remediation.

Early intervention for children with autism spectrum disorder is one of the most effective means of improving long-term social and academic outcomes (National Research Council, 2001). It has been found that when children receive intervention services during the preschool years they are better prepared to face future academic challenges and to continue to develop cognitively and socially (Forest, Horner, Lewis-
Palmer & Todd, 2004). Matson (2007) found that “the consensus is that early intervention is valuable and, within limits, the more intense the intervention, the greater the gains despite variability in outcomes within groups of children treated” (p. 208).

Types of Treatment Programs

Special education has been the norm for children with autism. Special education generally uses an eclectic variety of educational and therapeutic methods that are as varied as the school districts in which they are employed (Chasson, Harris & Neely, 2007). In general, special education services a diverse group of children, which include children with autism, Down Syndrome, learning disabilities, mental retardation, physical impairments, social/emotional delays or other developmental delays or disabilities. Some of these groups of children benefit from special education programs more than others, since the overall services are more appropriate for specific learning deficits (Chasson et al).

Freeman (1997) indicates that when evaluating programs for children with autism, it is important to remember that even though many treatments have been proposed, there is only one type of treatment that has passed the test of time and is effective and valuable for all children, both autistic and typical. Treatment should be “structured educational programs geared to the person's developmental level of functioning” (p. 646). While other treatments might be beneficial at various points in the life of a person with autism, it is imperative that one keeps an open mind while becoming educated on the subject of new treatments as they become available.

Over the last few decades, there have been many proposed treatments for autism, with some even daringly upheld as a cure for the disorder. These proposed treatments
include “holding therapy, megavitamins, music therapy, auditory integration therapy, facilitated communication, sensory diets, sensorimotor integration therapy, play therapy, Gentle Teaching, experimental brain surgery, immunosuppressant therapy, and secretin to name a few” (Bodfish, 2004, p. 319). Many of these claimed treatments were never promising enough to advance to the rigorous scientific testing found in controlled clinical trials even with the initial popular media attention bestowed upon them. Furthermore, some of these proposed treatments were even rigorously tested following parent demands to do so and were found to be futile.

Although these proposed treatments were more “disappointing chapters in the history of autism treatment, the uptake and subsequent release of interest in most of these nonestablished treatment approaches has demonstrated that autism is a disorder that seems to be particularly “at risk” for unfounded claims of treatment” (Bodfish, 2004, p. 318).

Much discussion has been given as to what type of treatment program is the most suitable for children diagnosed with autism. Freeman (1997) outlined eight general guidelines for evaluating various treatments for children diagnosed with autism:

1. Approach any new treatment with hopeful skepticism. Remember the goal of any treatment should be to help the person with autism become a fully functioning member of society.

2. Beware of any program or technique that is said to be appropriate for every person with autism.

3. Beware of any program that thwarts individualization and potentially results in harmful program decisions.
4. Be aware that any treatment represents one of several options for a person with autism.

5. Be aware that treatment should always depend on individual assessment information that points to it as an appropriate choice for a particular child.

6. Be aware that no new treatment should be implemented until its proponents can specify assessment procedures necessary to determine whether it will be appropriate for an individual with autism.

7. Be aware that debate over use of various techniques are often reduced to superficial arguments over who is right, moral, ethical and who is a true advocate for the children. This can lead to results that are directly opposite to those intended including impediments to maximizing programs.

8. Be aware that often new treatments have not been validated scientifically.

(p. 647)

Additionally, Freeman (1997) states that the “most important thing to remember when attempting to evaluate any treatment program is that every child with autism is an individual and what is appropriate for one child may or may not be appropriate for another” (p. 647).

Furthermore, in a study by Kasari (2002), the search for active ingredients in focused interventions was sought as a way to determine improvements through treatment programs. Kasari questions what the active ingredients are that produce significant improvements for children with autism. The researchers were left with numerous questions that could not be answered. These questions centered on intensity and teaching approach. Was the number of professional contact hours the key that results in the
developmental improvements or was it the approached used to teach the outcomes?

Furthermore, how do these specific pieces interact with a child’s characteristics or does the level of a child’s functioning make a difference?

Moreover, Kasari (2002) found that based on current research, there were several areas that should garner further investigation regarding their significance in intervention programming. These areas include “specific teaching approaches, teaching content, setting effects (home versus center), and hours of contact” (p. 454).

McGovern (2005) conducted a longitudinal study of children aged 2 -5 diagnosed with autism. This study was designed to test the premise that the autism diagnosis for the most part would remain stable but there would be some improvements in the severity of the symptoms, adaptive behavior, and emotional responsiveness in adolescence. McGovern’s study found that “all but 2 adolescents (46 of 48) met lifetime criteria for autism and all but 4 adolescents (40 of 44) met criteria for [ASD]. . . high-functioning adolescents with autism showed more improvement in these domains than low-functioning adolescents with autism” (p. 401).

Another study by Ben-Itzchak and Zachor (2007) addressed the relationship between pre-intervention variables of cognition, socialization and communication to the post-intervention outcomes of young children with autism. This study sought to access if pre-intervention developmental characteristics made any difference in the results from intervention.

In the Ben-Itzchak and Zachor (2007) study, all children attended an applied behavioral analysis (ABA) center-based program where a trained therapist developed and oversaw each child’s intervention. Each program was designed to be both thorough and
rigorous while addressing the various needs of each child. Intervention was provided for a minimum of 35 hours a week, one-on-one, by a skilled behavioral therapist. Additionally, parents were integrally involved and learned how to use behavioral methods at home while working with the program supervisor developing goals for the child to use in generalized settings.

The findings of this study revealed “children with higher initial cognitive levels and children with fewer measured early social interaction deficits show better acquisition of developmental skills. This is especially noted in three developmental areas: receptive language, expressive language, and play skills” (Ben-Itzchak & Zachor, 2007, p. 297). Furthermore, these findings are consistent with prior research that suggests that the cognitive ability in children with autism draws a parallel with the direct outcome of the utilized therapy. Both study groups, which consisted of children with weak social skills and others with improved social skills, demonstrated similar noteworthy progress in IQ scores. These scores increased an average of approximately 16 points after only one year of rigorous and concentrated behavioral intervention.

Even though this study did not exclusively concentrate on ABA and its effectiveness, the outcome did show that children on the autism spectrum made noteworthy progress in the areas of cognition and the developmental areas of imitation, receptive and expressive language, play skills, non-verbal communication skills and the reduction of stereotypical behaviors (Ben-Itzchak & Zachor, 2007). Furthermore, this study illustrated that children afflicted with a diverse range of symptom severity and ability prior to the beginning of the treatment showed significant progress with the intense intervention.
This study by Ben-Itzchak and Zachor (2007) helps to highlight the effectiveness and importance of intense early intervention, regardless of the severity of the range of symptoms. Additionally, “the outcome data encourage clinicians to teach imitation skills rigorously in the first stages of intervention, because these skills present an important stage in the process of learning and can be used to teach many developmental and self-help skills” (p. 299).

Cost of Autism

In one study, Jacobson and Mulick (2000) researched the overall costs, financial and societal, of educating and children on the autism spectrum. They discuss the differences between costs and benefits of policies, while bringing up a valid point regarding cost-benefit analysis: that of value. When the processes and outcomes of the effective intervention are condensed, it is easy to forget that it is about the overall value, not just monetary.

As Jacobson and Mulick (2000) ask, “How does one, after all, set the price of a bright future?” (p. 586). The cost of behavior intervention is high due to the labor involved. The intensive interventions necessary during early childhood in order to attain future success places extreme financial and time obligations on young families around the same time they are just realizing their own economical potential.

It has been an age old argument that spending public funds on educating children with special needs is not a prudent expenditure. But the fact remains; early intervention for children with developmental delays is clearly cost-effective (Chasson et. al, 2007; Ganz, 2006; Jacobson et. al, 1998; Jacobson & Mulick, 2000; Järbrink & Knap, 2001).

Early education intervention is associated with a reduction in elementary school
grade retention, reduction in borderline intellectual functioning. Intense early educational intervention can produce long-lasting benefits in both intellectual performance and school achievement. Effective intense early intervention is associated with a reduction in the number of students classified as having a disability, diminishes and/or prevents grade retention, and provides long-term benefits and skills in both intellectual performance and school success, all which are necessary for later independence (Ramey & Ramey, 1994; Turnbull & Turnbull, 2000).

In 1975 Congress promised to pay 40% of special education costs. However, over the years funding has been less than half the promised amount. This, in turn, sends the majority of the costs back to the state and school districts which are required by law to offer an appropriate education to all students (Kolber, 2003). The cost of educating children with autism is extremely expensive. During the 1999-2000 school year, the most recent year for available data, SEEP reported the average annual cost for providing a public education for a child with autism in the state of Ohio was $18,800. This is higher than the costs for an average special education student by more than $6,000 ($12,500) and $12,000 more than a typical student ($6,556). Educating a child with autism costs more than one with emotional disorders ($14,100) and mental retardation ($15,000), but not as much as one with multiple disabilities ($20,100). Additionally, roughly 68% of the total per pupil expenditures for children with autism was used on instruction and related school services while nearly 90% of that amount ($11,543) was used for special education services with the other 10% ($1,230) being used for regular education services (U.S. Government Accountability Office, 2005).

But the costs for not doing so can be far greater. Jacobson et al. (1998) developed
a cost benefit analysis model for early intensive behavioral intervention (EIBI) based on the range of outcomes reported by Lovaas (1987) and McEachin et al. (1993). According to Jacobson and Mulick (2000), this cost-benefit model estimated that the average cost-benefit of providing a public education in grades K-12 to a typically developing child with an income potential to the age of 55 minus the cost of education was $1.6 million. Subtracting the estimated cost of EIBI, the overall savings for a child with PDD who achieves normal functioning is $1.5 million. However, the overall costs of a child who obtains little to no EIBI benefit is $4.4 million. Therefore, the overall savings for a child that achieves partial effects from EIBI is approximately $1 million.

An additional study conducted in the United Kingdom by Järbrink and Knapp (2001) reiterated the immense costs of educating children with autism. This study estimated the economic impact of autism in the United Kingdom. With an estimated prevalence of 5 per 10,000, the annual societal cost to the United Kingdom was estimated to exceed £1 billion (approximately 1.765 billion US) with the lifetime cost for a person with autism exceeding £2.4 million (approximately 4.2 million US). All of the children in their study went to special schools at an annual cost of £11,963 (approximately $21,000 US).

Furthermore, in the first study to comprehensively survey and document the costs of autism to U.S. society, Michael Ganz, an Assistant Professor of Society, Human Development, and Health at Harvard School of Public Health, found that the approximate cost of caring for an person with autism over the course of his or her lifetime is $3.2 million and approximately $35 billion a year to care for all people with autism over their lifetimes (Ganz, 2006).
Ganz (2006) broke down the complete costs of autism into two classifications: direct and indirect costs. There are many areas to consider for both classifications. The direct costs can include medical costs, such as physician and outpatient services, prescription medications, and behavioral therapies that are estimated to cost on average of more than $29,000 per person per year. There are also direct non-medical costs, which include special education, special camps, and child care which is estimated to annually cost more than $38,000 for those individuals considered to have lower levels of the disability and more than $43,000 for those diagnosed with more disabling levels of autism.

There are many indirect costs associated with autism. Ganz (2006) explains there are costs associated with the value of lost productivity as a result of a person being diagnosed with autism. Lost productivity is the difference in prospective income between someone with autism and someone without. Indirect costs also encapsulate the value of lost productivity for the parents of a person with autism. These costs can include loss of income due to reduced work hours or not working at all. The estimated indirect costs for individuals with autism and their parents can range from $39,000 to nearly $130,000 annually.

Additionally, Ganz (2006) considers the $35 billion annual societal cost for caring for and treating people with autism is more than likely underestimated as there are many services used to support individuals with autism that are extremely difficult to measure, such as non-medical supplements, educational supports and various out-of-pocket expenses. The economic costs are important to understand as “families, public agencies, and some private agencies bear the responsibility of paying for these services” (Center
In conclusion, even though some early interventions may appear costly in the beginning, it is important to implement appropriate educational interventions for students with autism spectrum disorders. These interventions for children with autism should have appropriate goals for educational services just like those for typical children: personal independence and social responsibility. “These educational goals involve continuous progress in social and cognitive abilities, verbal and nonverbal communication skills, adaptive skills, amelioration of behavioral difficulties, and generalization of abilities across multiple environments” (National Research Council, 2001).
Chapter 3
Methodology

Introduction

With an estimated 1 in 150 children affected by autism, this childhood disorder has become the second most common developmental disability (Center for Disease Control and Prevention, 2007; Autism Society of America, n.d.). Since autism is a lifetime neurobiological disorder and is not curable, it is imperative that interventions are initiated as early possible.

In order for children diagnosed with autism to overcome the deficits of communication, social interaction and stereotypical behaviors, exposure to intense early intervention is crucial. In 2001, the National Research Council presented recommendations to follow when educating children with autism. These recommendations included three key points.

First, participation in an intervention program as soon as a diagnosis of autism spectrum disorder became a possibility. Second, there is active participation in an intense instructional program for a minimum of a comparable full school day for 5 days a week with a minimum of 25 hours a week for a full year. Third, there should be continual planned instructional opportunities which are organized around short periods of time in which adult attention is given in one-to-one and very small group instruction in order to
meet individualized goals (National Research Council, 2001).

