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# Perceived Levels of Confidence and Knowledge of Autism Between Paraprofessionals in Kentucky Schools and Parents of Children with Autism

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PERCEIVED LEVELS OF CONFIDENCE AND KNOWLEDGE OF AUTISM AMONG SPECIAL  
EDUCATION PARAPROFESSIONALS IN KENTUCKY SCHOOLS AND PARENTS OF CHILDREN  
WITH AUTISM

By

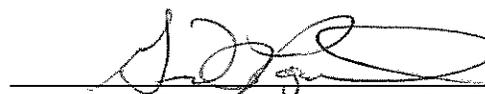
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PERCEIVED LEVELS OF CONFIDENCE AND KNOWLEDGE OF AUTISM  
BETWEEN PARAPROFESSIONALS IN KENTUCKY SCHOOLS AND PARENTS  
OF CHILDREN WITH AUTISM

By

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Bachelor of Science in Communication Disorders  
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Richmond, Kentucky  
2012

Submitted to the Faculty of the Graduate School of  
Eastern Kentucky University  
in partial fulfillment of the requirements  
for the degree of  
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## DEDICATION

This thesis is dedicated to my parents, Donald and Zelphia Baker, who have always told me that I was capable of achieving anything that I set my mind to. Their encouragement, unwavering love and support and constant sacrifices have allowed me to accomplish my dreams. I would also like to dedicate this thesis to my nephew, Caleb, who inspires me daily. I am eternally grateful to have such amazing people in my life.

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## ABSTRACT

A total of 173 special education paraprofessionals and 49 parents of children with autism responded to a survey investigating perceived levels of confidence and knowledge of autism. The purpose of this study was to determine if paraprofessionals assigned to children with autism in Kentucky public schools were adequately trained, skilled and knowledgeable in their provision of services to children with autism. Parents scored significantly higher in their amount of autism knowledge when compared to paraprofessionals. Paraprofessionals were found to be significantly more confident in their ability to provide instructional support to children diagnosed with autism than were the parents. Results of this study indicated a lack of knowledge in autism among paraprofessionals hired to work with children with autism. Further, parents were not confident in the paraprofessionals' knowledge of autism, amount of training received in autism or ability to provide instructional support to children diagnosed with autism. These findings have serious implications for children diagnosed with autism in the public school system. They suggest that additional trainings and/or workshops in autism are needed for paraprofessionals. Further, results suggest that the qualifications and previous experience of paraprofessionals need to be carefully considered during the hiring process to ensure the most qualified candidates were selected to work with such a complex, growing population.

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## CHAPTER ONE

### Introduction

As surges in the number of children diagnosed with autism continue to rise across the state, much attention has been focused on educators who face the daunting task of providing an appropriate education for such a growing, diverse population. Issues with teacher qualifications, training, teacher shortages and adequate knowledge in autism have been identified; however, one critical role in the special education program that may often times be undermined and overlooked is the role of the special education paraprofessional. In fact, paraprofessionals who provide support to children with disabilities were once identified as the fastest growing personnel category in the special education program (Young, Simpson, Myles & Kamps, 1997). As more and more children diagnosed with autism are entering the Kentucky public school system, the need for paraprofessionals to provide instructional support is high; however, their utilization, roles, responsibilities and overall qualifications for their respective positions is in question.

According to the Centers for Disease Control (2012) an estimated 1 in 88 children are being diagnosed with an autism spectrum disorder (ASD). Scheuermann, Weber, Boutot and Goodwin (2003) stated that children with autism exhibit unique characteristics that may create problems in the classroom and challenges for the teacher. This can result in the use of a paraprofessional hired to provide one-to-one daily instruction. Paraprofessionals employed in the school setting are assistants who perform supervised tasks assigned by qualified professionals, such as the special education teacher. According to Giangreco and Broer (2005) there is a general consensus in the

literature that schools should hire the most qualified paraprofessionals possible. Some schools are able to find or train highly skilled paraprofessionals. Other schools hire paraprofessionals who struggle with academic skills themselves, making it difficult to provide support to students (Giangreco & Doyle, 2002). Scheuermann et al. (2003) state that because many students spend more instructional time with the paraprofessional than with anyone else in the school, it is essential that they be skilled in teaching techniques that maximize instruction time.

Little research is available on paraprofessionals in special education (Giangreco & Broer, 2005). Only one research study was located in the literature that was conducted to determine the factual autism knowledge of school personnel working directly and indirectly with students with autism (Williams, Schroeder, Carvalho, & Cervantes, 2011). Given the scarcity of research on such an important topic, the following objectives were set for this study:

- 1) to determine special educational paraprofessionals knowledge of autism;
- 2) to compare their knowledge of autism to the knowledge of parents of children with autism;
- 3) to determine special education paraprofessional's perceived levels of confidence in providing instructional support to children with autism; and
- 4) to determine parent's perceived levels of confidence in the paraprofessional's ability to provide services to children with autism.

## CHAPTER TWO

### Review of Literature

#### **History of Autism**

The history of autism has been a troubled one. Countless efforts have been made in an attempt to define, assess and subsequently treat the mystery disorder which, despite years of tireless research, still has no known cause and no known cure. So it comes as no surprise that early attempts at defining the disorder and theories surrounding its etiology have suffered some minor and major setbacks since the appearance of the term over 100 years ago. Since then, our knowledge and understanding of autism has flourished, and the once indefinable condition has become the fastest growing disability in the United States (McCoy, 2011).

Blueler coined the term ‘autism’ in the early 1900’s to describe the social isolation behaviors seen in individuals with schizophrenia (Aspy & Grossman, 2008). The term was used again some 30 years later by Dr. Leo Kanner who, in an attempt to describe the strange behaviors of a group of 11 children, used the term “infantile autism” to account for the peculiar behavioral characteristics he recognized as being unique from any he had ever encountered (Mesibov, Adams, & Klinger, 1997). The children he observed presented with an inability to establish and reciprocate contact with others, an unusual interest in inanimate objects and an obsessive focus in their own personal interests. (Mesibov et al., 1997). Dr. Kanner illustrated this behavioral feature best when

describing one of the children: “he seems almost to draw into his shell and live within himself” (Best Behaviour Consulting, 2010, p.1).

Dr. Kanner recognized social isolation as a common feature between autism and schizophrenia. He stressed that the type of social isolation experienced in autism was what differentiated the two disorders, stating that children with autism were born with this “*extreme autistic aloneness*,” making them oblivious to the world around them and comfortable in their solitude (Mesibov et al., 1997). Further, Dr. Kanner listed three characteristics in schizophrenia that were not present in autism including hallucinations, more-frequent reports of psychosis in the family history and a later presentation of its most common symptom: psychosis (Mesibov et al., 1997).

The exact cause of autism was speculated by theorists for years following Dr. Kanner’s explanation of the disorder in the early 1940’s. Psychoanalytic theory suggested parents were at the root of the problem, proposing that autism resulted from the child’s inability to relate to others in his/her environment, particularly the parents. Psychoanalysts suggested that autism was caused by a disorder in emotional development, rendering the child incapable of forming object relationships, and preventing their transition from one developmental level to the next which could ultimately be treated by nurturant mothering (Mesibov et al., 1997; Rutter, 1971). Psychologist Bruno Bettelheim suggested that autism was a result of “refrigerator mothers,” who denied their children love and affection. His remedy for treatment was complete physical removal from the child’s biological parents and placement in the hands of nurturing staff who provided the child with the emotional care he had been so long

denied. Fortunately, an end was seen to psychoanalytic theory after mounting evidence in support of biological links to autism came into circulation.

### **Etiology**

Despite continuous efforts and innumerable studies hypothesizing a definitive cause of the disorder, a single word resonates through the literature describing the origins of autism: its largely *unknown*. The complexity of causation has compelled researchers to believe that one definitive source for the development of autism is unlikely to be unveiled, rather a combination of different factors, one influencing the other (McCoy, 2011). Nature, nurture, or combinations of the two have been hypothesized as being contributing factors to the development of autism. Risk factors have also been identified suggesting that some individuals may be more susceptible to the disorder than others (McCoy, 2011).

Twin studies in the late 1970's were conducted to determine if autism was a result of genetic factors. Folstein and Rutter (1977) compared the genetic make-up of same sex twins and found that 4 of 11 monozygotic pairs and 0 of 10 dizygotic pairs were consistent for autism. This finding suggested that there was a genetic component to the causation of the disorder; however, doubt lingered due to the number of monozygotic pairs whose make-up was inconsistent with the disorder (McCoy, 2011). Still, hope for a better understanding of its cause remained as Folstein and Rutter discovered that while autism was not found in all monozygotic pairs, social, communication or cognitive impairments were found in several of the children who were not diagnosed as having the disorder (Folstein & Rutter, 1977).

Studies such as these have strongly suggested an underlying genetic factor in autism but have also pointed out that it is not entirely to blame. At least 40% of the cases of autism are attributed to an environmental cause (McCoy, 2011; Hertz-Picciotto, Croen, Hansen, Jones, van de Water & Pessah, 2006). Environmental factors such as maternal drug use during pre- and perinatal stages of development may contribute to the development of autism (McCoy, 2011). Stressors such as complications during the birthing process and the psychological condition of the mother during pregnancy have also been suggested as being contributors to the disorder. Researchers have not been able to conclusively identify specific pre-natal and perinatal environmental factors that cause the disorder (McCoy, 2011). The Centers for Disease Control (2012) summarizes some of the current etiological autism research regarding specific risk factors including family history, the presence of certain chromosomal or genetic conditions in the individual diagnosed, premature births and drugs taken during pregnancy were among the factors listed as being elements that increase the likelihood of the development of autism. Much progress has been made in the field of autism research. What was once thought to be nothing more than a product of less than adequate parenting has since created a nature versus nurture battle, improving our methods of assessment, identification, diagnosis and treatment.

### **Definitions of Autism**

Several definitions of autism exist in the literature. Autism has been described as a “strange and increasingly more commonly diagnosed condition that is one of a group of neurological disorders that compose the autism spectrum disorder” (McCoy, 2011, p. 3). The Centers for Disease Control (2012) defines autism spectrum disorders as

“developmental disabilities that can cause significant impairments in social, communication and behavioral challenges” (Facts about ASDs, para. 1). Autism Speaks (2011) the nation’s largest autism science and advocacy organization, defines autism and autism spectrum disorders (ASD) as a group of complex developmental brain disorders. Regardless of the suggested definitions and etiologies of autism, one hallmark feature has remained concrete: autism impacts communication and the effects are lifelong.

### **Prevalence of Autism**

According to the Centers for Disease Control (2012) about 1 in 88 children are identified with ASD, and the prevalence figures continue to grow. Further, ASD’s occur in 1 in 54 males and 1 in 252 females. The reason behind this increase has led researchers to question whether more children are being affected or detected (Insel, 2012). A combination of the increased awareness and subsequent earlier diagnosis of the disorder, the use of more sensitive, comprehensive data collection methods on reporting the number of individuals affected, and/or the use of better screening and diagnostic instruments used in detection could all be to blame for the substantial increase in autism over the years (Insel, 2012).