It is important to note that this report did not specify a specific treatment for autism. Treatments must be individually tailored to a child's behaviors and special needs. Just as there is no one single symptom or behavior that identifies children with autism, there is no single treatment.

Research Framework

This research study was structured around the National Research Council’s recommendations from the 2001 report, *Educating Children with Autism*. This report outlined the specific research based recommendations and has become the benchmark people in the autism community use when evaluating autism early intervention educational programming.

While autism is not a new disorder, the increase in diagnosis during the past ten years has logically caused an increase in the need for services provided by schools. This need, coupled with the lack of knowledge administrators, teachers and even special educators have concerning the disorder could cause some gaps in services provided to this population.

Therefore, it was assumed that the results from this research would reveal that school districts in the Midwest were not providing services based on the recommendations from the National Research Council. These recommendations from the report are reflected in the questions posed to participants in the research survey. The focus of the research is specific to early intervention programming and services provided to children diagnosed with autism aged 3-6 not yet in kindergarten.
Methodology

The purpose of this research study is three-fold. The first purpose is to determine the number of hours of early intervention being provided by the public school district to children on the autism spectrum. The second purpose of the research is to determine what early intervention strategies public schools provide 3-6 year old children diagnosed with autism. The third purpose is to determine what types of supplemental interventions parents are providing to their children on the autism spectrum that are not provided by the schools.

Chapter 3 provides a description of the sampling, instrumentation, data collection, and data analysis procedures used in this research study. All procedures were reviewed and approved by The University of Toledo Department for Human Research Protections, Social, Behavioral and Educational Institutional Review Board.

Population

The target population in this study is public school districts in Michigan and Ohio and the parents of children with autism aged 3-6 and not yet in kindergarten in these two states. The research aims to determine the average number of hours of early intervention a student with autism receives from a public school district, what type of additional services are provided, and what parents do to supplement these school services. It was not feasible to survey all public school districts and parents in the United States. For convenience, public school districts and parents of children with autism in these two states were studied.
Sample

The target population for this research study included rural, suburban and urban school districts in the Midwest states of Ohio and Michigan and parents of children aged 3 – 6 not yet in kindergarten that were identified as being on the autism spectrum.

School District Research

To make the research results easier to handle, a sample population was determined, which consisted of public school districts in the two Midwest states of Michigan and Ohio. Schools selected are in all demographic areas; urban, suburban and rural.

School District Sampling Method

Because the modality of the survey was electronic, deliberate over-sampling was done to ensure adequate responses. Over-sampling was achieved by locating school district lists via the internet.

Michigan schools were found through the state department of education website via a database of districts that included special education students. This search resulted in a list of 352 school districts. Ohio school districts were located through the state of Ohio Department of Taxation school district identification list used for tax filing purposes. This list contained 581 school districts.

In order to facilitate electronic surveying, each school district required an email address. Each district name was entered into a search engine on the internet in order to locate the school district website. If a district website was found, the search then
continued for an email address of the person in charge of special education services. If this address was not available, then a search was done for the name and email address of the district superintendent. This process resulted in a total of 642 school districts in Michigan and Ohio.

The school district survey was sent out three times; August 14, 2007, September 4, 2007 and September 14, 2007. Fifty-three total emails were returned as undeliverable or being blocked by a filtering program, therefore, a total of 589 school districts in Michigan and Ohio became the sample population. A total of 134 school districts responded to the email requests. This resulted in a 22.8% response rate. Thirty-five of those responses were to opt out of taking the survey and 99 began the survey. This resulted in 75 completed surveys and 24 partially completed surveys.

**Parental Research**

Parents were surveyed through a link posted on the Autism Society of Northwest Ohio’s (ASNO) website. Additionally, the executive director of ASNO sent an informational email to everyone on the society’s email contact list that included the survey link. ASNO is associated with the autism community in Northwest Ohio, but can be accessed by anyone using a computer. Furthermore, the survey link was in e-mail newsletter from the Lucas County (Ohio) Board of Mental Retardation and Developmental Disabilities and also posted on the website of the Autism Society of Ohio. The Autism Society of Michigan did not respond to several requests to post this survey to their website.
Ethical Safeguards

All participants in a research study have a right to have the information they provide to be kept confidential. Additionally, in order to conduct a research study, it is imperative to consider any harm that might occur to participants.

In this research study, confidentiality was maintained through the use of an electronic survey sent to selected school districts in the chosen states and as a website link for parents or guardians that chose to participate. All participants were assured that the information would remain confidential and would only be used as a way to compare how different schools in the Midwest are educating students (aged 3 to 6 that were not yet in kindergarten) that have been diagnosed with an autism spectrum disorder.

Furthermore, the purpose of the study was clearly indicated to participants prior to the survey being conducted. An informed consent section was included as the first page of the survey.

Instrumentation

The research instrument used in this study consisted of an on-line survey which asked several questions related to the district demographics and children with ASD. The research survey was created by the researcher and adapted from similar surveys in order to collect data on specific questions. Questions included district demographics, number of educational program hours provided to children aged 3 to 6 not yet in kindergarten and the type of supplemental services needed, such as transportation and speech/occupational/physical therapy. Prior to sending the research survey to school districts and autism websites, a pilot survey was reviewed by three educators familiar
with autism spectrum disorder and three parents of children with autism. The survey was modified using the reviewers’ comments and suggestions and finalized to conduct the research. (Appendices A and B)

School District Survey

The school district survey (Appendix A) was a self reporting instrument with 16 questions and four parts. Part one was the informed consent information section. The participant was asked to select “Yes, I agree” or “No, I do not agree.” If agree was selected, the participant proceeded to part two. If no was selected, the participant was immediately sent to part four, where they were thanked for their time and participation.

Part two included questions on background information, such as what state the district in, type of district (urban, suburban or rural), total number of students enrolled in the district and how many of those students had special needs.

Part three included the autism specific questions. Such as, did the district have any students on the autism spectrum, how many of these students were aged 3-6 and not yet in kindergarten, the type of intervention program that was used for these students, the number of hours a week of instruction these students received, the number of days a week these children attend school, number of weeks a year they attended school, the percentage of these identified children that required special transportation, speech therapy, occupational therapy, physical therapy, or use of their own aide (paraprofessional), and did the district have an autism specialist. There was also an area immediately following the last question in section three where participants were asked to include any additional comments regarding the survey.
Parent Survey

The parent survey (Appendix B) was also a self reporting survey that had 23 questions in three parts.

Part one was the informed consent information section. The participant was asked to select “Yes, I agree” or “No, I do not agree.” If agree was selected, the participant proceeded to part two. If no was selected, the participant was immediately sent to part three, where they were thanked for their time and participation.

Part two included questions on background information, such as what state the parent’s district was in, type of district (urban, suburban or rural), how old was their child with ASD, how long had their child been diagnosed with ASD, what type of school their child attended (public, parochial, private, charter/community, or a home based program).

Additionally, part two included the autism specific questions. Such as, the type of intervention program that was used for their child, the number of hours a week of instruction their child received, the number of days a week their child attended school and the number of weeks a year their child attended school. This part also asked if their child received special transportation, speech therapy, occupational therapy, physical therapy, or had their own classroom aide (paraprofessional). Furthermore, this part asked whether or not their child received private speech therapy, occupational therapy, physical therapy, Discrete Trial Training (DTT), and Applied Behavior Analysis (ABA). Also, the participant was asked if out of pocket money was spent for additional services not covered by the school district, if they participated in an autism support group, the highest level of education they completed and their level of income. There was also an area immediately following the last question in section two where participants were asked to
include any additional comments they had regarding the survey.

On-line surveys were used due to their convenience for both school district special education administrators and parents. There are, however, several limitations to using such surveys. First, even though the school district survey was uniquely tied to a participant’s email address that was loaded onto survey website by the researcher and guidelines were given with the survey regarding who should be completing the survey, there were no guarantees this was the actual person completing the survey.

With the parent survey, there was also the possibility that a person could respond multiple times. Finally, the survey was limited to those respondents who had access to a computer and were computer literate. While the likelihood of these things occurring was not very high, it was still important to note these as possible limitations to the research.

Data Analysis Needs

In order to analyze the collected data, the data needed to be sorted into categories based upon the responses received from the posed survey questions from both the school districts and parents. Collected data was analyzed in order to make comparisons and generalization regarding the research. Data was also described using descriptive statistics in order to construct these comparisons and generalizations.

The school district research will allow for comparisons between the different types of districts in order to determine if larger districts provide more services than smaller ones. Comparisons will also be made between services provided by the different districts.

The parent research information will allow for comparisons between services provided by rural, suburban and urban districts. Additionally, the parent data will allow
for comparisons between services provided by the school and services that are provided
by the parent. This type of comparison will help determine if school districts are
providing the intense intervention recommended in the National Research Council’s
Chapter 4

Data Analysis and Results

Introduction

Children diagnosed as being on the autism spectrum present a challenging situation for those who deal with them on a daily basis, specifically parents and educators. As each child’s situation is unique, it is important to remember that the process used to educate them should also be unique – not a one size fits all program. With this in mind, The National Research Council’s 2001 report, *Educating Children with Autism*, included recommendations that are critical when educating children with autism. Even though this report did not specify a specific treatment for autism, it included several recommendations that are vital in order to overcome the limitations of this disability.

These recommendations are summarized as: participation in an intervention program as soon as a diagnosis of autism spectrum disorder becomes a possibility; active participation in an intense instructional program for a minimum of a comparable full school day for 5 days a week with a minimum of 25 hours a week for a full year; continual planned instructional opportunities which are organized around short periods of time in which adult attention is given in one-to-one and very small group instruction in order to meet individualized goals (National Research Council, 2001).

With these recommendations in mind, the researcher developed a research survey
in order to examine if and how school districts were meeting these recommendations. An additional survey was developed for parents to gauge their response to the same questions posed to the school district and if they supplemented what was being done in school.

The school district survey consisted of 16 multiple choice questions about their district and what intervention services are provided to children on the autism spectrum ages 3-6 not yet in kindergarten. Survey completion was estimated to take about 10-15 minutes.

Data Collection

Data collection was done through the use of Survey Monkey, an online survey tool that permits people of all experience levels to generate their own surveys easily. This online tool allowed for creation of the survey, collection of responses, and analysis of the surveys and responses used in this research study.

School District Research

Michigan schools were found through the state department of education website via a database of districts that included special education students. This search resulted in a list of 352 school districts. Ohio school districts were located through the state of Ohio Department of Taxation school district identification list used for tax filing purposes. This list contained 581 school districts.

In order to facilitate electronic surveying, each school district required an email address. Each district name was entered into a search engine on the internet in order to locate the school district website. If a district website was found, the search then continued for an email address of the person in charge of special education services. If
this address was not available, then a search was done for the name and email address of the district superintendent. This process resulted in a total of 642 school districts in Michigan and Ohio.

The school district survey was sent out three times; August 14, 2007, September 4, 2007 and September 14, 2007. Fifty-three total emails were returned as undeliverable or being blocked by a filtering program, therefore, a total of 589 school districts in Michigan and Ohio became the sample population. A total of 134 school districts responded to the email requests, resulting in a 22.8% response rate. Thirty-five of those responses were to opt out of taking the survey and 99 began the survey, resulting in 75 complete surveys and 24 partially completed surveys. Twenty-five respondents were from Michigan, 70 were from Ohio and 4 respondents failed to answer.

The response rate of 22.8% was low considering the number of districts requested to participate. There could be several reasons for this low number: the time of year the survey was sent out is an extremely busy time for many school administrators; lack of knowledge regarding the requested information; time needed to locate requested information, and possible feelings of culpability on the part of the district administrator responsible for the education of children on the autism spectrum.

Additionally, even though 134 responded to the survey, 35 of these respondents opted-out of taking the survey entirely, 99 respondents began the survey and only 75 completed the survey. There could be various reasons as to why 24 respondents did not complete the survey once it was started. Lack of knowledge and information, time needed to complete the survey if questions involved researching answers, and feelings of guilt over lack of services and lack of time are all speculative reasons for lack of completion.
Noteworthy Occurrences

One notable occurrence was once the survey questions became “autism specific,” the number of skipped responses increased to between 24 and 27 depending on the question that was asked. Another notable issue was with the response selections to the question “How many of these students with ASD are ages 3-6 and not yet in kindergarten?” One of the responses should have been 0. This was not discovered during the pilot stage of the survey and only appeared to affect one of the respondents which was indicated in the additional comment section.

School District Data Analysis

When school district data was analyzed regarding state location, responses indicated that of the 99 participants who took the survey, 25 (26.3%) were from Michigan and 70 (73.7%) participants were from Ohio. For a depiction of the results, see Figure 1. Four respondents skipped answering this question regarding the state location of their school district.

Figure 1. School District State Location.
When asked to identify if the school district they were responding for was considered rural, suburban or urban, 41 (43.20%) of the respondents indicated they were in a rural district, with 7 (17.10%) from Michigan and 34 (82.90%) from Ohio. Forty-five (47.4%) respondents were considered a suburban district with 16 (35.6%) from Michigan and 29 (64.4%) from Ohio. Nine (9.5%) participants were located in an urban district with 2 (22.2%) from Michigan and 7 (77.8%) from Ohio. For a depiction of the results, see Figure 2. Four respondents also skipped answering this question regarding the type of school district. This data is represented in the bar graph below with the clear visualization that most of the respondents were from what is considered rural and suburban districts.

![Bar graph showing school district type](image)

*Figure 2. School district type.*

School district personnel were then asked to respond to the question regarding the total number of students enrolled in their district. Eleven school district participants (11.6%) responded that there were between 1-1,000 students in their district, 68 (71.6%) respondents indicated between 1,001-5,000 students in the district, 11 (11.6%) responded between 5,001 - 10,000 students, 4 (4.2%) school districts had between 10,001-20,000 students and 1 participant (1.10%) indicated their school district had more
than 20,000 students enrolled. For a depiction of the results, see Figure 3. Once again, 4 school district respondents chose not to answer this particular question regarding the total number of students enrolled in their school district.

![Figure 3. Total number of students enrolled.](image)

School districts representative were also asked to answer a question regarding the number of these students enrolled in their district having special needs. A total of 13 school district respondents (13.8%) answered that there were between 1-100 students in their district with special needs. Three (12.0%) of these respondents were from Michigan and 10 (14.5%) were from Ohio. Thirty-four (36.2%) districts responded that there were between 101-300 students with special needs. Seven (28.0%) of these respondents were from Michigan and 27 (39.1%) from Ohio. Twenty-five (26.6%) school district representatives answered that there were between 301-500 students with special needs, with 8 (32.0%) responding from Michigan and 17 (24.6%) from Ohio. A total of 16 (17.0%) district representatives responded with having between 501-1,000 students with special needs, with 4 (16.0%) participants from Michigan and 12 (17.4%) from Ohio.
Finally, 6 (6.4%) districts responded that there were more than 1,000 students with special needs in their school district, with 3 (12.0%) responding from Michigan and 3 (4.3%) from Ohio. For a depiction of the results, see Figure 4. Five respondents skipped answering this question.

![Figure 4. Number of students with special needs.](image)

When broken down by district type, 11 (26.8%) rural districts responded as having between 1-100 students with special needs; 20 (48.8%) between 101-300; 9 (22.0%) 301-500; 0 (0%) between 501-1,000 and 1 (2.4%) with more than 1,000 students. Suburban districts reported 2 (4.5%) having between 1-100 students with special needs; 9 (20.5%) 101-300; 15 (34.1%) having between 301-500 students; 13 (29.5%) between 501-1,000 and 5 (11.4%) with more than 1,000 students with special needs. Zero urban districts reported between 1-100; 5 (55.6%) as having between 101-300 students; 1 (11.1%) between 301-500; 3 (33.3%) with 501-1,000 students and 0 (0%) more than 1000 students with special needs.

When participants were asked if their particular district had any students identified as having Autism Spectrum Disorder (ASD), 1 respondent (1.3%) indicated
there were 0 students with ASD; 60 (80.0%) respondents indicated 1-25 students with ASD; 10 (13.3%) participants answered 26-50 students with ASD; 2 (2.7%) participants answered 51-100 students with ASD; and 2 (2.7%) indicated there were more than 100 students identified as having ASD in their school district. For a depiction of the results, see Figure 5.

However, 24 respondents skipped answering this question regarding the number of students in their district identified as diagnosed with ASD.

![Figure 5. Number of students identified as having Autism Spectrum Disorder.](image)

When broken down by state, 0 (0%) of Michigan respondents indicated that there were no children identified as having ASD; 15 (71.4%) indicated there were between 1-25 students; 3 (14.3%) between 26-50; 2 (9.5%) between 51-100 students and 0 (0%) as having more than 100 students identified as being on the spectrum. In comparison, 1 Ohio district responded that there were 0 (0%) students having ASD; 45 (83.3%) between 1-25; 7 (13.0%) between 26-50 students; 0 (0%) between 51-100 and 1 (1.9%) having more than 100 students identified as being on the autism spectrum.
Furthermore, when broken down by district type, 1 rural district reported having 0 (0%) students with ASD; 28 (93.3%) having between 1-25 students; 1 (3.3%) between 26-50; and 0 (0%) responding to 51-100 and more than 100 students with ASD. In comparison, 0 (0%) of suburban districts responded as having no students with ASD; 25 (67.6%) between 1-25 students; 8 (21.6%) between 26-50; and 2 (5.4%) responded to both 51-100 students and more than 100. Additionally, 0 (0%) of urban districts responded as having no students with ASD; 5 (55.6%) between 1-25 students; 1 (11.1%) between 26-50 students; 3 (33.3%) having 51-100 students and 0 (0%) having more than 100 students on the autism spectrum.

When asked how many of these students with ASD are aged 3-6 and not yet in kindergarten, 69 (93.2%) school districts responded between 1-10 students; 4 (5.4%) districts answered between 11-20 students; and 1 (1.4%) district responded between 21-30 students. There were no responses to the final two categories of 31-40 students or more than 40 students. Additionally, 25 participants skipped responding to this question.

For a depiction of the results, see Figure 6.

![Figure 6. Number of students with ASD ages 3-6 not yet in kindergarten.](image-url)
When the data was filtered by state, 19 (90.5%) Michigan districts reported having between 1-10 students with ASD aged 3-6 and not yet in kindergarten; 2 (9.5%) responded between 11-20 students and 0 (0%) responded to the last three categories of 21-30, 31-40 and more than 40. Fifty (94.3%) Ohio districts responded having between 1-10 students; 2 (3.8%) between 11-20; 1 (1.9%) between 21-30 students and 0 (0%) districts responded to the last two categories of 31-40 students and more than 40 students with ASD.

Seventy-four out of 99 respondents answered the question regarding what programs their district used for early intervention for the students with ASD ages 3-6 not yet in kindergarten. Twenty-eight (37.8%) answered Applied Behavior Analysis (ABA); 12 (16.2%) answered Discrete Trial Training (DTT); 33 (44.6%) responded TEAACH (Treatment and Education of Autistic and Related Communication-Handicapped Children); 17 (23.0%) answered Floor Time; 37 (50.0%) responded to other. For a depiction of the results, see Figure 7.

![Bar Chart]

**Figure 7.** Type of early intervention program used for students with ASD ages 3-6 and not yet in kindergarten.
not yet in kindergarten.

When responses were filtered by state, 6 (28.6%) Michigan districts responded that they used ABA; 2 (9.5%) used DTT; 9 (42.9%) used TEAACH; 7 (33.3%) used Floor Time and 12 (57.10%) responded to other.

Additional comments from Michigan school districts who responded to “other” included:

1. A combination of best practices and a pre school (ECDD) program that serves cross categorical children. We are also involved with a Statewide training and resoruce [sic] prgram [sic] called the START initiative. We have been involved for one year and will continue next year as well. We have staff trained as trainers.

2. Students are put into our Early Childhood Special Education Program where they receive interventions. If more interventions are needed students are reevaluated and given the help they need.

3. Consortium program through the Intermediate School District or participation in our local Early Childhood Special Education or regular preschools with Teacher consultant services.

4. JumpStart

5. We use components of each/all of these plus other approaches, as the needs of the child and the decisions of the IEPT direct us.

6. We use ABA as our primary insturctional [sic] method paired with Positive Behavior Support (PBS). We use the AEPS curriculum as our primary curriculum/assessment tool but also use: Langauge [sic] for Learners, Teach Me
Language, ABLLS, Do-Watch-Listen-Say, Ladders to Literacy, and a few others to meet the educational needs and goals of our preschoolers with ASD.

7. Our ISD also offers a Parent/Child Learning Group for children not yet in kindergarten, although it is not only available for children with ASD.

Ohio responses included 22 (41.5%) using ABA; 10 (18.9%) DTT; 24 (45.3%) using TEAACH; 10 (18.9%) Floor Time and 25 (47.2%) responded to the other category. Responses to “other” included:

1. I do not know what specific intervention modality is employed.

2. Sensory diet, PECS, scheduling

3. Integrated Preschool with consultative services through our SERRC Center from an autism specialist

4. Combination of the above to meet the student's needs

5. We use bits and pieces of other programs and interventions as well, as required by individual student needs.

6. A mix of programs

7. Preschool teachers use a variety of interventions and strategies to support the children with ASD. Our primary background is through the TEAACH methodology.

8. We do not have any children identified.

9. Students participate in county preschool programs using a variety of techniques [sic]

Rural districts responded with 9 (31.0%) using ABA programming; 5 (17.2%)
Sixteen (43.2%) suburban districts responded using ABA; 6 (16.2%) used DTT; 21 (56.8%) used TEAACH, 10 (27.0%) utilized Floor Time and 17 (45.9%) responded to “other.” In comparison, 3 (37.5%) urban districts responded to ABA; 1 (12.5%) utilized DTT; 0 (0%) responded using TEAACH; 2 (25.0%) indicated they used the Floor Time approach and 4 (50.0%) responded to “other.” For a depiction of the results, see Figure 7.

Seventy-four out of 99 participants responded to the question how many hours a week of one-on-one or small group instruction does the district provide to children with ASD ages 3-6 not yet in kindergarten. For a depiction of the results, see Figure 8. Eighteen (24.3%) respondents answered between 0-5 hours; 21 (28.4%) answered between 6-10 hours; 18 (24.3%) responded between 11-15 hours; 8 (10.8%) responded between 16-20 hours; 8 (10.8%) answered between 21-25 hours; and 1 (1.4%) responded to 26 or more hours.

![Figure 8. Number of weekly instructional hours for ASD students ages 3-6 not yet in kindergarten.](image)

When Michigan and Ohio district responses were filtered, 2 (9.5%) Michigan
districts responded that children attended intervention 0-5 hours a week; 9 (42.9%) indicated 6-10 hours; 7 (33.3%) 11-15 hours a week; and 1 (4.8%) district responded to each of the last three categories of 16-20, 21-15 and more than 26 hours a week. In comparison, 16 (30.2%) Ohio districts responded 0-5 hours a week; 12 (22.6%) indicated 6-10 hours; 11 (20.8%) answered 11-15 hours; and 7 (13.2%) districts responded to both 16-20 hours and 21-25 hours; 0 (0%) Ohio districts responded to more than 26 hours a week.

When filtered by district type, 12 (41.4%) rural districts responded to 0-5 hours a week of intervention; 7 (24.1%) 6-10 hours; 5 (17.2%) 11-15 hours; 1 (3.4%) 16-20 hours; 3 (10.3%) 21-25 hours and 1 (3.4%) more than 26 hours a week. Suburban districts responded with 6 (16.2%) providing 0-5 hours a week; 13 (35.1%) 6-10 hours; 9 (24.3%) 11-15 hours; 4 (10.8%) 16-20 hours; 5 (13.5%) 21-25 hours and 0 (0%) providing more than 26 hours. In comparison, 0 (0%) urban districts provided 0-5 hours a week; 1 (12.5%) 6-10 hours; 4 (50.0%) 11-15 hours; 3 (37.5%) 16-20 and 0 (0%) districts responded to the categories of 21-25 hours or more than 26 hours a week.

Seventy-four participants responded to how many days a week children with ASD ages 3-6 not yet in kindergarten attend school, and 25 did not. One (1.4%) answered 1 day; 1 (1.4%) 2 days; 1 (1.4%) 3 days; 37 (50.0%) answered 4 days; 16 (21.6%) 5 days a week; 18 (24.3%) selected the days varied based on the IEP.

When comparing Michigan and Ohio districts responding to this question, 0 (0%) Michigan districts responded to the first two categories of 1 and 2 days a week. One (4.8%) Michigan district responded that their students with ASD attended 3 days a week; 5 (23.8%) 4 days; 8 (38.1%) 5 days a week and 7 (33.3%) responded that the days of
attendance varied based on the student’s IEP. In comparison, 1 (1.9%) Ohio district responded to the first two categories of 1 and 2 days a week of attendance. Zero (0%) Ohio districts responded children attended 3 days a week; 32 (60.4%) responded 4 days a week; 8 (15.10%) 5 days and 11 (20.8%) responded that the days children attended intervention varied based on their IEP. For a depiction of the results, see Figure 9.

Figure 10. Number of days a week children with ASD ages 3-6 and not yet in kindergarten attend school

Rural, suburban and urban districts filtered responses to this question indicated that 1 (3.4%) rural district responded to each of the first three categories of 1, 2 and 3 days a week of attendance; 13 (44.8%) responded 4 days; 3 (10.3%) 5 days and 10 (34.5%) indicated that the number of days varied depending on the child’s IEP. In comparison, 0 (0%) of suburban and urban districts responded to the first three categories of 1, 2 and 3 days a week of intervention. Twenty (54.1%) of suburban districts responded to 4 days a week; 10 (27.0%) indicated 5 days a week and 7 (18.9%) indicated that the number of days a week varied depending on the child’s IEP. On the other hand, 4
(50.0%) urban districts responded to the category of 4 days a week; 3 (37.5%) 5 days a week and 1 (12.5%) indicated that the number of days a week of intervention varied due to the child’s IEP.

When posed the question of how many weeks a year do children diagnosed with ASD ages 3-6 not yet in kindergarten attend school, 74 out of 99 participants chose to answer this question. Two (2.7%) districts responded 18 or less weeks a year of attendance; 46 (62.2%) 19-36 weeks; and only 26 (35.1%) responded 36 or more weeks a year. For a depiction of the results, see Figure 10.

![Bar chart showing weeks of school attendance for children with ASD ages 3-6 in Michigan and Ohio districts.](Image)

*Figure 10.* Number of weeks a year children with ASD ages 3-6 and not yet in kindergarten attend school.