### **Prevalence of Autism in Kentucky Schools**

The Kentucky Department of Education 2010-2011 State Child Find report reveals that there are approximately 3,927 children diagnosed with autism between 3 and 21 years of age who receive special education and related services in public schools in Kentucky (KDE, 2011). This number continues to grow (CDC, 2012).

## **Diagnostic Characteristics of Autism**

Dr. Kanner was the first to identify three defining characteristics of autism including social isolation, insistence on sameness and abnormal language (Mesibov et al., 1997). In the years since, his definition of autism has been broadened and refined into three categories or “triad of symptoms” including social differences, repetitive behaviors or social interests, and communication differences (Aspy & Grossman, 2008). Since repetitive behaviors and communication differences can be seen in other disorders, impairments in social communication are considered to be the hallmark characteristic when describing autism (Aspy & Grossman, 2008). The current version of the Diagnostic and Statistical Manual of the American Psychiatric Association, DSM-IV-TR, (2000) is used to diagnose autism and several other disorders. The DSM-IV-TR (2000) identifies three characteristics of autism as the basis for diagnosis which includes: qualitative impairments in social interactions, qualitative impairments to communication and repetitive and stereotyped patterns of behavior, interests, and activities (Aspy & Grossman, 2008).

## **Social Differences**

One common myth about autism is that individuals diagnosed with the disorder are incapable of being affectionate and have no desire to interact socially with others. Naturally, humans are social beings, but the act of communicating with another is a complex and sometimes overwhelming task for individuals with autism who lack the ability to understand the very basics of social interaction (McCoy, 2011). The use of body language, facial expressions, and variations in tone of voice may be foreign concepts to individuals on the spectrum. Further, the ability to establish and maintain eye

contact and infer what others may be thinking or feeling during a conversation are much needed skills for successful interactions that individuals with autism may be lacking (McCoy, 2011). In fact, individuals with autism may be portrayed as ‘rude’ by others in their environment as a result of the aforementioned difficulties with social communication (Aspy & Grossman, 2008). Establishing and maintaining friendships can be difficult, and failed attempts at communication may convince the individual to refrain from future communicative attempts, encouraging their isolation from the social world (Watson Institute, 2012).

### **Communication Skills**

Several deficits in communication skills may be evident in individuals with autism; however the severity of their symptoms can range from mild to severe, and their presentation can vary from one individual to the next (Watson Institute, 2012). Common communication differences seen in autism are delayed or immediate echolalia, repetition of sounds or words, the inability to understand figurative language, difficulty initiating or joining a conversation and impaired prosody (Aspy & Grossman, 2008). The individuals’ tone of voice may be conveyed in a robotic-like manner and the child’s pitch may vary considerably. Metaphoric speech and pronoun reversal may also be among the unusual language characteristics exhibited by this population (Mesibov et al., 1997). Pragmatic difficulties may include interrupting others in a conversation, inability to contribute to the conversation, inappropriate comments, difficulty in achieving appropriate proximity and understanding the emotional state of another (Aspy & Grossman, 2008).

During development, some individuals may experience difficulty in combining words to form meaningful sentences; others may only speak in one word utterances and

some may not verbalize at all. For those adults and children who do not communicate verbally, alternative means of communication such as sign language and picture exchange systems may be used to facilitate communication (Autism Speaks, 2012). Approximately 20 to 40% of children with autism fail to make gains in speech production even in the presence of interventions designed to facilitate verbal communication (National Research Council, 2001).

Communication is a complex, intricate, multi-faceted act requiring the simultaneous use of specific skills necessary for the successful transmission and interpretation of a message. Children with autism may lack the ability to store and retrieve information with regards to language, affecting the child's ability to use language that is functional and meaningful. Unfortunately, this message may often times get lost. A staggering one third to one half of children and adults do not use speech functionally (McCoy, 2011). The wide range of communication deficits seen in children with autism makes providing an education very difficult.

### **Restrictive Patterns of Behavior, Interests and Activities**

Repetitive behaviors can include hand-clapping, hand-flapping and rocking back and forth (Mesibov et al., 1997). An intense preoccupation with a particular item such as lining up toy trains or watching the wheels spin on a toy car is a common feature (Autism-Help, 2008). Further, obsessions with a specific subject such as astronomy or a TV program of interest may be evident. These intense, narrow interests can hinder the child's academic success and replace social interactions with others. Changes in routine may be overwhelming for children with autism who have an inherent need for sameness. Their inability to cope with modifications to the environment may foster feelings of

uneasiness, anger, confusion, etc. In order to cope, a repetitive behavior may be used such as hand-clapping or questioning. A change in routine may also trigger behavioral problems and severe emotional distress as a result (Autism-Help, 2008). These behaviors can be difficult to manage and can affect all areas in the child's life.

### **Additional Features of ASD**

Several other characteristics are often present in individuals diagnosed with autism including deficits in cognition, motor, sensory processing and difficulty in regulating emotions (Aspy & Grossman, 2008). It is important to note, however, that deficits in these particular areas are not necessary for a diagnosis of autism, rather, are only features commonly observed in autism spectrum disorders.

### ***Cognition***

Many children diagnosed with autism will experience difficulties in their academic performance as a result of an uneven development of cognitive abilities (Aspy & Grossman, 2008). Mental retardation was once thought to be a characteristic of autism; however, several research studies over the years have shown that while children with autism can have a secondary diagnosis of mental retardation, the two conditions are independent of one another, each with their own separate characteristics. A study conducted by Gillberg in the early 1980's found that 50% of children with autism had an IQ between 50 and 70 and 27% had IQ's below 50. Recent research has shown that only 55% of children with an autism spectrum disorder (ASD) had IQ scores that were suggestive of mental retardation (Simonoff, Pickles, Charman, Chandler, Loucas, & Baird, 2008).

Some individuals with autism may exhibit savant characteristics in a particular area of interest; however, deficits in other areas are generally found as well (Help Guide, 2012). Children with autism can have poor problem-solving skills, attention deficits and difficulty with remembering and generalizing information across a variety of different environments (Aspy & Grossman, 2008). Typically, abstract reasoning tasks are very difficult whereas tasks targeting immediate memory are easier to complete (Help Guide, 2012). Children with autism may be misdiagnosed as having attention deficit disorder instead of autism as a result of their inability to focus (McCoy, 2011; Goldstein & Schwebach, 2004). In fact, several well-known impairments observed in autism are homogenous with the impairments seen in other conditions including mental retardation, learning disabilities, ADD and schizophrenia (Mesibov et al., 1997). Consequently, knowledge of the salient features of autism becomes very important for appropriate understanding of the disorder, diagnosis and subsequent treatment.

### ***Motor Functioning***

Difficulties with motor movements are found in a large portion of individuals diagnosed with ASD (Aspy & Grossman, 2008). Individuals may have very good gross motor skills yet struggle with tasks involving fine motor movements (CDC, 2010). Difficulties with initiating and completing specific acts in combination with the continuous need for prompting occur more often in individuals with ASD as compared to the general population (Wing & Shah, 2006). Common motor differences include unusual body postures, poor handwriting and a refusal to complete writing tasks especially in the educational setting. These are all features that can have a serious negative impact on academic success.

### ***Sensory Processing***

Individuals with autism often experience difficulty with processing incoming sensory stimuli in their surrounding environments. A hypersensitive or hyposensitive response to stimuli is experienced by many with the disorder (Yack, Aquilla, & Sutton, 2002). Individuals with a hyperactive response may be startled easily, have an extreme sensitivity to light and sounds, and/or an aversion to specific tastes, smells and textures (Yack et al., 2002). At times, individuals may be sensitive to even the softest of sounds and a simple pat on the back or the feel of a certain type of fabric against their skin can be almost unbearable (Help Guide, 2012). A hypo-reactive response could include a lack of focus or attention to environmental noise, delayed responses, and a decreased sensation to pain (Yack et al., 2002). It may appear that the individual is completely ignoring a person trying to speak to them (Help Guide, 2002).

### ***Emotional Difficulties***

Individuals with ASD may have a difficult time understanding, controlling and expressing their own emotions for a variety of reasons. At one point, autism was considered an emotional disorder as a result of cold, rejecting parents Tantrums and self-injurious behaviors may be used as a coping mechanism which can create challenges for parents at home and for teachers and other educational staff in the educational setting (Aspy & Grossman, 2008). Depression, excessive worrying, and irrational fears may present. For example, a child with autism may show no response to heights or dangerous situations yet be frightened by common objects or toys in his/her environment (Help Guide, 2012). Emotional responses may include bouts of aggressive behavior and heightened levels of frustration that may appear for no particular reason. Some children

with autism may receive a misdiagnosis of a behavior disorder instead of ASD (Goldstein & Schwebach, 2004). Similarly, a child with autism may even be considered exhibiting oppositional defiant behaviors due to their insistence on sameness (McCoy, 2011; Remington, Sloman, Konstantareas, Parker, & Gow, 2001).

### **Prognosis**

It was not uncommon for individuals with autism to be institutionalized and simply forgotten some 30 to 40 years ago. The uniqueness of the disorder and varying degrees of severity in combination with the outlandish beliefs as to its cause created much undue stress and anguish for parents who were seemingly to blame for their child's misfortune. Prognosis was grim in light of the limited amount of knowledge that was available about autism in its early beginnings. Years later, as research evidence mounted and assessment, identification and treatment procedures improved, the prognosis for individuals with autism is far greater than what it once was. Just as the name implies, the outcomes for children diagnosed with an autism spectrum disorder follows along a continuum of possibilities dependent upon several factors. The National Institute of Neurological Disorders and Stroke state that while there is no cure for autism, symptoms of the disorder can improve with age and proper treatment in some cases (NINDS, 2012). Some children diagnosed with autism may even grow up to lead normal or near-normal lives, working independently and achieving success with minimal support (NINDS, 2012).

A study conducted in 2003 followed 68 adults who were identified as having autism in childhood in an attempt to determine the long-term prognosis of the disorder (Howlin, Goode, Hutton, & Rutter, 2004). Results indicated that while many of the adults

had achieved some level of independence, most were still very reliant upon their family members for support. This study suggested that further research needed to be conducted in this area due to the heterogeneity of the disorder in its presentation and degree of severity. Still, the benefits of early intervention resonate in the literature as being critical to the success of individuals with autism. Research evidence largely supports early intervention services as effective in increasing gains in development and improving function that result in long-term benefits and better outcomes (Mesibov et al., 1997).

### **Challenges in Education**

The unique behaviors exhibited by individuals with ASD can create specific challenges for teachers in the classroom (Scheuermann, Webber, Boutot, & Goodwin, 2003). Due to the complexities associated with autism, educators face many challenges when providing an appropriate education to those diagnosed. Skilled, seasoned educators and other associated professionals in education have admitted to feeling incapable and/or less than adequate in providing services to children with autism (Simpson, de Boer-Ott & Smith-Myles, 2003). Adequately trained personnel, appropriate choice of intervention strategies, proper educational placement and funding are all factors that must be considered when educating children with autism.

A greater emphasis was placed on the inclusion of children diagnosed with autism and other disabilities in the general education classroom following the reauthorization of the Individuals with Disabilities Education Act in 1997 (Simpson et al., 2003). In-depth individual educational planning is needed to meet the needs of the child with ASD so that he/she may experience educational success (Simpson et al., 2003). Smith and Girard (2008) states: “there is no doubt autism’s impact on public schools” (An Explosion of

Illness, para.14). The unpredictability, variability and overall uniqueness of the disorder can be a huge burden on school districts when providing a free and appropriate education (Smith & Girard, 2008).

Michael McKee, director of the Virginia Institute on Autism, states that children with autism perform best when there is a strong relationship between the parents and the school district; however parental aspirations and, at times, demands, when it comes to educational services for their children, are often mismatched with what the school district is willing, and/or able to provide. McKee reports “school districts across the country pretty much define appropriate as merely adequate” (Smith & Girard, 2008, para. 17). Vincent Strully, founder of the New England Center for Children said “the way we treat and educate children with autism is a national disgrace” (Smith & Girard, 2008, para. 4). School administrators must juggle limited resources and funding while providing a free and appropriate education as required by IDEA; and “appropriate” can mean something entirely different to parents.

### **Educator Preparation in Autism Service Delivery**

Lerman, Vorndran, Addison, & Kuhn (2004) examined the preparedness of teachers in using evidenced-based practices with young children diagnosed with autism and found continuing education programs on autism for public school teachers may be necessary. The authors go on to explain that studies have shown that with instruction, teachers, staff, and parents can learn how to properly implement behavioral interventions with minimal difficulty.

In a study examining the types of educational strategies used with children with ASD, *The Autism Treatment Survey* was distributed to teachers of students with ASD to

identify the types of interventions being implemented for each grade level in a public school system in Georgia. The survey revealed that less than 10% of the strategies being used with students with ASD had an evidence base (Hess, Morrier, Heflin, & Ivey, 2008). Further, the reasoning behind the teachers' selected interventions was based on a variety of factors (e.g. age, placement); however, best practice guidelines were not one of them. The authors suggest that pre-service and in-service trainings for educators are needed in order to ensure the use of appropriate, evidenced-based treatment strategies for children with autism (Hess et al., 2008). The authors also suggest that more training should be provided to educators in leadership positions regarding appropriate interventions for children with ASD as they are involved in all stages of the child's education and in the hiring of personnel to work with children diagnosed with the disorder.

Collaboration, or working together as a team, is an important concept in the education of children with ASD. The special education teacher, general education teacher, parents and even the individual diagnosed with autism are a few examples of the members included on a collaborative team (Friend & Cook, 2010). These members engage in a partnership for facilitating successful outcomes in academics through the development of interventions and plans for the student with ASD. Each member of the team can provide valuable insight from their own professions and/or personal experiences with autism so that appropriate educational decisions can be made. Due to the complexity of the disorder and increased focus towards the inclusion of students with ASD in the general curricula, knowledge and the use of appropriate, research-based supports and service delivery models are increasingly important factors in the education of students with ASD, high-functioning autism and Asperger's syndrome (Friend & Cook, 2010).

Ideally, parents want their children with ASD to be educated by knowledgeable teachers who are confident in their service delivery and in their knowledge of the disorder.

Generally speaking, teachers want their students with ASD to achieve success in the general education curriculum. However, undertrained teachers, in both general and special education, run the risk of developing issues with parents if their knowledge and training in the disorder are deemed less than adequate (Friend & Cook, 2010; Scheuermann et al., 2003).

In 2008 and 2010, a survey was administered to general and itinerant special education teachers in a suburban Southwestern city in the U.S. to determine their knowledge base of ASD and confidence in service delivery. A series of questions were asked regarding their confidence, training and perceptions on what type of educational training should be provided in ASD (Friend & Cook, 2010). While information from the study is still being gathered at this time, some information has already reported.

Teachers were asked with whom they worked with in their professions. Teachers responded that they worked with each other and with paraprofessionals almost as frequently. When asked what they knew about ASD, 50% of teachers reported that they had training in autism and 25% stated he/she was not provided with any “real” information on ASD. Specifically, special education teachers revealed that they had at least one meeting about ASD in their school. Other special education teachers said that they attended at least one training in their respective school district and one training outside of their district paid for by the school (Friend & Cook, 2010). Further, when teachers were asked what they need to know, a majority said the following were critical: “characteristics of ASD, adaptations for communication, social interaction deficits,

sensory over/under sensitivity, what the IEP says about the student, how to collaborate with special and general educators and paraprofessionals assigned in the classroom” (Friend & Cook, 2010, p. 181). Interestingly, when teachers were asked what training(s) would help when working with the ASD population, one teacher responded “any would be good” (Friend & Cook, 2010, p. 181). When asked to rate their perceived levels of confidence in ASD, 30% or fewer responded that they strongly agreed they were confident in determining appropriate interventions, counseling family members and providing effective services for students with ASD. It comes as no surprise that when asked what they thought about professional development in ASD, a vast majority agreed this would be beneficial for all faculty members in their school (Friend & Cook, 2010).

Working with students with ASD can be a challenging task. Appropriate preparation, skill and knowledge of the disorder combined with research-based techniques shown to be effective are crucial in promoting positive outcomes and facilitating educational success for the student with ASD. Further, it is important for other personnel included on the collaborative team to be knowledgeable in these areas as well because as Friend & Cook (2010) have explained, collaboration is a valuable piece of the autism puzzle and the importance of educational partnership cannot be stressed enough.

### **Personnel Working with ASD**

Appropriate service delivery methods for children with autism in the public school system may employ the use of more than just the general education teacher, special education teacher, and related service delivery personnel. As Friend & Cook state, educational partnership, professionals accepting equal or close to equal responsibility in

the education of the child with autism, is important when trying to meet the needs of such a complex, diverse population. The idea of collaboration is further support by Scheuermann et al. (2003) who suggested that educating children with ASD requires a village of knowledgeable people.

When examining implications of autism in the classroom, Boyd & Shaw (2010) discussed that the increase in early identification and diagnosis has resulted in more children with ASD requiring services in the classroom. This increase directly impacts service delivery models and the need for school-based personnel to be attentive to the child's learning styles and academic environment (Hess, et al., 2008). Due to the complex behaviors exhibited by children with autism including sudden, unexplainable tantrums, self-abusive behavior and non-compliance, a special education paraprofessional, or paraprofessional referred to hereafter, may be employed to provide one-to-one daily instruction in the educational setting. It should be noted that little research is available on paraprofessionals in special education (Giangreco & Broer, 2005). Further, a study in 2001 conducted a review of the literature between 1991 and 2000 targeting paraprofessional supports for students with disabilities and found that an increasing need for student outcome data, training, supervision and role clarification exists in the literature (Giangreco, Edelman, & Broer, 2001). The authors state that paraprofessional roles in supporting students with disabilities is one of the least studied areas of special education (Giangreco et al., 2001).

Scheuermann et al., (2003) examined the preparation of school personnel who work with children diagnosed with ASD. The authors stated children with ASD may often require 1:1 instruction from paraprofessionals in the special and regular education

classroom. Further, teacher shortages in school systems have resulted in an increasing reliance on paraprofessionals to provide instruction to students with ASD. In fact, students with ASD may spend more time with the paraprofessional than with the special and/or general education teacher. For these reasons, it would seem essential that paraprofessionals hired to provide instructional support for children diagnosed with such a complex disorder would have adequate knowledge of the disorder, appropriate service delivery models, and experience in providing services to his population.

### **Paraprofessionals**

Paraprofessionals may also be referred to as paraeducators, instructional assistants, teacher's aides, education aides, etc. Paraprofessionals employed in the school setting are assistants who perform supervised tasks assigned by qualified professionals, such as the special education teacher. The roles and responsibilities delegated to paraprofessionals have evolved dramatically over the last five decades. Paraprofessionals have gone from performing clerical duties to providing instructional assistance to students with disabilities ranging in severity (Wallace, 2003). The 1997 amendments to the Individuals with Disabilities Education Act defined paraprofessionals as “an employee who, following appropriate training, performs tasks as prescribed and supervised by the licensed/supervised professional/practitioner” (IDEA partnerships, 2001, p. 2).

The National Resource Center for Paraprofessionals defines and describes the role of the paraprofessional:

“Paraeducators are school employees who: (1) work under the supervision of teachers or other licensed/certificated professionals who have responsibility for (a) identifying learner needs, (b) developing and implementing programs to

meet learners needs, (c) assessing learner performance, and (d) evaluating the effectiveness of education programs and related services, and (2) assist with the delivery of instructional and other direct services as assigned and developed by certified/licensed professional practitioners” (Likins, 2002, p. 6).

The types of tasks of services provided by paraprofessionals differ by region and district according to The Study of Personal Needs in Special Education (SPeNSE, 2001). The study revealed that special education paraprofessionals nationwide spent at least 10% of their time completing each of the following activities: (a) providing instructional support in small groups, (b) providing one-on-one instruction, (c) modifying materials, (d) implementing behavior management plans, (e) monitoring hallways/study hall/other, (f) meeting with teachers, (g) collecting student data, and (h) providing personal care assistance (SPeNSE, 2001). While paraprofessionals are hired to work with students with and without disabilities, one of the most demanding roles is providing instructional support to children with autism; however, according to a study conducted in 2003, it was noted that little formal data exist about the state of personnel preparation in autism (Scheuermann et al., 2003).

### **Paraprofessional Roles in Autism**

According to an article reviewing the utilization of paraprofessionals in programs for children with autism, paraprofessionals have been assisting teachers with students with autism for nearly two centuries (Boomer, 1994). There has been a dramatic increase in the use of paraprofessionals over the years. Further, paraprofessionals assigned to programs with disabilities including autism are considered to be the fastest growing personnel category in the field of special education (Young et al., 1997).

Paraprofessionals may be expected to perform some or all of the following activities

when working with children with autism: 1) data manager; 2) integration facilitator; 3) functional skills facilitator; and 4) assistance with meals and hygiene (Boomer, 1994).

### **Paraprofessional Qualifications**

The No Child Left Behind Act (2001) requires paraprofessionals working for schools receiving Title I funds to meet three specific requirements within a specified time frame.

- (1) Meet a rigorous standard of quality that demonstrates, through a formal or local academic assessment, knowledge of and the ability to assist in instructing, reading, writing, and mathematics or in readiness activities for reading, writing or mathematics.
- (2) Have completed at least 2 years of study at an institution of higher education.
- (3) Have obtained an Associate's degree or higher (Kentucky Department of Education, 2011, p.1).