Michigan districts responded to this question with 0 (0%) providing 18 or less weeks a year of intervention; 10 (47.6%) provided 19-36 weeks and 11 (52.4%) 36 or more weeks a year of intervention. In comparison, Ohio districts responded with 2 (3.8%) providing 18 or less weeks a year of intervention; 36 (67.9%) 19-36 weeks a year and 15 (28.3%) providing 36 or more weeks of intervention.
Additionally, rural, suburban and urban districts responses were filtered out. Two (6.9%) rural districts, and 0 (0%) suburban and urban districts responded to providing 18 or less weeks a year of intervention. Twenty-one (72.4%) rural, 20 (54.1%) suburban and 5 (62.5%) urban districts responded to the second category of 19-36 weeks a year. Furthermore, 6 (20.7%) rural, 17 (45.9%) suburban and 3 (37.5%) urban districts indicated providing 36 or more weeks a year of intervention.

Seventy-one survey participants responded to the question what percentage of all of the districts students with ASD require special transportation. Thirty-five (49.3%) districts responded 0 - 25% of these students required special transportation; 12 (16.9%) answered 26-50%; 7 (9.9%) responded 51-75%; and 17 (23.9%) responded that 76-100% of their ASD students required special transportation. For a depiction of the results, see Figure 11. Twenty-eight participants skipped answering this question regarding transportation for their ASD students.

![Figure 12. Percentage of ASD students that require special transportation.](image)

Michigan district representatives responded with 9 (42.9%) indicating 0-25% of their students with ASD require special transportation; 6 (28.6%) answered 26-50% of
their students with ASD did and 3 (14.3%) each responded to the last two categories of 51-75% and 76-100% of their students with ASD require special transportation. In comparison, 26 (52.0%) Ohio districts responded that 0-25% of their ASD students require special transportation; 6 (12.0%) indicated 26-50%; 4 (8.0%) 51-75% and 14 (28.0%) responded that 76-100% of their ASD students required special transportation.

When data was filtered by district type, 15 (57.7%) rural, 16 (43.2%) suburban and 4 (50.0%) urban responded to the 0-25% category. Four (15.4%) rural, 6 (16.2%) suburban, and 2 (25.0%) urban districts indicted that 26-50% of their ASD students required special transportation. One (3.8%) rural, 6 (16.2%) suburban and 0 (0%) urban districts responded to the category of 51-75% while 6 (23.1%) rural, 9 (24.3%) suburban and 2 (25.0%) urban districts indicated that 76-100% of their ASD students required special transportation.

When school district representatives were posed the question of what percentage of all of the district’s students with ASD require speech therapy, 73 participants responded to this question while 26 chose not to respond. Three (4.1%) participants responded that 0-25% of students in the district with ASD required speech therapy; 7 (9.6%) responded 26-50%; 15 (20.6%) indicated 51-75% of their ASD students; and 48 (65.8%) indicated that 76-100% of their students with ASD required speech therapy.

Comparing the data from Michigan and Ohio, 2 (9.5%) Michigan districts and 1 (1.9%) Ohio district responded that 0-25% of their ASD students required speech therapy while 6 (28.6%) of Michigan and 6 (12.0%) of Ohio districts responded to the category of 26-50% of their students required speech therapy. Three (14.3%) Michigan and 4 (8.0%) Ohio districts indicated 51-75% of their students required speech therapy while 3 (14.3%)
Michigan and 14 (28.0%) Ohio districts responded to the last category of 76-100% students required speech therapy. For a depiction of the results, see Figure 12.

![Bar chart showing the distribution of students requiring speech therapy across different percentage categories.](chart)

*Figure 12.* Number of students with ASD that require speech therapy.

When filtered by district type, 2 (6.9%) rural, 1 (2.7%) suburban and 0 (0%) urban districts responded to the first category of 0-25% of their ASD students required speech therapy. Three (10.3%) rural and suburban (8.1%) and 1 (14.3%) urban answered 26-50%; 6 (20.7%) rural, 8 (21.6%) suburban and 1 (14.3%) chose the third category of 51-75% while 18 (62.1%) rural, 25 (67.6%) suburban and 5 (71.4%) urban selected the last category of 76-100% of their ASD students required speech therapy.

Seventy-two participants chose to answer the question what percentage of all of the district’s students with ASD require occupational therapy, while 27 skipped answering this question. 13 (18.1%) of respondents selected 0-25%; 17 (23.6%) 26-50%; 23 (31.9%) answered 51-75%; and 19 (26.4%) responded that 76-100% of the students in their district with ASD required occupational therapy. For a depiction of the results, see Figure 13.

Six (30.0%) Michigan districts indicated that 0-25% of their ASD students
required occupational therapy; 7 (35.0%) answered 26-50%; 5 (25.0%) responded 51-75% and 2 (10.0%) responded to the last category of 76-100% of their ASD students required occupational therapy. On the other hand, 7 (13.5%) of Ohio districts responded to the first category of 0-25%; 10 (19.2%) indicated 26-50%; 18 (34.6%) selected 51-75% and 17 (32.7%) districts responded to the last category of 76-100% of their ASD students required occupational therapy.

![Figure 14. Number of students with ASD that require occupational therapy.](image)

When data was further sorted by district type, 7 (25.9%) rural school districts, 4 (10.8%) suburban and 2 (25.0%) urban selected the first category of 0-25% of their students with ASD required occupational therapy. Additionally, 4 (14.8%) rural, 10 (27.0%) suburban and 3 (37.5%) urban districts chose the second category of 26-50% of their students with ASD required occupational therapy, while 6 (22.2%) rural, 16 (43.2%) suburban and 1 (12.5%) urban school districts indicated the third category of 52-75% of their students required this same service. Finally, 10 (37.0%) of rural, 7 (18.9%) suburban and 2 (25.0%) urban school districts responded to the final category of 76-100% of their students with ASD required occupational therapy.
When school district survey participants were asked the next question of what percentage of all of the district’s students with ASD required physical therapy, 74 participants responded to this question. Twenty-five district participants chose not to respond to this same question. Forty-eight (64.9%) of the school district representative responded that 0-25% of the students in their district with ASD required physical therapy; 15 (20.3%) respondents indicated that 26-50% of their students with ASD required this therapy; another 6 (8.1%) districts answered that 51-75% of their students with ASD required physical therapy; and 5 (6.8%) district participants responded that 76-100% of the students in their district with ASD required physical therapy services. For a depiction of the results, see Figure 14.

![Figure 14. Number of children with ASD that require physical therapy.](image)

Comparing Michigan and Ohio school districts responses to this question, 15 (71.4%) of Michigan and 33 (62.3%) of Ohio districts responded that 0-25% of their ASD students required physical therapy while 6 (28.6%) Michigan and 9 (17.0%) of Ohio districts selected the second category of 26-50%. Furthermore, 0 (0%) of Michigan districts chose the last two categories of 51-75% and 75-100% while 6 (11.3%) and 5
(9.4%) of Ohio districts responded in the same manner.

Rural districts responded with 16 (55.2%) selecting the first category of 0-25% of their ASD students requiring physical therapy; 8 (27.6%) choosing 26-50%; 1 (3.4%) for 50-75% and 4 (13.8%) indicating 76-100% of their ASD students required physical therapy. In comparison, 25 (67.6%) of suburban and 7 (87.5%) or urban districts selected the first category of 0-25%; 7 (18.9%) suburban and 0 (0%) urban chose 26-50%; 4 (10.8%) suburban and 1 (12.5%) urban responded with 51-75% while 1 (2.7%) suburban and 0 (0%) urban districts selected the last category of 76-100%.

Survey participants were asked to answer the question what percentage of all of the district’s students with ASD required their own aide. Seventy-three participants responded to this question with 47 (64.4%) selecting 0-25% required their own aide; 16 (21.9%) answered 26-50%; 5 (6.9%) responded 51-75%; and another 5 (6.9%) selected 76-100% of their students with ASD required their own aide. However, 26 participants skipped answering this question. For a depiction of the results, see Figure 15.

![Figure 16. Number of students with ASD that require their own aide.](image-url)
When comparing state school district responses regarding ASD students requiring their own aide, 12 (57.1%) in Michigan and 35 (67.3%) selected 0-25%. Six (28.6%) of Michigan and 10 (19.2%) of Ohio districts selected the second category of 26-50% while 1 (4.8%) Michigan and 4 (7.7%) Ohio districts chose 51-75%. Finally, 2 (9.5%) Michigan and 3 (5.8%) Ohio districts answered that 76-100% of their ASD students required their own aide.

When data was further sorted by district type, 16 (55.2%) of rural, 24 (66.7%) of suburban and 7 (87.5%) of urban districts indicated that 0-25% of students with ASD required their own aide. Nine (31.0%) rural, 6 (16.7%) suburban and 1 (12.5%) urban school districts participants selected the second category of 26-50% while 3 (3.4%) rural, 4 (11.1%) suburban and 0 (0%) of urban school districts chose the third category of 51-75% of their students with ASD required their own classroom aide. For the last category of 76-100% of ASD students required their own aide, 3 (10.3%) rural, 2 (5.6%) and 0 (0%) urban district representatives answered in this manner.

The final question school district survey participants were asked to answer was whether or not their district had an Autism Specialist. Seventy-two participants responded to this question with 23 (31.9%) answering yes there was an Autism Specialist in their district and 49 (68.1%) participants answered no to this question. Twenty-seven survey participants chose not to respond to this question regarding the Autism Specialist.

When the survey responses were sorted by state as to whether or not an Autism Specialist was part of the staff, 11 (55.0%) Michigan districts and 12 (23.1%) Ohio districts indicated yes to the question, while 9 (45.0%) of Michigan and 40 (76.9%) Ohio district representative selected no.
Research data further sorted by district type shows that in rural districts, 6 (20.7%) had an Autism Specialist on staff while 23 (79.3%) school districts did not have one. Sixteen (45.7%) suburban district representatives reported there was an Autism Specialist in their district while 19 (54.3%) responded that there was no one employed in this position.

In comparison, 1 (12.5%) of the urban school district representatives answered yes when asked about having an Autism Specialist while 7 (87.5%) answered no to this same question. For a depiction of the results, see Figure 16.

![Pie chart](image)

*Figure 17*. Percentage of school districts that have an autism specialist.

**Parent Survey Analysis**

Seventy-one parent respondents began the research survey with only 31 completing the survey. When the data from the parent survey was analyzed, responses indicated that of the 35 participants that replied to the question regarding state of residency, 6 (17.1%) were from the state of Michigan and 29 (82.9%) participants were from the state of Ohio. Thirty-six parent survey respondents skipped answering this
question regarding the state location of their school district. The results are depicted in the bar graph in Figure 17.

![Bar graph showing Michigan and Ohio with numbers 6 and 29](image)

Figure 18. Parent survey participants by state location.

When parents were asked to label the school district their child attended as either rural, suburban, or urban, 12 (34.3%) of the survey respondents indicated they were in a rural district, with 3 (25.0%) from Michigan and 9 (75.0%) from Ohio. Fifteen (42.9%) parent respondents selected a suburban school district with 2 (13.3%) from Michigan and 13 (86.7%) from Ohio. Eight (22.9%) of the parent survey participants indicated they were located in an urban district with 1 (12.5%) from Michigan and 7 (85.5%) from Ohio.

Thirty-six survey respondents skipped answering this question regarding the type of school district their child attended. The corresponding research data results are depicted in the bar graph in Figure 18. The majority of the parent participants responding to this question indicated they are from an area in their state that is considered a suburban school district.
Figure 19. Parent survey participants by district type

Thirty-five parents participating in this survey responded to the question regarding the current age of their child that was diagnosed as having Autism Spectrum Disorder (ASD). Twelve (34.3%) of the respondents indicated that their child with ASD was currently three years old, 13 (37.1%) indicated their child was currently four years old, seven parents (20%) responded that their child with ASD was five years old, and three parents (8.6%) indicated their child was six years old. Thirty-six participants skipped answering this survey question. For a depiction of the results, see Figure 19.

Figure 20. Age of child with ASD not yet in kindergarten.
Of the six children from Michigan, 2 (33.3%) were aged three, 1 (16.7%) age 4, 2 (33.3%) aged five and 1 (16.7%) was 6 years old. Twenty-nine respondents were from Ohio, with 10 (34.5%) aged three, 12 (41.4%) aged four, 5 (17.2%) aged five, and 2 (16.7%) indicated their child with ASD was six years old.

When broken down by district type, 6 (50.0%) three year olds, 2 (16.7%) four year olds, 3 (25.0%) five year olds and 1 (8.3%) six year old lived in a rural district. For those respondents that indicated they lived in a suburban district, 4 (26.7%) selected three years old, 7 (46.7%) chose four years old, 3 (30.0%) were aged five and 1 (6.7%) was six years old. Of the eight children that lived in an urban district, 2 (25.0%) were aged three, 4 (50.0%) aged four, and 1 (12.5%) child was five and six years old, respectively.

Parents were asked the question how many months had their child been diagnosed with ASD. Thirty-two respondents answered this question, with 2 responding in a manner that did not fit the criteria (36+ and less than 12 months). The 32 responses were plotted on a scatter chart and represented in Figure 20. The median number of months since diagnosis was 15.5. Thirty-nine respondents skipped answering this question.

\[\text{Figure 21. Months since child was diagnosed with ASD.}\]
Michigan residents responded with six different lengths of time since their child was diagnosed with ASD: 3, 8, 18, 30, 36 and 48 months. Ohio residents responded with 21 different entries of months since diagnosis: 1, 2, 3, 5, 6, 8, 11, 12, 13, 14, 15, 16, 17, 22, 24, 25, 27, 32, 34, 36 and 60 were all indicated.