While these requirements are put in place for paraprofessionals working in Title I schools, some school districts have adopted these requirements for all paraprofessionals. It is also noted that a high school diploma is the most common employment criteria for schools not receiving Title I funds (National Center for Education Statistics, 2007). While the highest level of education completed differs from one paraprofessional to the next, this minimum educational requirement should put educators on high alert with regard to the amount of supervision, guidance and support they deem necessary to ensure expectations are clearly followed and quality services are provided (Friend & Cook, 2010). The qualifications of paraprofessionals can still greatly vary depending on the school district, however the NCLB has established some ground rules for the selection of individuals who possess the level of skill, training, education or previous experience needed to complete activities specifically related to the job (Friend & Cook, 2010).

The Individuals with Disabilities Act (2004) does make an attempt to provide schools with information regarding the use of paraprofessionals; however, little improvement has been made to federal guidelines in mandating specific rules and regulations regarding paraprofessionals across school districts (Friend & Cook, 2010). The IDEA (2004) states the paraprofessionals are: (1) legitimately employed to assist in the delivery of services to students; (2) are not the primary service providers; and (3) are entitled to training for their duties (Friend & Cook, 2010, p.137).

According to the American Speech-language-Hearing Association (1999), responsibilities and tasks are delegated based on level of education or equivalent experience of the paraprofessional, although previous experience is not specifically defined. Members of the school team may construct their own list of desirable traits, skills and levels of experience that they would like to see in a potential employee (Trautman, 2003). A list of 10 characteristics to look for in a paraprofessional is described by the author. Appropriate skills for the targeted position and previous work experience, especially in education or related fields, were deemed to be among the most important characteristics sought after when hiring a new paraprofessional (Trautman, 2003).

### **Prevalence of Paraprofessionals in Kentucky**

According to the Kentucky Department of Education 2009-2010 special education personnel data, there were approximately 5,888 special education paraprofessionals employed to provide special education services to students with disabilities in the 2009-2010 school year. Of those paraprofessionals, approximately 641 were employed to work with student's ages 3 to 5 whereas 5,247 were employed to work with students between

the ages of 6 to 21. This number has increased when compared to previous personnel data from the 2007-2008 school year. This data revealed that approximately 5,794 paraprofessionals were employed at that time during the 2007- 2008 school year (Kentucky Department of Education, 2011). This increase is consistent with the increase in the number of paraprofessionals employed in the nation's public schools. According to the National Center for Education Statistics (2007), there were approximately 360,000 special education paraprofessionals who were employed specifically to provide services to students with disabilities. In addition, 76 percent of elementary and secondary public schools used paraprofessionals for the provision of services for students with disabilities.

The number of paraprofessionals employed in public schools is likely to increase. The Bureau of Labor Statistics anticipates a 15 percent increase in the number of paraprofessionals employed between the years 2010 and 2020 (U.S. Department of Labor, 2012). Several reasons for this inflation of paraprofessional use have been hypothesized including the rising emphasis on early intervention programs, a greater focus on the inclusion of children with autism in the general education curriculum and/or as a result of a shortage of special education teachers (Friend & Cook, 2010; Daniels & McBride, 2001; Nichols, Bicard, & Casey, 2008). Whatever the reason for this surge in paraprofessional employment, it is important that proper training, education and supervision are provided for their specific roles.

### **Paraprofessional Training and Supervision**

One of the issues encountered in the provision of services by special education paraprofessionals is their questionable roles in special education programs. Giangreco and Broer (2002) examined the use of paraprofessionals in 12 public schools in Vermont.

Customized questionnaires were distributed to five different groups. A total of 737 participated in the study, including general education teachers, special education paraprofessionals, parents, special educators, and school administrators. A total of 153 special education paraprofessionals participated in the study. Paraprofessionals were asked to determine the percentage of time they spent in close proximity to their assigned student(s) and the frequency of their involvement in seven different categories of tasks including clerical support, supervising students, assisting with personal care, providing behavioral support, implementing planned, supervised instruction, and participating in self-directed activities (i.e., planning lessons) not supervised or planned by the teacher.

The results of the study indicated that paraprofessionals spent nearly one-fourth of their time self-directed and nearly 70% reported making high level, instructional and curricular decisions without supervision. Discussion indicated that “each special education paraprofessional might expect to receive less than 2% of the special educator’s time in training, supervision, or other professional direction” (Giangreco & Broer, 2002, p. 21).

Paraprofessionals who are not properly trained or supervised when performing their assigned duties could cause potential harm to the students they serve. Scheuermann et al. (2003) explain that inadequate instruction may have a significant negative impact on the student and could potentially cause a regression of skills.

Paraprofessionals are to be supervised by the special education teacher, general education teacher or another professional in the school when providing instructional support to their assigned children (Friend & Cook, 2010). Clear expectations of responsibilities and assigned tasks should be understood along with open lines of

communication to ensure that the needs of the student are being met (Friend & Cook, 2010). Some teachers do not want to accept the supervisory position that accompanies the utilization of a paraprofessional, stating that “it interferes with the working relationship with the paraprofessional” (Friend & Cook, 2010, p.147).

Federal law states that paraprofessionals need to be trained for the responsibilities they are expected to perform in their jobs. The ways in which this is accomplished may vary among school districts; however, it is noted that the initial training provided to paraprofessionals is not sufficient in preparing them for the roles and responsibilities often delegated in their respective positions (Friend & Cook, 2010). Trainings in specific areas are usually provided at the request of the supervising professional rather than through a means of initial preparation (Friend & Cook, 2010).

The Autism Speaks (2008) organization described the basics of autism and the roles and responsibilities of paraprofessionals working with children with autism in a brief document outlining specific strategies for the paraprofessional to use in daily interaction and service delivery. The foundation discussed the importance of the paraprofessional’s position, stating that paraprofessionals are “in a unique position to effect great changes in that individual’s life and function” (Freschi, 2002, para. 4). The amount of training in autism was also discussed, stating that it is unlikely training in ASD is provided to paraprofessionals prior to working with children with autism in order to prepare for their respective roles (Autism Speaks, 2008). Further, because the paraprofessionals are primarily seen as a support rather than an educator, he/she may not have been present during IEP meetings and/or other activities addressing the specific

needs and learning styles of their assigned child which may be beneficial information to use during the provision of support services (Autism Speaks, 2008).

In an issue of the Autism Asperger's Digest magazine, David F. Freschi, an educational consultant working to provide better services for children with autism/Asperger's or related disabilities, discussed the importance of training among paraprofessionals working with children with the disorder. He explained that paraprofessionals who are not properly trained could reverse any progress made by their assigned student. The skills needed to be a paraprofessional take time and practice (Freschi, 2002). Freschi (2002) states training should be a continuous process consisting of multiple members of the child's team rather than intermittent attendance in workshops with only one or two members. If teachers and paraprofessionals are properly trained, positive results in the students overall growth can usually be observed (Freschi, 2002).

A study examining the use of teaching assistants with children with autism in mainstream secondary schools in England revealed that many of the teaching assistants, who were hired to work with a child with autism, reported having no previous experience in working with individuals with autism. Further, many stated that a general training course in ASD would not be helpful, rather, hands-on experience was the preferred educational tool for learning about this complex disorder (Symes & Humphrey, 2011).

### **Benefits of Training in Autism**

Paraprofessionals may be asked to implement various behavioral strategies or techniques when working with children with autism. For instance, paraprofessionals may be asked to teach social skills using social stories with individuals with autism or use discrete trial training with their assigned child. Since students with autism spend a

majority of their days in the educational setting with the paraprofessional, it is important that paraprofessionals receive proper training. Further, it is essential paraprofessionals are trained in techniques that maximize instruction time (Scheuermann et al. 2003). Adequate training can facilitate better service delivery and improved outcomes for the students receiving instructional support.

One study examined the use of visual cues and social reminders in the general education classroom to children in an elementary school diagnosed with ASD. These tactics were administered by paraprofessionals who had received social skills training to determine if gains in social responsiveness could be achieved when taught by previously trained paraprofessionals in partially and fully included classrooms (Mazurik-Charles & Stefanou, 2010). Results indicated that a short-term gain in social responsiveness was achieved. Further research was suggested in the efficacy of using trained paraprofessionals in the delivery of interventions as in the one described in this study (Mazurik-Charles & Stefanou, 2010).

A similar study regarding social skills in autism was conducted to determine if paraprofessionals could be trained to write and use social stories for students diagnosed with an ASD. Three pairs consisting of a paraprofessional and their assigned student with ASD participated in the study (Quilty, 2007). Results indicated that paraprofessionals could be taught how to successfully write and implement social stories. Further, their stories had positive impacts on the students' specific behavior targeted during the activity (Quilty, 2007).

A brief training procedure was administered to three paraprofessionals with a bachelor's degree in an effort to facilitate the generalization of discrete trial training

skills, such as performance feedback and modeling, from the training environment to the teaching environment (Bolton & Mayer, 2008). A criterion of 98% was required to successfully complete the training. Upon completion of the training, participants were then monitored in the classroom environment to determine if the skills they had acquired could be successfully generalized across settings. Results indicated that paraprofessionals were able to maintain most of the skills learned during training (Bolton & Mayer, 2008).

The importance of training in autism during the implementation of specific intervention and treatment techniques is illustrated by the previously discussed studies. Each of the studies reported a successful outcome when training in a specific area of autism was provided prior to the provision of services. There is a general consensus in the literature that school districts should hire the most qualified paraprofessionals possible (Giangreco & Doyle, 2002). Some schools are able to find or train highly skilled paraprofessionals. Other schools hire paraprofessionals who struggle with academic skills themselves, making it difficult to provide support to students (Giangreco & Doyle, 2002).

### **Knowledge of Autism Among Paraprofessionals**

A pilot study investigated the factual knowledge and perceived competencies in autism knowledge among 54 school district employees from a southwestern state. The authors make note that to date, a systematic investigation specifically examining the perceived levels of competencies in autism knowledge or a survey examining school personnel's factual knowledge of autism has not been conducted (Williams et al., 2011).

A total of 26 general education teachers, 14 special education teachers, 7 school counselors and 7 paraprofessionals responded to the survey. Survey measures included The Autism Survey (Stone, 1987) to assess participants' factual knowledge of autism

(Williams et al., 2011). Two components of the survey were constructed: a perceptions survey examining participants' perceived confidence in autism knowledge, and a knowledge survey assessing factual autism knowledge. Results indicated that school personnel perceived their competencies in autism knowledge to be average. The personnel's overall factual autism knowledge regarding treatment, assessment and diagnosis of autism was low (Williams et al., 2011). The authors suggest that the results of this study may encourage more trainings in autism individualized to the specific needs of school personnel working with individuals with autism in their school district. The authors also suggest that inconsistencies may be present in the knowledge of autism and the perceived levels of confidence in the level of autism knowledge among school personnel. That is, school personnel think they know more about autism than they actually do.

The Autism Speaks organization stressed the importance of having adequate knowledge in the basic characteristics of autism, and in the specific characteristics exhibited by each individual child with autism assigned to the paraprofessional (Autism Speaks, 2008). Knowledge is power. The presentation of autism characteristics in those diagnosed vary greatly. As a result, knowledge concerning the specific learning styles, preferences, needs and strengths of the paraprofessionals assigned children with autism will support their efforts to provide appropriate, individualized services in their respective positions (Autism Speaks, 2008).