Rural respondents varied from 1 month since diagnosis to 60 months, with additional responses of 2, 3, 11, 14, 15, 30 and 48. Suburban participants had 13 different responses ranging from 1 month to 36 months. Other suburban responses were 5, 6, 8, 12, 13, 17, 18, 22, 24, 25 and 32 months. In the urban districts, there were seven different responses of months since diagnosis with 5, 8, 16, 24, 27, 34 and 36 all being entered.

Thirty-five parents responded to the question regarding the type of school their child attended, with 23 (65.7%) indicating their child attended public school and 1 (2.9%) indicating a parochial school. No participants (0%) responded that their child attended a charter/community school and 3 (8.6%) respondents indicated that their child attended a home-based program. Thirty-six participants skipped answering this question regarding the type of school their child attended. For a depiction of the results, see figure 21.

Figure 22. Type of school child attends.
When this data was sorted by state, 5 (83.3%) of Michigan respondents reported that their child attended a public school and 1 (16.7%) selected a home based program; 0 (0.0%) responded to the choices of parochial, private and charter/community school. Ohio responses included 18 (62.1%) attended a public school, 1 (3.4%) parochial, 8 (27.6%) private, 0 (0.0%) charter/community school, and 2 (6.9%) selected home based program.

Furthermore, when sorted by district type, 11 (91.7%) rural respondents indicated that their child attends a public school and 1 (8.3%) a private school. No rural respondents selected the choices of parochial, charter/community schools or a home based program. Suburban parents indicated that 6 (40.0%) attend a public school, 1 (6.7%) a parochial school, 5 (33.3%) private, 0 (0%) went to a charter/community school and 3 (20.0%) utilized a home based program. In comparison, 6 (75.0%) urban participants indicated public school with 2 (25.0%) choosing the private school answer. No urban parents selected the choices of parochial, charter/community or home based program.

Parents were asked what program(s) their child’s school district used for early intervention for students with ASD ages 3-6 that are not yet in kindergarten. Thirty-five participants responded with six (17.1%) indicating that their child’s school district used Applied Behavior Analysis (ABA), one (2.9%) responded with Discrete Trial Training (DTT) and five (14.3%) used TEAACH (Treatment and Education of Autistic and Related Communication-Handicapped Children). One parent (2.9%) answered that their child’s district used the Floor Time program, 14 (40.0%) parents responding to this question answered not sure what type of program was used and eight participants (22.9%)
responded to other. Additionally, 36 respondents skipped this question. For a depiction of the results, see figure 22.

![Figure 22](image_url)

*Figure 23.* Parent report of type of intervention program used by district.

Two (33.3%) Michigan parents responding to this question indicated that the program used in their district was ABA, 2 (33.3%) chose TEAACH, and 2 (16.7%) selected the answers of “not sure” and “other” respectively. The one comment in response to “other” responses from Michigan parents was a simple “none.”

In comparison, 4 (13.7%) Ohio parents responded that the district used ABA as the intervention program, 1 (3.4%) chose DTT, 3 (10.3%) used TEAACH, 1 (3.4%) Floor Time, 13 (44.8%) of the parents were not sure of the program used and 7 (24.1%) selected the choice “other.” These responses included:

1. Thanks to the Ohio Autism Scholarship Program, my child attends a school which is not in our district. They have a broad-based curriculum. I will answer my questions below about the school he attends, rather than our school district.

2. Mixture of things I assume.
3. Teachers have been trained in PLAY Project

4. I have not seen evidence of any of the above being carried out according to protocol.

5. The public school in our district was not trained in any approach, so we switched to the local parochial school with an aide hired by us. We pulled our child out of the public special needs preschool after they lost him for a period of time when he wandered away. He spent most of the year staring out the window.

6. Inclusion preschool with typically developing students ratio ~1:2 (4 special needs, 8 typically developing)

7. Integrated pre-school classroom

When data was sorted by the type of district in which the parents lived, 3 (25.0%) rural parents indicated that ABA was the program used, 1 (8.3%) selected TEAACH, 7 (58.3%) were not sure of the program used, and 1 (8.3%) responded to “other.” No rural parents selected the choices of DTT or Floor Time. In comparison, 1 (6.7%) suburban parent chose ABA, DTT, and Floor Time with 4 (26.7%) choosing TEAACH. Three suburban parents were not sure what intervention program was used and 5 (33.3%) chose the last selection of “other.” Additionally, 2 (25.0%) of urban parents selected ABA, 4 (50.0%) were not sure what program was used and 2 (25.0%) chose “other.” No urban parents selected the choices of DTT, TEAACH or Floor Time.

Thirty-five out of 71 parent participants responded to the question of how many hours a week did their child attend school. Two (5.7%) respondents answered between 0-5 hours; 13 (37.1%) answered between 6-10 hours; 8 (22.9%) responded between 11-15
hours; 6 (17.1%) responded between 16-20 hours; 2 (5.7%) answered between 21-25 hours; and 4 (11.4%) responded that their child attended school 26 or more hours a week. The results are depicted in Figure 23.

![Bar chart](image)

**Figure 24.** Parent report of number of weekly hours child with ASD attends school.

When responding to the question regarding the weekly hours their child diagnosed with ASD ages 3-6 and not yet in kindergarten attended school, 0 (0%) of Michigan parents reported 0-5 hours, 11-15 hours, and 21-25 hours a week. Three (50.0%) parents chose the category of 6-10 hours a week; 1 (16.7%) 16-20 hours and 2 (33.3%) 26 or more hours a week. On the other hand, 2 (6.9%) Ohio parents reported 0-5 hours a week of attendance; 10 (34.5%) participants selected between 6-10 hours a week; 8 (27.6%) 11-15 hours; 5 (17.2%) 16-20 hours; and 2 (6.9%) reported 21-25 hours and more than 26 hours a week of school attendance.

This data was further sorted by district type with no rural parents indicating that their child attended school between 0-5 hours a week. Moreover, 3 (25.0%) rural parents reported 6-10 hours of attendance; 4 (33.0%) between 11-15 hours; 1 (8.3%) 16-20
hours; and 2 (16.7%) each selected 21-25 hours and more than 26 hours a week of school attendance. In suburban districts, 2 (13.3%) parents each indicated 0-5, 11-15 and 16-20 hours of weekly school attendance, with 8 (53.3%) parents selecting 6-10 hours, 0 (0.0%) 21-25 hours and 1 (6.7%) more than 26 hours a week. Additionally, of the 8 urban parents that responded to this same question, none reported 0-5 and 21-25 hours of attendance. However, 2 (25.0%) urban parents chose 6-10 and 11-15 hours with 3 (37.5%) reporting 16-20 hours and 1 (12.5%) reported more than 26 hours a week.

When parents were asked the question how many days a week their child with ASD ages 3-6 not yet in kindergarten attended school, 35 parents participants answered while 36 skipped this question. Two participants (5.7%) answered 1 day a week; 1 parent (2.9%) responded to 2 days; 5 parents (14.3%) answered 3 days; 16 participants (45.7%) responded 4 days a week and 11 (31.4%) responded that their child attended school 5 days a week. These results are depicted in Figure 24.

![Bar chart showing days of school attendance](image)

*Figure 25. Parent report of days a week child attends school.*

When parent responses from Michigan and Ohio were filtered, 1 (16.7%)
Michigan parent responded to each category of 1, 2, and 3 days a week. No (0%)
Michigan parents selected 4 days and 3 (50.0%) indicating 5 days a week. Twenty-nine
Ohio parents responded to this question with 1 (3.4%) choosing 1 day; 0 (0%) 2 days; 4
(13.8%) 3 days; 16 (55.2%) 4 days and 8 (27.6%) five days a week.

Broken down by district type, the data indicated that 1 (8.3%) rural parent
reported 1 day and 3 days a week of attendance. Zero (0%) rural parents reported 2 days a
week with 7 (58.3%) indicating 4 days and 8 (27.6%) selected 5 days a week of
attendance. In comparison, 1 (6.7%) suburban parent responded to the categories of 1 day
and 2 days a week; 4 (26.7%) 3 days; 6 (40.0%) 4 days; and 3 (20.0%) chose 5 days a
week. No urban parents selected 1, 2, or 3 days respectively with 3 (37.5%) selecting 4
days and 5 (62.5%) 5 days a week of attendance.

When parents were asked the question of how many weeks a year their child with
ASD ages 3-6 not yet in kindergarten attend school, 35 of 71 participants answered this
question. Two (5.7%) parents responded 18 or less weeks; 17 (48.6%) 19-36 weeks; and
16 (45.7%) responded 36 or more weeks a year. The results are depicted in Figure 25.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure26.png}
\caption{Parent report of number of weeks a year child attends school}
\end{figure}
Of these 35 respondents, 6 were from Michigan and 29 from Ohio. One (16.7%) Michigan parent selected 18 or less weeks; 2 (33.3%) 19-36 and 3 (50.0%) attended school 36 or more weeks a week. For Ohio, 1 (3.4%) parents reported 18 or less weeks a year; 15 (51.7%) 19-36 and 13 (44.8%) 36 or more week a year of school attendance.

One (8.3%) rural parent responded their child attends school 18 or less weeks a year; 6 (50.0%) 19-36 weeks and 5 (41.7%) more than 36 weeks. In contrast, 1 suburban parent selected 18 or less weeks a year with 7 (46.7%) choosing 19-36 weeks and more than 36 weeks a year attendance. Additionally, 0 (0%) urban parents chose 18 or less weeks a year while 4 (50.0%) selected both 19-26 weeks and more than 36 weeks a year.

Thirty-five parent participants responded to the question of whether or not their child received special transportation from their school district. Fourteen (40.0%) parent participants responded that their child received special transportation while 21 (60.0%) responded that their child did not receive special transportation. Thirty-six participants skipped answering this question regarding transportation for their child with ASD. For a depiction of the results, see Figure 26.

![Figure 27](Image)

*Figure 27. Parent report of transportation provided by school district.*
Transportation is provided by the school district to 4 (66.7%) Michigan respondents while 2 (33.3%) do not receive special transportation. In Ohio, 10 (34.5%) respondents indicated that special transportation was provided by the district while it was not provided to 19 (65.5%) of the respondents.

When this data was sorted by district type, parents in rural districts reported that special transportation was received by 4 (33.3%) participants, but 8 (66.7%) did not receive this service. In comparison, 6 (40.0%) suburban and 4 (50.0%) urban parents reported receiving this service while 9 (60.0%) of suburban and 4 (50.0%) of urban parents did not.

When asked to respond to the questions did their child receive speech therapy (ST) provided by the school district, 35 participants responded to this question while 36 chose not to respond. Twenty-five (71.4%) responded that their child received speech therapy provided by the district with 10 parents (28.6%) responding that their child did not receive this service from the school district. For a depiction of the results, see Figure 27.

![Bar Chart](image)

**Figure 28.** Parent report of speech therapy provided by the school district.
While 35 parent participants responded to the question regarding speech therapy, 5 (83.3%) of the Michigan parents and 20 (69.0%) of Ohio parents responded that their child received speech therapy services from the district while 1 (16.7%) Michigan and 9 (31.0%) Ohio parents did not receive this same service.

On the other hand, 10 (83.3%) parents in rural school districts, 8 (53.3%) suburban and 7 (87.5%) parents indicated their child diagnosed with ASD received speech therapy services from the school district while 2 (16.7%) rural, 8 (66.7%) suburban, and 1 (12.5%) parent participant did not.

Twenty-one (60.0%) parent survey participants responded positively to the question regarding whether or not their child diagnosed with ASD received occupational therapy services provided by the school district while 14 (40.0%) parent participants responded that their child did not receive occupational therapy services from the respective school district. For a depiction of the results, see Figure 28.

![Figure 28. Parent report of occupational therapy provided by the school district.](image)

Of these 35 survey participants, 6 were from Michigan with 5 (83.3%) responding
yes, their child received occupational therapy from the district while 1 (16.7%) responded negatively to this question. Comparatively, 16 (55.2%) Ohio respondents that participated in the survey selected yes while 13 (44.8%) responded in the negative.

Furthermore, 10 (83.3%) rural, 6 (40.0%) suburban, and 5 (62.5%) urban parents chose yes, occupational therapy was provided by the school district. However, 2 (16.7%) rural, 9 (60.0%) suburban, and 3 (37.5%) urban parents responded that occupational therapy was not a service their child with ASD received from the school district.

The next question of the parent survey regarded whether or not their child received physical therapy from the district. Nine (25.7%) parents indicated that their child did receive this service while 26 (74.3%) indicated that their child did not receive these related services. These results are depicted in Figure 29.

![Figure 29. Parent report of physical therapy provided by the school district.](image)

Of the 35 people that responded to the parent survey, 4 (66.7%) participants from Michigan and 5 (17.2%) from Ohio indicated that they received physical therapy from the school district, while 2 (33.3%) of Michigan and 24 (82.8%) of Ohio survey takers
responded with no.

When this data is analyzed by district, 4 (33.3%) rural, 1 (6.7%) and 4 (50.0%) parent survey takers chose the first answer selection of yes, while 8 (66.7%) rural parents, 14 (93.3%) suburban and 4 (50.0%) urban parents responded with the second answer choice of no.

The next question asked of participants taking the parent survey dealt with whether or not their child was assigned an individual teacher’s aide. Of the 35 Michigan and Ohio parents that answered this question, 3 (50.0%) and 5 (17.2%) participants respectively answered yes. On the other hand, 3 (50.0%) Michigan and 24 (82.8%) Ohio parents chose the second answer of no. For a depiction of the results, see Figure 30.