Basic knowledge of the disability is essential, as a lack thereof could result in the use of ineffective methods of teaching and a loss of important instruction time crucial to educational success (Freschi, 2002). Freschi (2002) suggests that paraprofessionals

should have at least participated in an introductory course in autism reviewing effective teaching strategies and techniques, sensory issues related to the disorder and communication modalities.

### **Paraprofessional Confidence in Provision of Services**

A study examined the use of paraprofessionals to promote social interactions between children with autism and their non-disabled peers in the classroom. Paraprofessionals received training in motivation-based facilitation procedures. Prior to training, paraprofessionals were characterized as “hovering” over their assigned child with autism rather than encouraging the child to engage in social interaction (Klein, 2006). After receiving training, paraprofessionals reported an increased level of confidence in their abilities to promote social interaction between children with autism and their disabled peers. More importantly, an increase in social reciprocity was found in the children with autism (Klein, 2006).

Behavior management is an important task for paraprofessionals when working with a child in the school system. Children with autism may experience frequent behavioral problems due to a change in routine, communication difficulties, sensory processing issues, etc. (Autism-Help, 2008). Knowledge of specific behavioral strategies, behavioral plans provided by supervising professionals and proper supervision are need to ensure the safety of the child with autism and others in his/her surrounding environment (Causton-Theoharis, Giangreco, Doyle, & Vadasy, 2007). A study revealed that “paraprofessionals spend one fifth of their time providing behavioral supports to students” (Giangreco & Broer, 2005, p.21). With that said, many paraprofessionals did

not feel confident with regards to the extent and/or type of training they have received in the area of behavioral management (Causton-Theoharis et al., 2007).

Further, there have been reports by paraprofessionals that teachers are not proficient in guiding their work (Ghere & York-Barr, 2007). A lack of training and supervision may impact the paraprofessionals' confidence in providing instructional support to their assigned student with autism.

The roles and responsibilities of the paraprofessional may become hazy when teacher supervision is inadequate and/or appropriate communication is not established between the parties providing services to children with autism. An area of paraprofessional research that has been seemingly untouched is how paraprofessionals perceive their job satisfaction in terms of the amount of respect, appreciation, acknowledgement and/or recognition they receive from educators for their assigned job tasks (Giangreco et al., 2001).

With the increase of the number of students with autism and other disabilities entering the public school system paired with the increase in the use of paraprofessionals in both the special and general education curriculum, the establishment of positive, professional relationships between the paraprofessional and other personnel are important for successful communication and provision of services. A total of 122 school personnel experiences were examined including special educators, paraprofessionals and administrators working in four schools grades K-12. A set of six categories were identified and used to question personnel in how they acknowledged and appreciated the paraprofessionals employed in their schools. These themes included: (1) monetary signs and symbols of appreciation; (2) compensation; (3) entrusted with more responsibilities;

(3) noninstructional responsibilities; (4) wanting to be listened to; and (6) orientation and support.

Data from the study revealed that while respect, acknowledgement and appreciation may commonly take the forms of verbal praise or a “pat on the back,” paraprofessionals’ perspectives on what these terms meant revealed that training opportunities, clarification of roles and supervision are also indicative of the elements that contribute to their overall job satisfaction (Giangreco et al., 2001). Paraprofessionals who are not happy with the conditions of their employment may experience a level of job dissatisfaction that could potentially lead to their departure. Giangreco et al. (2001) point out that successful attainment of paraprofessionals who are satisfied with their respective positions is an important component of the school community and will benefit students with disabilities in the long term. The study revealed that some paraprofessionals who had higher levels of education and experience were seen as better-equipped to take on more advanced instructional activities. Paraprofessionals, in turn, felt that they were receiving more respect and acknowledgement for their work as a result. Consequently, the study also found that these higher-level instructional tasks were also given to paraprofessionals working with low-incidence disabilities such as autism, who were not properly trained or supported in working with this population (Giangreco et al., 2001).

Some paraprofessionals stated that their input in team meetings regarding the child they provided services to was important. The opportunity to share their information about the student was a sign of respect and made them feel as if they were valuable members of the child’s educational team (Giangreco et al., 2001). These feelings of value, respect, acknowledgement and appreciation hold different meaning and take

different forms from one paraprofessional to the next. This study pointed out that when paraprofessionals felt valued, their job satisfaction increased. As a result, interactions between paraprofessionals and educators may be improved. This may encourage more training opportunities, improve paraprofessional confidence in their roles and foster positive outcomes in service delivery to students with disabilities. While this study did not target paraprofessionals' confidence in providing instructional support to students with autism specifically, outcomes may suggest that a lack of respect, acknowledgement and appreciation for their positions could potentially impact their levels of confidence in service implementation regardless of their amount of autism knowledge.

There is no question as to the importance of the paraprofessionals who, long since their first appearance in the workforce, have become integral members of the educational team. If educators are more aware of how they interact with paraprofessionals and show signs of appreciation and respect, all parties, including the children with disabilities they serve, could benefit from this improvement in job satisfaction.

### **Parents' Knowledge of Autism**

The Stone Autism Survey (1987) examined parent and teacher views of autism by assessing their beliefs regarding specific areas of the disorder. The survey revealed that many parents and teachers held inaccurate beliefs and misconceptions about autism, specifically with regards to cognitive, emotional and developmental characteristics of the disorder (Stone & Rosenbaum, 1988). The authors suggest that the inaccurate views held by parents and teachers may impede their collaborative efforts (Stone & Rosenbaum, 1988).

A study by Haggard (2010) to examine the knowledge and perceived levels of confidence in recognizing and providing services in the area of autism between parents and selected professional including pediatricians, speech-language pathologists, and family physicians. A modified version of the Stone Autism Survey (1987) was administered to assess their knowledge autism characteristics. Results indicated that both parents and the professionals involved in the study held outdated beliefs regarding the knowledge of autism characteristics (Haggard, 2010).

The knowledge of autism in parents of typically-developing children was studied in an effort to explain the delay in the diagnosis of autism and, thus, a delay in much needed early intervention services if a diagnosis is warranted (Newell & Knight, 2012). The authors stated that to date, a study looking at parents' knowledge of autism characteristics pertinent in the identification and diagnosis of ASD had not been conducted (Newell & Knight, 2012).

A lack of awareness or inaccurate information regarding ASD may prevent parents from noticing the early signs of ASD (Newell & Knight, 2012). With autism on the rise, possible etiologies and treatments for the disorder have become a popular topic for debate among the public and are frequently discussed in the media. This increase in public discussion has led to false misconceptions and inaccurate information that could have serious consequences for parents and their children with autism.

Participants in the study included parents of at least one-typically developing child below the age of 5 who had not been identified as being on the spectrum. Participants responded to a survey consisting of 80 statements regarding several areas of autism (e.g., diagnosis, development, treatment, causes). Results indicated that parents

have varying levels of agreement on popular topics discussed in the public such as vaccines, dietary restrictions, genetics, prenatal care and social behaviors in ASD (Newell & Knight, 2012). The confusion among parents regarding areas associated with early diagnosis and topics of controversy warrant a need for more education so that parents can better understand the characteristics of autism important for diagnosis (Newell & Knight, 2012).

A review of literature between 1995 and 2009 was completed regarding parental beliefs about the etiology of their child's autism and its effects (Hebert & Koulouglioti, 2010). Results of the literature review found that parents hold contrasting beliefs about the cause of their child's autism including genetics, environmental factors and immunizations (Hebert & Koulouglioti, 2010). Parental beliefs concerning the etiology of autism have been shown to impact future health care choices and family planning (Hebert & Koulouglioti, 2010).

Physician knowledge of ASD from the parents' viewpoint was examined in order to confirm the hypotheses that caregivers would receive little information about autism from medical providers following their child's diagnosis of autism and that their knowledge of ASD would be acquired from other sources (Rhoades, Scarpa, & Salley, 2007). Participants included 146 caregivers of children with autism who responded to an online survey requesting demographic information and their responses to several questions regarding their diagnostic process, where they obtained information about autism and the availability and need for local services for ASDs (Rhoades et al., 2007). Results from the caregiver survey indicated that 40% of professionals provided information about autism following their child's diagnosis, 15-34% provided insight into

medical and/or treatment programs, 6% of professionals referred the parents to an autism specialist and 18% provided no further information about autism to the parents (Rhoades et al., 2007). Most common sources for autism knowledge included internet, books, videos and other parents of children with ASD. This study suggested the need for physician training in ASD so that they were better prepared to advise parents (Rhoades et al., 2007).

Parents are important members of their child's collaborative team because they are seen as the ultimate resource for the child's teacher and they are naturally their child's number one advocate. (Friend & Cook, 2010). Parents can provide the teacher with valuable information regarding how autism affects their child's everyday life. Parents who are not knowledgeable of their child's disorder, however, particularly those whose child has just been diagnosed, may rely on educators for important information about autism. It becomes extremely important that accurate information about autism and available services is provided so that parents are aware of their options.

### **Parents' Confidence in Paraprofessionals Abilities**

Parents are important advocates for their children with autism; therefore, if a needed service is being denied or if they feel their child is not receiving the appropriate amount or type of instruction, they are usually the first to bring this to the attention of educators. When examining school personnel training in autism, Scheuermann and colleagues (2003) found that teachers and other service providers often sought out specialized training in autism in response to a problem or due to parents insisting on better preparation for their child's teacher. In some cases, parents take legal action. The National Research Council (2001) reported that the large number of legal cases brought

on by parents indicates parental concerns regarding the knowledge and skills of school district personnel.

Dymond, Gilson, and Myran (2007) examined the services for children with autism spectrum disorders and what specific areas may need to change. When discussing the development of IEP's, the authors report that parents "felt they often were more knowledgeable than school personnel about autism and various instructional strategies and treatments" (Dymond et al., 2007, p. 141). Further, parents felt they needed to train their child's teacher in how to appropriately educate their child. This lack of faith in the child's teacher can create problems for the paraprofessional who receives supervision and guidance from this individual. A lack of supervisor knowledge may translate into the inappropriate selection of treatment methods and loss of important instructional time (McCoy, 2010).

As discussed previously, ideally, parents want personnel working with their child or children with autism in the school system to be knowledgeable about the disorder and proficient in their abilities to provide instructional support. Further, the importance of open lines of communication between parents and professionals regarding their child or children with autism cannot be stressed enough. Many factors may influence parents' confidence in the professionals' ability to provide services. A study conducted examining parents' interaction with professionals looked at three key areas: parents' perception, experiences that either encouraged or discouraged parent trust, and roles that parents took on when interacting with professionals (McCoy, 2011; Stoner, Bock, Thompson, Angell, Heyl, & Crowley, 2005). Results of the study found that parents had negative experiences with education professionals resulting in feelings of skepticism and

caution thereafter (McCoy, 2011; Stoner et al., 2005, p. 232). Further, an element of trust is important when working with professionals. Parents reported that they trusted professionals when parent expectations were met by the professional, open lines of communication were present and when parents felt that a genuine interest in their child was felt by the professional working with the child (McCoy, 2011; Stoner et al., 2005).