![Figure 30](image)

*Figure 30.* Parent report of child having own classroom aide.

Compartively, 4 (33.3%) rural, 3 (20.0%) suburban and 1 (12.5%) urban survey parent participants answered yes, their child had their own classroom aide. However, 8 (66.7%) rural parents, 12 (80.0%) suburban parents and 7 (87.5%) urban parent participants responded no, their child with ASD did not have their own classroom aide.
The next three questions of the parent research survey regarded whether or not their child that was diagnosed with ASD received the services of private speech therapy (ST), private occupational therapy, or private physical therapy. Figures 31, 32 and 33 correspond to this data.

A total of 35 parent participants responded to the question regarding whether or not their child that was diagnosed with ASD received private speech therapy. Twenty-three (65.7%) of the parent participants responded that their child received private speech therapy services while 12 parent participants (34.3%) responded that their child did not receive private speech therapy services. For a depiction of the results, see Figure 31.

![Figure 31: Child received private speech therapy](image)

Figure 31. Child received private speech therapy

Of the 23 parent participants that responded yes to the question regarding whether or not their child diagnosed with ASD received private speech therapy, 3 (50.0%) were from Michigan and 20 (69.0%) were from Ohio, while 3 (50.0%) Michigan and 9 (31.0%) Ohio parents responded no their child did not receive private speech therapy services.
Furthermore, 7 (58.3%) rural, 11 (73.3%) suburban and 5 (62.5%) urban parent survey respondents indicated that their child received private speech therapy. Three (50.0%) rural, 4 (26.7%) suburban and 3 (37.5%) urban participants responded no, their child did not receive private speech therapy services.

Regarding the question of private occupational therapy services, once again, a total of 35 parent participants responded to this question with 22 (62.9%) responding that their child diagnosed with ASD received private occupational therapy services with 13 (37.1%) participants responding that their child did not receive private occupational therapy services. For a depiction of the results, see Figure 32.

![Figure 32](image)

**Figure 33.** Child receives private occupational therapy

Of the 22 parents responding positively to the survey question of whether or not their child diagnosed with ASD received private occupational therapy services, 5 (83.3%) of the respondents were from Michigan and 17 (58.6%) were from Ohio. On the other hand, 1 (16.7%) Michigan parent and 12 (41.4%) Ohio parents responded no their child diagnosed with ASD did not receive private occupational therapy services.
In comparison, 6 (50.0%) rural participants, 12 (80.0%) suburban participants and 4 (50.0%) urban parent participants indicated that their child did receive private speech therapy services, while 6 (50.0%) rural, 3 (20.0%) suburban and 4 (50.0%) urban parents responded no, their child with ASD did not receive the services of private occupational therapy.

When answering the question regarding private physical therapy, 6 (17.1%) parent participants indicated that their child did receive private physical therapy services while 29 (82.9%) participants indicated that their child did not receive the services of private physical therapy. For a depiction of the results, see Figure 33.

![Figure 34. Child receives private physical therapy.](image)

When this data was sorted by state, of the 6 parent participants that responded yes to this question regarding private physical therapy, 2 (33.3%) were from Michigan and 4 (13.6%) were from Ohio. On the other hand responding no to this question, 4 (66.7%) were Michigan parents and 25 (86.2%) were from Ohio.

When this data was further sorted by district type, 1 (8.3%) rural, 3 (20.0%)
suburban and 2 (25.0%) urban parent participants indicated yes, their child did receive private physical therapy services from the school district. In comparison, 11 (91.7%) rural, 12 (80.0%) suburban and 6 (75.0%) urban parent participants responded no to this question.

Parent survey participants were then asked if their child received Discrete Trial Training (DTT) or Applied Behavior Analysis (ABA) not provided by the school district. Thirty-five survey participants responded to these two questions while 36 chose not to respond.

Regarding the question of Discrete Trial Training services not provided by the school, 7 (20.6%) parents responded that their child received these services while 27 parents (79.4%) indicated that their child did not receive this type of therapy. For a depiction of the results, see Figure 34.

![Figure 34. Child receives DTT not provided by the school.](image)

Of the 7 parents that responded yes, their child did receive Discrete Trial Training not provided by the school district, 2 (33.3%) were from Michigan, 5 (17.9%) from Ohio,
with 2 (16.7%) living in a rural district, 4 (26.7%) in a suburban and 1 (14.3%) an urban school district.

Comparatively, of the parents that responded no to this same question, 4 (66.7%) were Michiganians and 23 (82.1%) Ohioans. Of these respondents, 10 (83.3%) were from a rural district, 11 (17.3%) a suburban and 6 (85.7%) an urban school district.

When asked to answer the question of whether or not their child received Applied Behavior Analysis not provided by the school district, 13 parents (37.1%) responded that their child did receive Applied Behavior Analysis not provided by the school and 22 (62.9%) responded that their child did not receive ABA therapy that was not provided by the school district. For a depiction of the results, see Figure 35.

![Figure 35. Child receives ABA not provided by the school.](image)

Of these 13 parents that responded yes to the question of ABA not provided by the school district, 3 (50.0%) live in Michigan and 10 (34.5%) in Ohio. Consequently, 4 (33.3%) lived in a rural district, 7 (46.7%) a suburban and 2 (25.0%) an urban school district. In comparison, of the 22 parents that responded no to this same question, 3
(50.0%) were from Michigan and 19 (65.5%) from Ohio. Furthermore, 8 (66.7%) responded that they lived in a rural school district, 8 (53.3%) in a suburban and 6 (75.0%) in an urban district.

The final questions of the parent survey focused on more demographic type questions that would help provide a better picture of their life situation. Parents were asked if they spent money out-of-pocket (not covered by insurance) for additional services for their child that are not provided by the school district or other agencies, did they attend or participate in an autism support group, what was their highest level of education and their income level.

Thirty-four participants responded to the question regarding money spent out-of-pocket (not covered by insurance) for additional services that are not provided by the school district or other agencies. Twenty-four (70.6%) of the respondents indicated that they did spend out-of-pocket money for services with 10 (29.4%) indicating that they did not spend any out-of-pocket money. These results are depicted in Figure 36.

---

![Figure 37](image)

**Figure 37.** Money spent out of pocket for additional services by parent.
Four (66.7%) of the parents from Michigan responded yes, they spent money out of pocket for services while 2 (33.3%) responded that they did not spend any money out of pocket for services. Twenty (71.4%) of Ohio parents responded yes to this same question, while 8 (28.6%) responded no.

Of the 12 rural parents, 8 (66.7%) responded yes to this question with 4 (33.3%) choosing no; 10 (71.4%) suburban parents indicated yes with 4 (28.6%) indicating no; and 6 (75.0%) urban parents responded yes while 2 (25.0%) answered no to this question.

Additionally, 35 parents responded to the autism support group question with 17 parents (48.6%) indicating that they attended or participated in an autism support group while 18 (51.4%) responded that they did not. For a depiction of the results, see Figure 37.

![Figure 37](image)

**Figure 37.** Parent participated in some type of support group.

Of the six Michigan parents responding to this question regarding support group participation, 5 (83.3%) indicated yes regarding participation in some type of support group with 1 (16.7%) not participating. On the other hand, 12 (41.4%) Ohio parents
responded yes to the same question with 17 (58.6%) indicating no support group participation. Seven (58.3%) rural parent respondents replied yes to this question with 5 (41.7%) indicating no participation; 7 (46.7%) suburban parents participated in a support group and 8 (53.3%) did not. Furthermore, 3 (37.5%) urban parents participated in some type of support group while 5 (62.5%) responded that they did not participate in a support group.

A total of 35 parent participants responded to the question regarding the highest level of education they had achieved. In response to the choices, 7 (20.0%) parent participants indicated receiving a high school diploma and associate/trade degree; 3 (8.6%) parents indicated a bachelor degree; 4 (11.4%) responded bachelor plus; 7 (20.0%) parent participants each indicated a graduate degree and graduate plus. For a depiction of the results, see Figure 38.

![Figure 38: Parent’s highest level of education.](image)

When responses were sorted by state, Michigan parents indicated: 0 (0.0%) had only a high school diploma; 1 (16.7%) each responded as having an associate/trade
degree, bachelor degree, and bachelor plus; 3 (50.0%) a graduate degree; 0 (0.0%) responded to graduate plus and prefer not to answer.

Ohio parent participants responded as 7 (24.1%) having a high school diploma; 6 (20.7%) associate/trade degree; 2 (6.9%) a bachelor degree; 3 (10.3%) bachelor plus; 4 (13.8%) graduate degree; 7 (24.1%) graduate plus. No Ohio parents preferred not to answer this question.

In comparison, 4 (33.3%) rural parents each selected high school diploma and associate/trade degree as the highest level of education; 1 (8.3%) each selected bachelor and bachelor plus; 2 (16.7%) graduate degree; and 0 (0.0%) selected graduate plus and the prefer not to answer selection. Two (13.3%) suburban parents each selected high school diploma and bachelor degree; 1 (6.7%) each associate/trade degree and bachelor plus; and no suburban parents chose graduate plus or prefer not to answer. Furthermore, 1 (12.5%) urban parent each selected high school diploma, and graduate plus; 2 (25.0%) each selected associate/trade degree, bachelor plus and graduate degree. There were no urban parents that preferred not to answer this question regarding level of education.

The final question of the parent survey asked participants to answer regarding the family income level. There were seven income levels and one choice of prefer not to answer. Eight (22.9%) parents responded the family income level was $35,000 or less; 6 (17.1%) selected $35,000 to under $50,000; 8 (22.9%) $50,000 to under $75,000; 7 (20.0%) parents selected $75,000 to under $100,000; 2 (5.7%) chose $100,000 to under $125,000; 1 (2.9%) selected $125,000 to under $150,000 and 2 (5.7%) indicated that the income level was $150,000 or more. One (2.9%) parent preferred not to answer this question. These results are depicted in Figure 39.
In comparison, of the six Michigan parents that responded to this question, 1 (16.7%) each had an income level of less than $35,000, between $75,000 to under $100,000 and $125,000 to under $150,000. Three (50.0%) parents selected the $50,000 to under $75,000 income level and none selected the levels of $35,000 to under $50,000, $100,000 to under $125,000 and more than $150,000. Additionally, no Michigan parents preferred not to answer this question.

Consequently, 29 Ohio parents responded to this question with 7 (24.1%) selecting less than $35,000; 6 (20.7%) selecting $35,000 to under $50,000; 5 (17.2%) $50,000 to under $75,000; 6 (20.7%) $75,000 to under $100,000; 2 choosing (6.9%) $100,000 to under $125,000; 0 (0.0%) $125,000 to under $150,000; 2 selecting more than $150,000. One (3.4%) parent indicated the choice of prefer not to answer.

When further sorted by district type, rural parents responded as: 5 (41.7%) less than $35,000; 6 (50.0%) $50,000 to under $75,000; and 1 (8.3%) $75,000 to under $100,000. No rural parents responded to the other categories of $35,000 to under $125,000.

Figure 39. Family income level.
$50,000; $100,000 to under $125,000; $125,000 to under $150,000; more than $150,000; and prefer not to answer. Suburban parents responded to this question with 2 (13.3%) indicating an income level of less than $35,000; 1 (6.7%) each selected $35,000 to under $50,000 and $50,000 to under $75,000; 6 (40.0%) had $75,000 to under $100,000; another 1 (6.7)% each selected $100,000 to under $125,000 and $125,000 to under $150,000; 2 (13.3%) parents chose more than $150,000; 1 (6.7%) preferred not to answer this question.

Of the eight urban parents that answered this question, 1 (12.5%) each had an income level of $35,000 or less; $50,000 to under $75,000 and $100,000 to under $125,000. Another 5 (62.5%) earned $35,000 to under $50,000. No urban parents selected the income levels of $75,000 to under $100,000; $125,000 to under $150,000 and more than $150,000. Furthermore, no urban parents preferred to not answer this question.

Conclusion

It is important to remember that even though there is no cure for autism, the 2001 report from the National Research Council’s report details specific recommendations for intervention services for children on the autism spectrum. The earlier and more intense the intervention, the greater the possibility of reducing affects of this life-long disorder. This notion is reinforced by the Autism Society of America (n.d.), “Experts agree though, that early intervention is important in addressing the symptoms associated with autism. The earlier treatment is started, the better the chance the child will reach normal functioning levels” (ASA Guidelines, General Standards of Care section, ¶8).

Even though this report and recommendations were issued more than 6 years ago,
it is quite evident after analyzing the research data that many school districts are not providing what is needed for intense intervention and many parents are struggling with finding and receiving the interventions and services that are necessary for their child with ASD.

Using the research data, Chapter 5 will provide a discussion of implications, conclusions and future recommendations for school districts, parents and future research.
Chapter 5
Discussion, Conclusions and Recommendations

Introduction

The diagnosis of autism is increasing at alarming rates. Based on the Center for Disease Control and Prevention’s (CDC) February 8, 2007 press release *New Data on Autism Spectrum Disorders (ASDs) from Multiple Communities in the United States*, autism now affects 1 in 150 births. This report is noteworthy as the disorder and its affects are becoming more prevalent in the media due to increased awareness and research.

More important than the CDC statistical reports on the prevalence of ASD and the attempt to measure the number of children with an ASD, the report also considered when signs of developmental concerns were first noticed by parents and others. The studies discovered that between 51% and 88% of children diagnosed with an ASD had at least one documented developmental concern before their third birthday (Center for Disease Control and Prevention, Media Relations, Press Release, February 8, 2007).

“Research indicates that early diagnosis is associated with dramatically better outcomes for individuals with autism. The earlier a child is diagnosed, the earlier the child can begin benefiting from one of the many specialized intervention approaches” (Autism Society of America, What is Autism: Diagnosis & Consultation, Early Diagnosis...
Section, n.d.). Landa (2007) reinforces the benefits of early intervention stating, “better communication skills translate into better prognosis, a reduction in maladaptive behaviors [Reichle et al., 1991], and new learning opportunities that yield additional access to information about and through others [Yoder and Warren, 1999]” (p. 19).

It is recommended that children with ASD actively participate in an intense instructional program for a minimum of a comparable full school day for 5 days a week with a minimum of 25 hours a week for a full year (National Research Council, 2001). If early intervention is the key to improvement, consisting of better communication skills and the reduction of atypical behaviors, then why aren’t school districts following these recommendations and guidelines set forth in 2001?

With the National Research Council’s 2001 recommendations in mind, this researcher began a descriptive study of what public school districts in Michigan and Ohio were doing in order to follow these guidelines and recommendations.

Discussion

The original research predictions revolved around the National Research Council’s 2001 report, Educating Children with Autism. The research predictions were threefold: school districts are not providing the recommended year around 25 hours a week intervention; parents are not satisfied with the services provided by the districts; and parents are providing additional interventions that are not provided by the school district.

In order to substantiate these predictions, the research addressed several key questions:

1. How many hours a week of intervention are public school districts providing
students on the autism spectrum?

2. Which programs are school districts using for early intervention?

3. Are parents bridging the gap between intervention hours provided by the public school district and the number of recommended hours, and if so, how?

In order to answer these questions, a survey of public school districts in Ohio and Michigan was conducted to determine what programs are being used by the districts and how many hours of intervention a week are typically provided to their students on the autism spectrum. Furthermore, parents were surveyed to learn if and how they bridge the gap between hours recommended by experts and hours provided by the school.

Results

When considering the research, it is important to remember autism experts recommend that children with ASD actively participate in an intense instructional program for a minimum of a comparable full school day for 5 days a week with a minimum of 25 hours a week for a full year (National Research Council, 2001).

School district results.

Results from the school district survey will be discussed. These results validated the research predictions that the majority of school districts were not following the recommendations outlined in the 2001 report by the National Research Council on educating children with autism.

Hours a week. Results of the study validated the research predictions. The vast majority of school districts are not following the recommendations set forth by the National
Research Council and are not providing the recommended number of hours of intervention. When summarizing the school district data, only nine districts responded in a manner that met recommendations: eight (10.80%) responded with between 21 and 25 hours a week with only one (1.40%) school district responding that students attended school six or more hours a week.

Individual state data further illustrates the lack of intervention hours provided to students with ASD aged 3 to 6 and not yet in kindergarten. Only two Michigan districts responded that children attended intervention programs between 21 and 25 hours a week and more than 26 hours a week. In comparison, seven (13.2%) districts responded that students attended school 21 to 25 hours a week. Alarmingly, zero (0%) Ohio districts responded that students attended school more than 26 hours a week.

Furthermore, when the data was analyzed by school district type, 13.7% of rural, 13.5% of suburban and 0% of urban districts reported that students attended school at least 21 to 25 hours a week. Of these, only the rural district reported that one student (3.4%) attended school more than 26 hours a week.

Days a week. The data regarding the number of days a week children with ASD ages 3-6 not yet in kindergarten attend school were just as dismal. Research results overwhelmingly indicated that school districts were not following the recommendation of the National Research Council regarding the number of days a week of intervention a child with ASD should have. Out of the 76 respondents, only 16 (21.6%) responded that children in their district attended school 5 days a week with another 18 (24.3%) responding that the number of days varied based on the IEP.

Michigan and Ohio district data illustrates this lack of following the expert
recommendations of 5 days a week of attendance. Eight (38.1%) Michigan districts reported students attended school 5 days a week and 7 (33.3%) responded that the days varied based on the student’s IEP. In comparison, 8 (15.1%) Ohio district reported that student attended school 5 days a week with 11 (20.8%) responding that the days children attended intervention varied based on their IEP.

Rural, suburban and urban districts filtered responses to this question also indicated an extremely low number that followed the expert recommendations. Three rural (10.3%) districts reported children attend 5 days a week and 10 (34.5%) indicated that the number of days varied depending on the child’s IEP. In comparison, 10 (27.0%) suburban districts indicated children attend school 5 days a week and 7 (18.9%) indicated that the number of days a week varied depending on the child’s IEP. On the other hand, 3 (37.5%) urban districts responded to the category of 5 days a week and 1 (12.5%) indicated that the number of days a week of intervention varied due to the child’s IEP.

Weeks a year. Furthermore, when the research was analyzed regarding the number of weeks a year children with ASD ages 3-6 not yet in kindergarten attended school, out of the 74 participants that chose to answer this question, only 26 (35.1%) responded 36 or more weeks a year.

Michigan districts responded to this same question with 11 (52.4%) indicating 36 or more weeks a year of intervention. In comparison, Ohio districts responded with 15 (28.3%) providing 36 or more weeks of intervention. Rural, suburban and urban districts responses indicate much the same: 6 (20.7%) rural, 17 (45.9%) suburban and 3 (37.5%) urban districts indicated providing 36 or more weeks a year of intervention.
Once again, it is important to acknowledge the National Research Council (2001) recommends that children with ASD actively participate in an intense instructional program for a minimum of a comparable full school day for 5 days a week with a minimum of 25 hours a week for a full year. The data indicated above clearly indicates this is not happening in school districts in Ohio and Michigan and is this is illustrated in Figure 8: *Number of Weekly Instructional Hours for ASD Students Ages 3-6 Not Yet in Kindergarten* (see page 57); Figure 9: *Number of Days a Week Children with ASD ages 3-6 Not Yet in Kindergarten Attend School* (see page 58); and Figure 10: *Number of Weeks a Year Children with ASD ages 3-6 Not Yet in Kindergarten Attend School* (see page 60).

**Parent results.**

The research data regarding the number of hours a day, the days a week, and the number of weeks a year a child diagnosed with ASD aged 3 to 6 and not yet in kindergarten attends school is further illustrated in the ensuing results from the parent surveys.

**Hours a week.** Of the 35 parent participants that responded to the question regarding the number of hours a week their child diagnosed with ASD attended school, only 2 (5.7%) answered between 21 and 25 hours a week with 4 (11.4%) parents responding that their child attended school 26 or more hours a week. Unfortunately, no Michigan parents reported their child diagnosed with ASD attended school 21 to 25 hours a week and only 2 (33.3%) parents reported attendance at 26 or more hours a week. Additionally, 2 (6.9%)
Ohio parents each reported their child diagnosed with ASD attended school between 21 and 25 hours a week and more than 26 hours a week of school attendance.

Data by school district type revealed only 2 (16.7%) rural parents of children diagnosed with ASD each selected 21 to 25 hours and more than 26 hours a week of school. In suburban districts, 0 (0%) parents reported 21 to 25 hours a week with 1 (6.7%) reporting more than 26 hours a week. Furthermore, of the 8 urban parents none reported their child attending school 21 to 25 hours a week with only 1 (12.5%) reporting more than 26 hours a week of attendance.

Days a week. Parents responding to the number of days a week their child with ASD ages 3-6 not yet in kindergarten attended school indicated that out of the 35 that answered this question, only 11 (31.40%) reported their child attended school 5 days a week. Michigan and Ohio parent responses were similar. Three (50.0%) Michigan parents reported their child attended school 5 days a week while 8 (27.6%) Ohio parents reported five days a week of attendance.

Broken down by district type, the parent data further indicated that 8 (27.6%) rural districts reported their students attended school 5 days a week. In comparison, 3 (20.0%) parents in suburban districts reported 5 days a week with 5 (62.5%) urban parents reporting 5 days a week of attendance.

When considering the research, it is important to remember autism experts recommend that children with ASD actively participate in an intense instructional program for a minimum of a comparable full school day for 5 days a week with a minimum of 25 hours a week for a full year (National Research Council, 2001).
Weeks a year. When parents were asked the question of how many weeks a year their child with ASD ages 3-6 not yet in kindergarten attend school, 35 participants answered this question with 16 (45.7%) responding 36 or more weeks a year. Of these 35 respondents, 3 (50.0%) Michigan parents reported their child attended school 36 or more weeks a week, while 13 (44.8%) Ohio parents reported the same.

In comparing by district type, 5 (41.7%) parents in rural districts reported their child attending more than 36 weeks a year, while 7 (46.7%) suburban parents and 4 (50.0%) urban parents answered in the same manner.

The data in Figures 23, 24, and 25 illustrate that according to the parent survey respondents these recommendations are not being met. Two parents (5.7%) indicated that their child attended school between 21 and 25 hours a week with only four (11.4%) of parents responding that their child attends school more than 25 hours a week. An astounding 82.8% of parent respondents indicate that their child with ASD aged 3 to 6 not yet in kindergarten is attending school less than 21 hours a week.

After reviewing and analyzing the data from both the school districts and parents regarding the amount of intervention received, the researcher’s first two predictions regarding school districts not providing the recommended year around 25 hours a week of intervention have been validated.

Parent Additional Interventions and Services

Parents were surveyed to gather data regarding the interventions and services their child received that were not provided by the school district. Questions pertained to
private services, such as speech and occupational therapy, as well as interventions, such as ABA and DTT.

**Private Services**

In the parent survey, there were five questions posed to parents regarding services not provided by the school district. These questions dealt with private speech, occupational and physical therapy. Two questions pertained to specific recognized intervention therapies: ABA and DTT.

A total of 35 participants responded to the question of whether or not their child received private speech therapy with 23 (65.7%) parent participants responding that their child received private speech therapy. When analyzed by state, 3 (50.0%) were from Michigan and 20 (69.0%) were from Ohio. Furthermore, 7 (58.3%) rural, 11 (73.3%) suburban and 5 (62.5%) urban respondents indicated that their child received private speech therapy.

Thirty-five parents also responded to the private occupational therapy question, with 22 (62.9%) responding that their child received private occupational therapy. Five of these 22 parents were from Michigan and 17 from Ohio. In comparison, 6 (50.0%) rural, 12 (80.0%) suburban and 4 (50.0%) urban respondents indicated that their child received private speech therapy.

For the third question regarding private physical therapy, 6 parents (17.1%) out of 35 indicated that their child did receive this service. Of the 6 parent participants that responded yes to this question 2 were from Michigan and 4 from Ohio.

When this data was then sorted by district type, 1 (8.3%) rural, 3 (20.0%) suburban and 2 (25.0%) urban parents indicated their child did receive private physical
therapy services.

Additional Interventions

Parent survey participants were asked if their child received Discrete Trial Training (DTT) or Applied Behavior Analysis (ABA) not provided by the school district. Thirty-five survey participants responded to these two questions.

Regarding the question of Discrete Trial Training services not provided by the school, 7 (20.6%) parents responded that their child received these additional interventions not provided by the school district. Of the 7 parents that responded yes to this question, 2 were from Michigan and 5 from Ohio, with 2 (16.7%) living in a rural district, 4 (26.7%) suburban and 1 (14.3%) urban.

When asked to answer the question or whether or not their child received Applied Behavior Analysis not provided by the school district, 13 parents (37.1%) responded that their child received Applied Behavior Analysis not provided by the school. Of the 13 parents that responded yes to this question 3 lived in Michigan and 10 in Ohio. Consequently, 4 (33.3%) lived in a rural district, 7 (46.7%) a suburban and 2 (25.0%) an urban school district.

Parents were also asked if they spent money out-of-pocket (not covered by insurance) for additional services for their child that are not provided by the school district or other agencies. Thirty-four participants responded to this question with 24 (70.6%) of the respondents reporting that they did spend out-of-pocket money for services. Four of the parents were from Michigan and 20 from Ohio. Furthermore, 8 (66.7%) parents living in a rural district responded yes to this question, with 10 (71.4%) suburban parents and 6 (75.0%) urban parents responding the same.
This data clearly indicates that parents are providing additional interventions that are not provided by the school district, while spending money out of their own pocket for these services and interventions.

**Implications of Results**

There are many implications regarding the results of this survey, especially in the educational and societal settings. If the results of this research is what would be found in other areas of the country, then major implications regarding autism education and what is not being done to provide crucial early intervention is staggering.

Current and past research indicates that the sooner a child with ASD receives appropriate intervention based on the National Research Council’s recommendations, the better the chances are to decrease deficits in language, socialization, and integrating into the community (Ben-Itzchak & Zachor, 2006; Corsello, 2006; Forest et al., 2004; Freeman, 1997; Green, 1996; Jacobson et al., 1998; Kasari, 2003; Matson, 2007; McGovern & Signan, 2005; Reynolds, 1995; Steele, 2004; Zachor et al., 2007).

A recent study by Zachor, Ben-Itzchak, Rabinovich, & Lahat (2007) illustrates that significant improvement of very young children with autism can occur when given early intervention. This study also found that the type of intervention applied has a major impact on the progress of these children. Zachor et al. (2007) found that a change in the core symptoms of autism is more evident with intervention that is based on ABA principles in comparison to an eclectic intervention approach.