The paraprofessional's role as a connector between the school and the community was examined. The authors explain that paraprofessionals who reside in the same community as the students they serve may be able to empathize and communicate more effectively than other educators (Chopra, Sandoval-Lucero, Aragon, Bernal, Berg De Balderas, & Carroll, 2004). Parents have reported that paraprofessionals are important links between families and schools and are valuable members of the educational team. Potential participants were selected from a focus group where paraprofessionals were interviewed regarding their relationships with families and roles in representing the community to the school (Chopra et al., 2004). Participants included 49 paraprofessionals. Results indicated that paraprofessionals viewed themselves as important connectors in the community between the parents, school and community. With regards to parent confidence and trust in their instructional abilities, paraprofessionals reported that parents were respectful, trusting and faithful in their abilities due to their established relationships (Chopra et al., 2004). Paraprofessionals in the study also reported that if a problem with the school arises, parents of the children with whom they work may even approach them before going to the teacher or another educator to discuss the problem due to their trusting relationship (Chopra et al., 2004).

## CHAPTER THREE

### Methods and Materials

#### **Purpose of the Study**

Paraprofessionals have provided assistance to teachers with students diagnosed with autism for nearly two centuries (Boomer, 1994). The number of students with autism spectrum disorders (ASD) receiving services in special education continues to grow as the prevalence of autism increases every year (Mazurik-Charles & Stefanou, 2010). Paraprofessionals provide valuable services to children with disabilities in the classroom; however, their preparedness for the roles in which they are assigned has been in question (Mazurik-Charles & Stefanou, 2010). The purpose of this study was to determine if special education paraprofessionals possess adequate knowledge, skill, and training to provide instructional support to children with autism.

The objectives of this study were as follows: 1) to determine the knowledge of autism of special education paraprofessionals assigned to children with autism; 2) to compare their knowledge of autism to the knowledge of parents of children with autism; 3) to determine special education paraprofessional's perceived levels of confidence in providing instructional support to children with autism; and 4) to determine parents' perceived levels of confidence in the paraprofessional's ability to provide services to children with autism. This chapter contains the inclusion and exclusion criteria for participation, materials, data collection methods, and procedures for data analysis.

## **Participants**

According to the Kentucky Department of Education special education personnel data, approximately 5,888 paraprofessionals were employed in Kentucky schools for the 2009-2010 school year. The total number of paraprofessionals contacted could not be determined due to constraints regarding the procedures for retrieving contact information.

Various chairpersons and/or presidents of autism support groups throughout Kentucky were notified to retrieve contact information for parents of children with autism. The exact number of parents contacted could not be determined due to constraints regarding the procedures used for retrieving contact information.

## **Survey Instrument**

The survey administered to participants in this study was a modified version of the Stone Autism Survey (1987) use in a previously conducted research study (Haggard, 2010). Further modifications were made in this study specifically to the background information and perceived levels of confidence sections for the target populations. The survey instrument was constructed online via the survey generating website SurveyMonkey (2010).

The survey was divided into three sections: (1) background information; (2) characteristics of autism; and (3) perceived levels of confidence. The survey was available in two versions; one for each of the targeted populations.

### ***Paraprofessional Survey***

The special education paraprofessional survey contained 47 items and was designed to obtain a better understanding of the roles and responsibilities of a paraprofessional in providing one-to-one instructional support to a child with autism,

their perceived levels of confidence in their knowledge of autism, perceived levels of confidence in providing instructional support to children diagnosed with autism, and preparedness in their respective roles (see Appendix A).

**Background Information.** This section contained 13 items requesting demographic information, education, and field experience in working with children with autism. Participants responded to the items either by choosing from a list of possible answers or by supplying their own response.

**Knowledge.** This section contained 22 items. Participants responded with a “yes”, “no”, or “don’t know” concerning various characteristics and/or misconceptions about autism. Only one version of this section of the survey was provided; each group of participants responded to the same statements and followed the same procedures for responding to each item.

**Confidence.** This section contained 12 items. Participants were asked to rate their confidence on statements regarding job tasks, amount of training, and knowledge of autism. The participants rated their perceived levels of confidence using a 6-point Likert scale (1=strongly disagree to 6=strongly agree). The last two survey items in this section provided the participants with the opportunity to supply their own response.

### *Parent Survey*

This version of the survey was designed to assess the parent’s knowledge of autism, sources of their knowledge and perceived levels of confidence in the paraprofessional’s knowledge of autism and their ability to provide one-on-one instructional support to their child or children diagnosed with autism (see Appendix B).

**Background Information.** This section consisted of 10 items requesting specific information regarding the parents' child or children diagnosed with autism. Specifically, parents were asked to provide the current severity of their child or children's autism, percent of the day the special education paraprofessional is with their child, and their frequency of contact with the paraprofessional. Further, this section requested that parents indicate what source(s) they used in order to obtain or expand their knowledge of autism. Procedures for responding to the items within this section were consistent with the methods used in the paraprofessional's survey.

**Knowledge.** This portion of the survey was the same as the survey used for the paraprofessionals. Methods for responding to each statement were also the same.

**Confidence.** This section contained 12 items and requested parents rate their perceived levels of confidence on specific statements using a 6-point Likert scale mirroring the scale used in the paraprofessionals survey. Various statements were provided regarding the paraprofessional's roles, responsibilities and preparedness when working with children with autism. These questions were designed to elicit the parents' perceptions of paraprofessionals, their levels of confidence in the paraprofessionals' ability to provide instructional support to their child or children diagnosed with autism, and their knowledge of autism. Further, parents were asked to rate their levels of confidence in their own understanding and recognition of the signs and symptoms of autism.

The paraprofessional survey contained 47 items whereas the parent's survey contained 44. This difference is accounted for within the background information section in the paraprofessional survey due to the need for additional information of this group for

the purposes of the study. Instructions for each section of the survey were provided at the top of the page in bold font to ensure visibility.

### **Procedure**

The survey was created using the survey generating website, SurveyMonkey (2010). A link to the survey was created and attached to the request for participation e-mail sent to the paraprofessionals or special education directors in each district.

### ***Identifying Paraprofessionals***

Paraprofessionals were recruited via e-mail. Since no statewide e-mail distribution list for this population was in existence at the time of contact, the Kentucky Department of Education was contacted to request a list of all special education directors in the state of Kentucky (see Appendix C). Once obtained, an e-mail was sent to the special education directors in each school district of the 174 counties in Kentucky requesting (1) a list of the e-mail addresses of the special education paraprofessionals in their district; or (2) an e-mail be forwarded to the target population requesting their anonymous and voluntary participation in the study (see Appendix D).

A total of 50 special education directors replied to request for contact information for special education paraprofessionals. A total of 12 special education directors provided the e-mail addresses of the special education paraprofessionals employed within their district. The remaining 38 agreed to forward the request for participation letter containing the link to the survey to the targeted population.

### ***Identifying Parents***

The Kentucky Autism Training Center (KATC) was approached to request contact information for support groups for parents of children with autism in Kentucky (see Appendix E).

This recruitment method was found to be the most efficient, organized way to contact parents. An e-mail was sent to the chairperson and/or president of support groups for parents of children with autism in various locations in the state of Kentucky provided by KATC. The e-mail requested (1) a list be provided of the e-mail addresses of the parents of children with autism who are members of their support group; or (2) an e-mail be forwarded to members of the support group requesting their anonymous and voluntary participation. Further, the KATC agreed to post a link to the survey on their website at <https://louisville.edu/education/kyautismtraining/> so that parents of a child or children with autism who were not members of a support group would be notified of the study (see Appendix F).

A total of 15 support group presidents and/or chairpersons responded to the e-mail requesting contact information for parents of children with autism. One chairperson provided the e-mail addresses of the members of their group. The remaining 14 agreed to forward the request for participation e-mail to their members.

### **Email Requests**

An e-mail was sent directly to the special education paraprofessionals and the parents of children with autism if an e-mail address was provided. Otherwise, an e-mail was sent to the special education directors of each school district and the president and/or support group chairpersons throughout Kentucky to be forwarded to the intended

populations. The e-mail introduced the researcher, the purpose of the study, possible benefits of participation, contact information for the researcher and the faculty advisor in the event that questions or concerns arose, and the link to the survey. Further, it was explained that participation in the study was completely voluntary and anonymous, as no identifying information was requested (see Appendix G and H).

Participants were instructed to not include their name or any other identifying information in regards to their place of employment or names of individuals with whom they work. The e-mail included a date for completion of the survey. A reminder e-mail was sent to the same contacts/participants approximately two weeks after the initial contact e-mail in order to allow those who had not completed the survey ample time to do so within a specific time frame. Responses were no longer accepted after the two week reminder date noted in the reminder e-mail (see Appendix I).

### **Data Analysis**

Inclusion of the participants in the study was based on information retrieved from the background information sections of the survey. All data were downloaded from SurveyMonkey (2010) into an Excel spreadsheet and then uploaded into the statistical analyzing software program, MiniTab (2010). All statistical analysis procedures used a significance criterion of ( $p=.05$ ) and a 95% confidence interval. Participant responses for the demographic portion of the survey were tallied and summarized using descriptive statistics. A percentage was calculated for each statement.

Responses collected from the knowledge portion of the survey were analyzed using a two sample *t*-test to determine the proportion of correct response between the two groups. Similarly, the sum of 'don't know' responses was analyzed using the same

method of statistical analysis. Further analysis was conducted using a two-sample  $z$ -test to determine if a significant difference was present on responses to specific autism knowledge statements between the two groups.

Responses to the perceived levels of confidence section of the survey were tallied for both groups and a percentage was calculated. Further analysis was conducted using a test of two proportions comparing similar confidence item statements between the two groups.

## CHAPTER FOUR

### Results

The purposes of this survey were 1) to determine the knowledge of autism of special education paraprofessionals assigned to children with autism; 2) to compare their knowledge of autism to the knowledge of parents of children with autism; 3) to determine special education paraprofessionals' perceived levels of confidence in providing instructional support to children with autism; and 4) to determine parent's perceived levels of confidence in the paraprofessional's ability to provide services to children with autism. The respondents included special education paraprofessionals assigned to a child with autism in the Kentucky public school system and parents of children with autism who receive one-to-one support from a paraprofessional meeting the above criteria. The participants completed a modified version of the Stone Autism Survey (1987) used in a previously conducted research study (Haggard, 2010). The survey was divided into three sections: 1) demographic information; 2) knowledge of autism characteristics; and 3) perceived levels of confidence, and was available in two versions. Further modifications were made to the demographic and confidence sections of each survey for the respective populations.

A total of 222 surveys were collected online using the survey generating website, SurveyMonkey (2010). A total of 173 paraprofessionals and 49 parents of children with autism participated in the study. Participants

were included if they met specific inclusion criteria collected in the background information in Section I. of each version of the survey.