If intervention based on ABA principles is shown to help change the core symptoms of autism, then it would be a commonsense addition to a school district’s early intervention program, yet the research results do not indicate this. According to results
obtained from this research study, a full 50% of the 74 school districts that responded indicated they used an intervention program that was not ABA, DTT, TEACCH or Floor Time. Additionally, of the 35 parents that responded to the research survey, 62.9% indicated that their child’s school did not use ABA, DTT, TEACCH or Floor Time as the program used for intervention. Furthermore, 57.1% (20) of the 35 parents that responded indicated that their child received ABA or DTT not provided by the school.

Understandably, the cost associated with small group intervention is expensive. Many school districts balk at one-on-one instruction and do not take into consideration that by utilizing an early intense behavioral intervention (EIBI), later education costs can be reduced. This theory is supported by Chasson et al. (2007):

…while costs for EIBI per year are higher than the costs for special education, EIBI only lasts for an average of three years with a substantial portion of the children mainstreaming into regular education, minimizing the need for additional special education funds for the remainder of childhood. (p. 403)

Exacerbating the problem of the lack of early intervention is the lack of insurance coverage for the services. Insurance companies routinely do not cover the cost associated with autism therapies. Who then bridges the gap? Often parents of children on the autism spectrum do by spending inordinate amounts of money in order to provide the necessary programs for their child in the hope of reducing the dire affects of this oftentimes debilitating disorder.

Several parent respondents made comments regarding the cost of services not covered by insurance or school districts:

1. We did have private therapies for our son. Speech and Occupational, but
insurance did not cover so we had to drop due to the expense.

2. We apend [sic] a lot of time and money to help our son b/c the school does not provide....

3. We also pay privately for an aide to accompany our son to his preschool five days a week.

4. Took him out of public school and put him in private with the Ohio Autism Scholarship but I still will have to pay 280/month on top of the 20,000 per year that the scholarship pays!

However, this lack of insurance coverage is starting to change. In Ohio, H.B. 170 would prohibit health insurers from excluding coverage for autism. Under Ohio House bill 170, fully insured health plans would be required to cover the diagnosis and treatment for autism. Advocates propose this inclusion would give children with autism exposure to the early treatment that would benefit them for the rest of their lives. Currently, many insurance plans cover the diagnosis of the disorder, but not the subsequent treatment plans or programs (Associated Press, 2007). Additionally, Michigan is also looking at insurance reform regarding mandated insurance coverage for those diagnosed with autism (Autism Society of Michigan, 2008).

What are the societal costs going to be if these children with ASD do not get the early intervention that is crucial to future improvement? Couper (2004), a professor at the University of Adelaide, South Australia, Australia, calls for more advocacy from her colleagues:

While there may be unanswered questions as to how intensive intervention is best practiced for different children they will recognize that the usual public
commitment to fund evidence based therapy for a common and severe childhood disorder is lacking. Nor do unanswered questions deter us from providing intensive therapy in other severe childhood disorders. As paediatricians, we prescribe and supervise costly public funded treatments with no more or less outcome basis than that for IBI in the treatment of autism. For example, society accepts the cost of growth hormone therapy for non-growth hormone deficient children, enzyme replacement in Gaucher’s disease, cardiac transplantation in neonatal hypoplastic left heart syndrome, inhaled pulmozyme therapy in cystic fibrosis, and the resuscitation and care of preterm infants less than 25 weeks gestation. While parents must be the prime advocates for children, an objective voice from the profession would now strengthen their advocacy.

Contribution of the Study

This research study contributes to the current societal and educational discussion and debate of what to do with the massive increase of children with autism spectrum disorder. More specifically, this research will greatly contribute to the discussion of the importance of early intervention services for children afflicted with an autism spectrum disorder.

With the increase in diagnosis of autism comes an increase in awareness of this debilitating disorder. However, many people are still unaware of the scale of what all is involved in educating a child on the spectrum and the financial costs of doing so, both currently and in the future.

Additionally, this research has allowed, in the simplest of terms, the opportunity for school district administrators to reflect on what is currently being done in their district
and what more could or should be done to educate children with ASD. Most educators went into the profession with the common notion of being able to positively impact and benefit children. When comparing what is currently being done in their district to the recommendations of the National Research Council, this reflection will more than likely be an overwhelming experience producing strong feelings and discussions.

Furthermore, this research project clearly illustrates that children diagnosed with ASD are not receiving a comprehensive and educationally sound form of intervention that conforms to the National Research Council’s recommendations of active participation in an intense instructional program for a minimum of a comparable full school day for 5 days a week with a minimum of 25 hours a week for a full year.

Limitations of the Study

There were several limitations to this research study. One limitation is the sample size itself. Unfortunately, due to time and costs issues, this study could not be conducted over a larger part of the country. Another limitation to this study was the lack of a response from some school districts. Data cannot be considered if it is not received.

Additionally, the ability of the responder to determine and gather the correct requested information is a limitation. Many times, gathering this type of information is difficult for several reasons. For example, in Ohio, preschoolers are labeled as preschoolers with a disability and do not receive a specific label, such as cognitively disabled, medically handicapped or autistic until entering school as a kindergartener. Unless the district has a specific diagnosis for such children and is willing to share this specific information, determination of exact numbers may be difficult.

Additional limitations to the research related to the type of early intervention
program used. Types of early intervention programs used by school districts were not taken into effect. It was not asked whether the program used was a part time program or a full time program.

Another limitation to the research was the researcher created survey which was not norm-referenced. This non-norm referenced survey was deemed more appropriate than a norm-referenced one in order to collect research specific data. Survey validation was accomplished socially by a panel of experts.

Assumptions of the Study

Perceived discrepancies in the research regarding the number of hours a week and days a week of early intervention programs are due to it being assumed that programs were full day, full week programs, which is not the case in the majority of school districts. Preschool programs differ between districts.

Recommendations for Future Research

This study could serve as a catalyst for other researchers to evaluate what is going on in other areas of the country. Data could be gathered and analyzed to determine if results are representative of other school districts in other areas.

In addition to the data researched in this survey, more detailed information regarding preschool early intervention programs would be beneficial. This information would be more specific to the type of program utilized, such as full time or part time program, the number of days a week and the number of hours a week for the program. Acquiring more accurate data related to the program in place, such as the intervention approach used, would allow for more detailed results.
Future research could include more detailed information from parents regarding types of interventions services their child received prior to age three, how they learned about these services and how these services were provided and paid for.

In addition, further studies may look at the results of early intervention and the need for educational assistance of these same children in their latter school years. This could be done in the form of a longitudinal study.

Conclusion

The results of this study indicate that school districts in Michigan and Ohio are not following the National Research Council’s recommendations regarding early intervention services. This research study met its purpose, which was to bridge the gap in the literature regarding early intervention recommendations and an analysis of the programs school districts use for intervention. This descriptive research did this by looking at what is being done by school districts and parents to educate children on the autism spectrum.

The main findings of the research indicate that school districts are not following the recommendations set forth by the National Research Council’s 2001 study, *Educating Children with Autism*. Intervention programs are severly lacking in the states of Michigan and Ohio, school districts are either not knowledgeable about what constitutes best practice regarding children with ASD, or do not have the resources necessary to implement these best practices. Some parents are bridging gaps in service at huge economic costs to their families. Parents do this in order to provide and procure the therapies and services needed which will permit their children the opportunity to lessen the debilitating affects of this life-long disorder. By paying for much needed services out
of their own pockets, their children are allowed the opportunity to become the best person they can while afflicted with this disorder.

There is no clear cut solution to this problem. As one Ohio administrator responding to the survey aptly commented, “This is an increasingly growing diagnosis, but funding has not kept pace with the student needs. The burden of providing special education services is continuing to be placed on the local tax payers . . . The issue should be between the school and legislators.”
References


Associated Press. (November 8, 2007). *Bill would require insurance plans to cover autism treatment.*


early childhood program (Rev. ed.). Washington, DC: NAEYC


H. Brookes.


Appendix A

Autism Early Intervention School Survey

**Directions:** Please circle the letter that best fits your district.

1. What state is your district in?
   a. Michigan
   b. Ohio

2. Your school district is considered:
   a. Rural
   b. Suburban
   c. Urban

3. What is the total number of students enrolled in your district?
   a. 1-1,000
   b. 1,001 – 5,000
   c. 5,001 – 10,000
   d. 10,001- 20,000
   e. more than 20,000

4. How many are special needs students?
   a. 1-100
   b. 101-300
   c. 301-500
   d. 501-1,000
   e. more than 1,000

**Autism Specific Questions**

5. Does your district have students identified as having Autism Spectrum Disorder (ASD)?
   a. 0 . . . Your survey is complete. Thank you for your assistance!
   b. 1 – 25
   c. 26 – 50
   d. 51 – 100
6. How many of these students with ASD are ages 3-6 and not yet in kindergarten?
   a. 1 – 10
   b. 11 – 20
   c. 21 – 30
   d. 31 – 40
   e. more than 40

7. What program(s) does your district use for early intervention for these students with ASD ages 3-5 that are not yet in kindergarten? Please select all that apply.
   a. Applied Behavior Analysis (ABA)
   b. Discrete Trial Training (DTT)
   c. TEAACH (Treatment and Education of Autistic and Related Communication-Handicapped Children)
   d. Floor time
   e. Other program not listed (please describe below)

Description of programs from answer E:

8. How many hours a week of one-on-one or small group instruction does your district provide to these children with ASD ages 3-6 not yet in kindergarten?
   a. 0-5
   b. 6-10
   c. 11-15
   d. 16-20
   e. 21-25
   f. 26 or more

9. How many days a week do these children with ASD ages 3-6 not yet in kindergarten
attends school?
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5

10. How many **weeks a year** do these children with ASD ages 3-6 not yet in kindergarten attend school?
   a. 18 or less
   b. 19 - 36
   c. 36 or more

11. What percentage of ALL the district’s students with ASD require **special transportation**?
   a. 0 – 25%
   b. 26 – 50%
   c. 51 – 75%
   d. 76 – 100%

12. What percentage of ALL the district’s students with ASD require **speech therapy**?
   a. 0 – 25%
   b. 26 – 50%
   c. 51 – 75%
   d. 76 – 100%

13. What percentage of ALL the district’s students with ASD require **occupational therapy**?
   a. 0 – 25%
   b. 26 – 50%
   c. 51 – 75%
   d. 76 – 100%

14. What percentage of ALL the district’s students with ASD require **physical therapy**?
   a. 0 – 25%
   b. 26 – 50%
c. 51 – 75%

d. 76 – 100%

15. What percentage of ALL the district’s students with ASD require their own aide?
   a. 0 – 25%
   b. 26 – 50%
   c. 51 – 75%
   d. 76 – 100%

16. Does your district have an Autism Specialist?
   a. yes
   b. no

Additional Comments

__________________________________________________________________________

__________________________________________________________________________
Appendix B
Survey for Parents of Children with Autism Ages 3 to 6 Not Yet in Kindergarten

Directions: Please circle the letter that best answers the question.

1. What state do you live in?
   a. Michigan
   b. Ohio

2. Your school district is considered:
   a. Rural
   b. Suburban
   c. Urban

3. How old is your child that has ASD?
   a. 3
   b. 4
   c. 5

4. How long has your child had an ASD diagnosis?  
   Please answer in number of months
   ___________ months

5. What type of school does your child attend?
   a. public
   b. parochial
   c. private
   d. charter/community school
   e. home-based program

6. What program(s) does your district use for early intervention for these students with ASD ages 3-6 that are not yet in kindergarten?
   a. Applied Behavior Analysis (ABA)
   b. Discrete Trial Training (DTT)
   c. TEAACH (Treatment and Education of Autistic and Related Communication-Handicapped Children)
d. Floor Time
e. Other program not listed (please describe below)
f. Not sure

Description of programs from answer E:

7. How many hours a week does your children attend school?
   a. 0-5
   b. 6-10
   c. 11-15
   d. 16-20
   e. 21-25
   f. 26 or more

8. How many days a week does your child attend school?
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5

9. How many weeks a year does your child attend school?
   a. 18 or less
   b. 19-36
   c. 36 or more

10. Does your child receive special transportation from their school district?
    a. yes
    b. no

11. Does your child receive speech therapy from their school district?
12. Does your child receive occupational therapy from their school district?
   a. yes
   b. no

13. Does your child receive physical therapy from their school district?
   a. yes
   b. no

14. Does your child have their own aide at school?
   a. yes
   b. no

15. Does your child receive private speech therapy?
   a. yes
   b. no

16. Does your child receive private occupational therapy?
   a. yes
   b. no

17. Does your child receive private physical therapy?
   a. yes
   b. no

18. Does your child receive Discrete Trial Training (DTT) not provided by the school?
   a. yes
   b. no

19. Does your child receive Applied Behavior Analysis (ABA) not provided by the school?
   a. yes
   b. no
20. Do you spend money out-of-pocket (not covered by insurance) for additional services for your child that are not provided by the school district or other agencies?
   a. yes
   b. no

21. Do you attend or participate in an Autism support group?
   a. yes
   b. no

22. What is the highest level of education you have completed?
   a. High school diploma or equivalent
   b. Associate or trade school degree
   c. Bachelor degree
   d. Bachelor’s plus
   e. Graduate degree
   f. Graduate plus

23. What is your income level?
   a. Under $35,000
   b. $35,000 to under $50,000
   c. $50,000 to under $75,000
   d. $75,000 to under $100,000
   e. $100,000 to under $125,000
   f. $125,000 to under $150,000
   g. prefer not to answer

Additional Comments

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________