Approximately 87% (n=150) of paraprofessionals and 96% (n=48) of parents of children with autism completed the survey in its entirety. All survey data were analyzed regardless of completion. Missing data labels were assigned to unanswered survey items.

The total number of surveys distributed cannot be calculated due to the specific methods used in recruiting the participants. In some instances, the special education director and support group chairperson were held responsible for dispersing the link to the survey via e-mail to prospective participants. For this reason, the total number of paraprofessionals and parents who actually received the e-mail is unknown.

## **Background Results**

### ***Paraprofessionals***

Section I. of the paraprofessional survey contained a series of questions designed to obtain paraprofessionals' specific background information, and information regarding their assigned child diagnosed with autism. Participants in this group were asked to provide the following information: age, gender, age of diagnosis, and severity of the child's autism to whom they were assigned as a paraprofessional. Participants were also asked to indicate: their gender, previous experience in autism, sources of autism knowledge, top three sources for autism knowledge, number of attended trainings in autism and highest level of education completed. Finally,

participants were asked to respond 'yes' or 'no' to a series of questions regarding supervision, awareness of individualized education plan (IEP) goals and lesson plans.

Paraprofessionals (n=171) were asked to provide the age of the child with autism to whom they were assigned as a paraprofessional.

Paraprofessionals were given the opportunity to supply their own response rather than selecting the child's age from a list. While all paraprofessionals provided a response to the question, several (n=28) provided more than one age (e.g., 11,11, 12, 14) or the grade levels of the children with autism to whom they provide one-to-one support. Two respondents did not supply an age or grade level and instead supplied a response unrelated to the question. As a result, these two respondents were not included in the group data analysis for this section. This information was labeled as missing data during statistical analysis procedures.

A total of 28 responses was adjusted by choosing the largest age from the list of ages provided, for example, if an age was repeated several times (e.g., 11, 11, 12, 12), the largest age was chosen. For those respondents who provided grade levels (3rd, 4th, 5th), the highest grade was chosen and the typical age of children within that grade level was used for that response. The adjusted ages were used in the statistical analysis to compute the mean age of children receiving one-to-one support from paraprofessionals. Analysis revealed the mean age of children to be 10 and the overall age range between four and 20 years.

Paraprofessionals (N=173) were asked to indicate the gender of the child with autism to whom they were assigned . A majority (84.4%) were male and a few (15.6%) were female

Paraprofessionals were to indicate if their assigned child was diagnosed with autism within the past 10 years by answering ‘yes,’ ‘no,’ or ‘don’t know.’ More than half (67.6%) of paraprofessionals responded ‘yes.’ Some paraprofessionals (25%) responded ‘don’t know,’ and even fewer (10.9%) responded ‘no’ to the question.

Paraprofessionals were asked to indicate the severity of the child’s autism by choosing from three severity levels: 1) mild (high functioning); 2) moderate; and 3) severe. Participants were also given the opportunity to respond “don’t know” in the event that he/she was not aware of the diagnosis of the child at the time of survey completion. Fifty-seven (32.9%) reported working with a child who had mild (high functioning) autism. Sixty-seven (38.7%) indicated providing services to children with moderate autism. Fewer (20.8%) reported working with a child diagnosed with severe autism. Only 13 (7.5%) responded “don’t know” regarding the severity of the child’s autism (see Table 1, Appendix J).

Paraprofessionals were asked to provide their gender and previous experience in working with children with autism. The majority (90.2%) were female. The remaining 9.8% were male. The majority of paraprofessionals (76.3%) reported having previous experience in autism and (23.7%) reported having no previous experience.

Paraprofessionals were asked to indicate where they received information about autism by choosing from a list of provided resources.

Figure 4-1 illustrates the percentage of paraprofessionals who reported using each of the provided resources to obtain knowledge about autism.

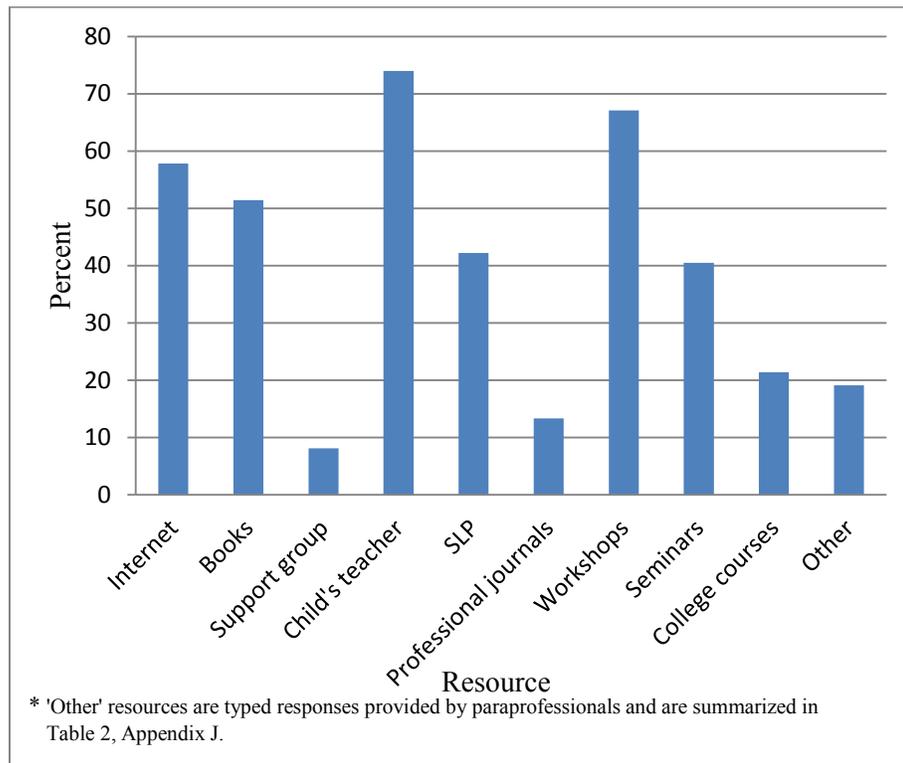


Figure 4-1. Percentage of Resources used by Paraprofessionals for Autism Knowledge.

Participants were permitted to select more than one resource and were also given the option to supply their own response by choosing “other professional” in the event their specific resource was not listed as a choice. A majority of paraprofessionals (74%) reported their knowledge came from the child’s teacher and 116 paraprofessionals (67%) reported workshops. Few paraprofessionals (13.3%) reported professional journals and even fewer (8%) selected support groups as a resource for obtaining knowledge about autism.

Thirty-three paraprofessionals (19%) provided a typed response for ‘other professional’ (see Table 2, Appendix J). Responses were tallied, divided into categories and the most frequently occurring responses were identified within each group to form a percentage. Typed responses included both other professionals as well as a variety of different resources used to obtain information about autism including parents and number of trainings attended in autism. Four paraprofessionals (12%) stated they received information about autism from the parents of their assigned child. Similarly, four paraprofessionals (12%) stated previous experience; two (9%) stated they received their knowledge about autism from other aides with more experience; two (6%) reported the special education teacher; three (9%) reported the district autism specialist; and two (6%) of the paraprofessionals reported being parents of children with autism themselves. Two paraprofessionals (6%) reported they had not received any information or completed any trainings about autism. One of the participants reported working in an autism unit for a year without having had prior training or experience in providing instructional

support to children diagnosed with an autism spectrum disorder (ASD). The remaining responses were composed of a mixture of different resources ranging from private therapists to annual professional development activities (see Table 2, Appendix J).

Paraprofessionals were asked to select the top three resources providing the best information about autism using the same list of resources (see Table 3, Appendix J). Participants were, again, given the opportunity to select ‘other professional’ and provide their own typed response. A majority of paraprofessionals (66%) indicated that the child’s teacher was among their top three resources for autism knowledge. About 61% of paraprofessionals reported workshops, few (7%) reported professional journals and approximately 10% of paraprofessionals selected support groups as being in their top three resources for providing the best information about autism. Twenty-five paraprofessionals (14%) selected the ‘other professional’ option and provided a typed response.

The typed responses were tallied and divided into categories. A percentage was calculated to determine the most frequently occurring responses. Most paraprofessionals (44%) reported hands-on experience as being among the three best resources for obtaining information about autism and three paraprofessionals (12%) reported parents of their assigned child. The remaining categories of typed responses are summarized in Table 4 (Appendix J).

Paraprofessionals were asked to indicate the number of trainings or workshops they have attended in autism (see Table 5, Appendix J). Thirty-seven (21.4%) paraprofessionals attended zero trainings or workshops in autism. Some (19.6%) attended one to two; fewer (17.3%) attended two to three; 13.9% attended three to four; even fewer (6.9%) attended four to five; and 20.8% attended more than 5 trainings or workshops in autism.

Paraprofessionals were asked to indicate their highest level of education completed (see Table 6, Appendix J). Eighty-four paraprofessionals (48.6%) reported their highest level of education completed was a high school diploma or GED; thirty-two (18.5%) reported having an Associate's degree and fifty-seven (32.9%) reported having a Bachelor's degree.

Paraprofessionals were asked if the special education teacher, general education teacher, speech-language pathologist or other professional provided lesson plans for their assigned child. A majority (67.7%) reported 'yes' and some (32.9%) responded 'no,' they did not receive lesson plans from a school professional.

Paraprofessionals were asked if they were aware of the child's goals as stated in the child's IEP. The majority (85.5%) of paraprofessionals responded with 'yes,' while (14.5%) responded 'no,' they were not aware of the child's goals.

Paraprofessionals were asked if they had ever been supervised by the special education teacher, general education teacher, speech-language pathologist or other professional. The majority of paraprofessionals (91.9%)

responded 'yes.' Few paraprofessionals (8%) reported they had never been supervised.

### ***Parents***

A series of questions were asked to obtain parents' background information and specific information regarding their child diagnosed with autism. Participants in this group were asked to indicate the following: current age of child, child's gender, parents' gender, and severity of the child's autism. Subsequent survey items requested information involving the child's special education paraprofessional including: how long the child has received one-to-one instructional support from a paraprofessional, parents' frequency of contact with the paraprofessional, how often paraprofessional attends the child's IEP meetings, percent of the day child spends with paraprofessional and the number of different paraprofessionals assigned to the child since first enrolled in school. Finally, parents were asked to specify where they received their information about autism.

Parents (N=49) were asked to provide the age of their child diagnosed with autism by supplying their own response. The mean age of children was 10 and the range was between two and 20 years of age. No adjustments to age were warranted for this group.

Parents were asked to indicate their child's gender and their own gender. The majority of parents (81.6%) indicated their child was male whereas (18.4%) reported their child was female. Forty-three (87.8%) of parents who responded to the survey were female and six (12.2%) were male.

Parents were asked to indicate the severity of their child's autism (see Table 7, Appendix J). Fourteen parents (28.6%) reported their child to be mild (high-functioning). About half (51.0%) indicated moderate severity, eight (16.3%) reported severe autism, and two (4.1%) reported they did not know the severity of their child's autism.

Parents were asked to specify the amount of time their child has received one-to-one instructional support from a paraprofessional (see Table 8, Appendix G). Four parents (8.2%) reported their child has received support less than one year, six (12.2%) reported 1 to 2 years, fourteen (28.6%) reported 2 to 3 years, two (4.1%) reported 4 to 5 years, and twenty (40.8%) reported their child has received more than 5 years of instructional support from a paraprofessional.

Parents were asked to indicate how often they corresponded with their child's paraprofessional (see Table 9, Appendix J). Less than half (32.7%) of parents reported corresponding with their child's paraprofessional every day. Fifteen (30.6%) indicated 1 to 2 times per week. Nine (18.4%) reported once a month. Only two (4.1%) indicated every other month, and seven (14.3%) parents indicated that he/she rarely speaks with their child's paraprofessional.

Parents were asked to indicate how often the paraprofessional attends their child's IEP meetings by using the following scale: always, frequently, sometimes and never (see Table 10, Appendix J). Twenty parents (40.8%) reported the paraprofessional always attended their child's IEP meetings. Six (12.2%) reported frequent attendance, five (10.2%) indicated sometimes, and

less than half (37%) reported the paraprofessional never attended their child's IEP meetings.

Parents were asked to indicate the percent of the day their child spends with the paraprofessional by selecting from the following: 25%, 50%, 75% and 100% (see Table 11, Appendix J). Findings indicated 20 parents (40.8%) reported their child spent 25% of the day with their paraprofessional; seven (14.3%) reported 50% of the day; nine (18.4%) reported 75% of the day, and thirteen parents (26.5%) reported their child spent 100% of the day with their assigned paraprofessional.

Parents were asked to indicate how many different paraprofessionals their child has been assigned to since he/she was first enrolled in school (see Table 12, Appendix J). Nine parents (18.4%) reported one; eleven (22.4%) indicated two; nine parents (18.4%) reported three and four parents (8.2%) reported four. Zero parents (0%) reported five paraprofessionals and 16 parents (32.7%) indicated their child has been assigned to five or more paraprofessionals since he/she was first enrolled in school.

Parents were asked to indicate where they received information about autism by choosing from a list of resources. The items on the list were the same as those for the paraprofessionals with the exception of two answer choices, "speech-language pathologist" and "child's paraprofessional," which were available only on the parent version. Parents were permitted to choose more than one resource, and were also given the opportunity to select 'other professional' in the event their resource was not provided. Figure 4-2

illustrates the percentage of parents who reported using each of the resources listed to obtain knowledge about autism.

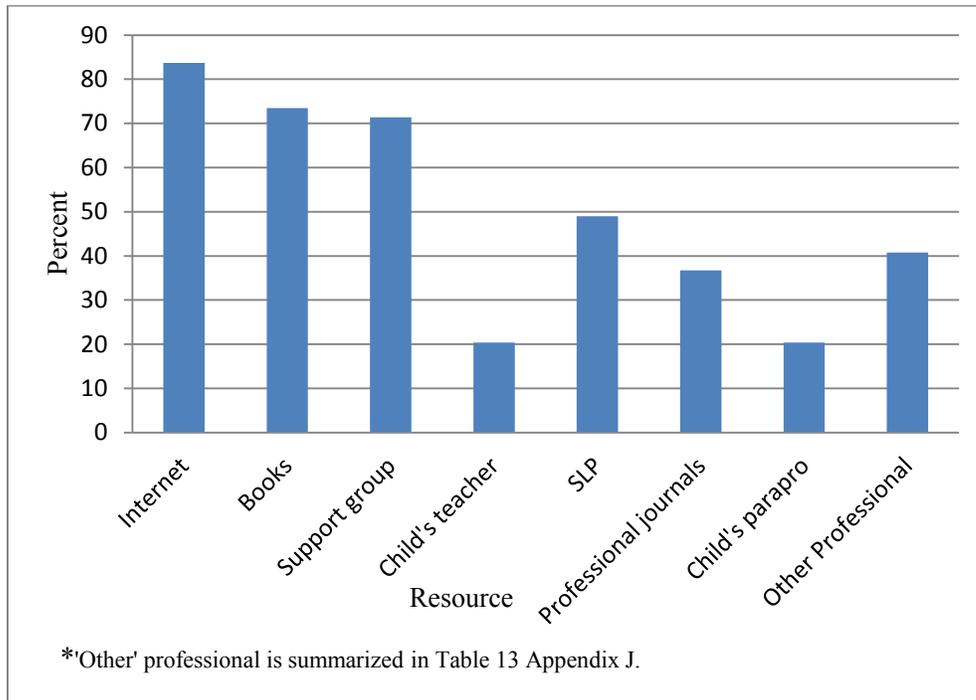


Figure 4-2. Percentage of Resources used by Parents for Autism Knowledge.

The majority of parents (83.7%) reported receiving their knowledge about autism from the internet compared to 57.8% of paraprofessionals. A total of 36 parents (73.5%) reported receiving information from books. Fewer parents (20.4%) reported receiving information from their child's teacher compared to 128 paraprofessionals (74%) who responded that the child's

teacher provided them with the most information about autism. Twenty parents (40.8%) supplied their own response for ‘other professional.’

The most frequently occurring responses for ‘other professional’ were tallied and divided into categories. A percentage was calculated to determine the most frequent responses which included: doctors and the Weisskopf Center in Louisville, KY. Four parents (20%) reported receiving their knowledge of autism from doctors and three (15%) listed the Weisskopf Center. The remaining responses ranged from ABA therapists to a combination of different resources. Responses are summarized in table form (see Table 13, Appendix J).

### **Knowledge of Autism**

#### ***Paraprofessional and Parent Responses***

Section II of the survey included 22 statements addressing facts and misconceptions associated with the characteristics of autism. Participants indicated their level of agreement for each statement by answering “yes,” “no” or “don’t know.” Each group received the same statements; no modifications were made for the target populations. A total of 162 paraprofessionals and 49 parents completed this section of the survey. Participant responses were analyzed using a two-sample T-test to determine the average number of correct responses for each group. A sum was calculated regarding the total number of ‘don’t know’ responses for each group using the same statistical analysis. A question by question analysis was performed using a two-proportion z-test to determine if participant responses to specific questions

were statistically significant between the groups. Participants who chose not to provide a response for this section of the survey were omitted from statistical analysis procedures and classified as missing data. The following paragraph provides the correct response to each of the 22 autism statements along with the percentage of participants who responded correctly. A summary of this information is provided in tabular form (see Table 14, Appendix J).

**“Autism is an emotional disorder.”** This statement is false. Slightly more parents (61.2%) answered this question correctly as compared to paraprofessionals (51.2%).

**“Autism is a developmental disorder.”** This statement is true. Most parents 89.8% answered this question correctly. A total of 75.3% of paraprofessionals accurately responded to this statement.

**“Children with autism are deliberately noncompliant.”** This statement is false. A majority of the participants responded accurately to this statement. A total of 93.2% of paraprofessionals and 95.9% of parents responded correctly.

**“Children with autism do not show emotional attachment, even to parents.”** This statement is false. Slightly more parents (85.7%) answered this question correctly. Paraprofessionals were not far behind with (79.6%) of the participants responding correctly to the statement.

**“Most children with autism do not talk.”** This statement is false. The percentage of correct responses between the two groups was close.

Slightly more paraprofessionals (79.6%) responded correctly to the statement when compared to the 75.5% of parents who provided a correct response.

**“Most children with autism are also mentally retarded.”** This statement is false. A majority of the participants responded accurately. A total of 93.2% of paraprofessionals responded correctly to the statement as compared to (81.6%) of parents.

**“Most children with autism are more intelligent than scores from standardized tests indicate.”** This statement is true. The percentage of parents (91.8%) who responded correctly was higher than the percentage of paraprofessionals (73.5%).

**“Autism exists only in childhood.”** This statement is false. All parents (100%) responded correctly to this statement. Almost all of the paraprofessionals (97.5%) were accurate in their response to this statement.

**“Autism can be diagnosed as early as 18 months.”** This statement is true. A majority of parents (89.8%) responded correctly to this statement. A little over half of paraprofessionals (59.9%) provided a correct response to the statement.

**“With proper treatment, most children can outgrow autism.”** This statement is false. A majority of participants provided correct responses. A total of 85.7% of parents responded correctly compared to 81.5% of paraprofessionals.

**“Even with early intervention, the prognosis for independent community functioning of children with autism is poor.”** This statement is

false. A little over half in each group of the participants responded correctly. A total of 59.2% of parents and 58.0% of paraprofessionals provided a correct response to this statement.

**“When children with autism do not respond to a question/direction to which he/she has shown a previous response to, he/he is just being stubborn and noncompliant.”** This statement is false. A majority of participants provided an accurate response with 93.8% of paraprofessionals and 95.9% of parents responding correctly to the statement..

**“It is difficult to distinguish between autism and childhood schizophrenia.”** This statement is false. A larger percentage of parents (77.6%) responded correctly to this statement when compared to the number of paraprofessionals (43.2%).

**“It is important that autistic children receive special education services at school.”** This statement is true. Nearly all participants responded correctly to this statement. Almost all parents (98.0%) and 96.9% of paraprofessionals provided an accurate response.

**“Autism occurs more commonly among higher socioeconomic levels.”** This statement is false. Parents (79.6%) responded to this statement accurately. A little over half of paraprofessionals (57.4%) responded to the statement accurately.

**“Autistic children’s withdrawal is mostly due to cold, rejecting parents.”** This statement is false. Nearly all participants responded correctly

to this statement. Most all of the paraprofessionals (95.1%) responded to the statement correctly whereas as 100% of parents responded correctly.

**“Autism is generally evident before age 3.”** 75.5% of parents and 68.5% of paraprofessionals responded to this statement correctly.

**“Autistic children usually grow up to be schizophrenic adults.”** This statement is false. Most parents (87.8%) responded correctly to the statement, whereas 74.1% of paraprofessionals accurately responded to the statement.

**“Early diagnosis and intervention are important for children with autism.”** This statement is true. All parents (100%) responded correctly to this statement. Almost all paraprofessionals (98.8%) accurately responded.

**“Children with autism exhibit impaired social skills.”** This statement is true. All parents (100%) and 88.9% of paraprofessionals provided an accurate response to this statement.

**“Children with autism exhibit delayed or impaired communication skills.”** This statement is true. Nearly all parents (98.0%) and paraprofessionals (90.7%) responded correctly to this statement.

**“Children with autism engage in repetitive and stereotypical behaviors.”** This statement is true. Most parents (95.9%) and fewer paraprofessionals (84.6%) provided a correct response to this statement.

### Analysis of Autism Knowledge between Groups

A two-sample *t*-test was performed to determine if a significant difference existed between the number of correct and incorrect responses between the two groups using a significant criterion of ( $p=.05$ ). Figure 4-3 illustrates the average scores for each group.

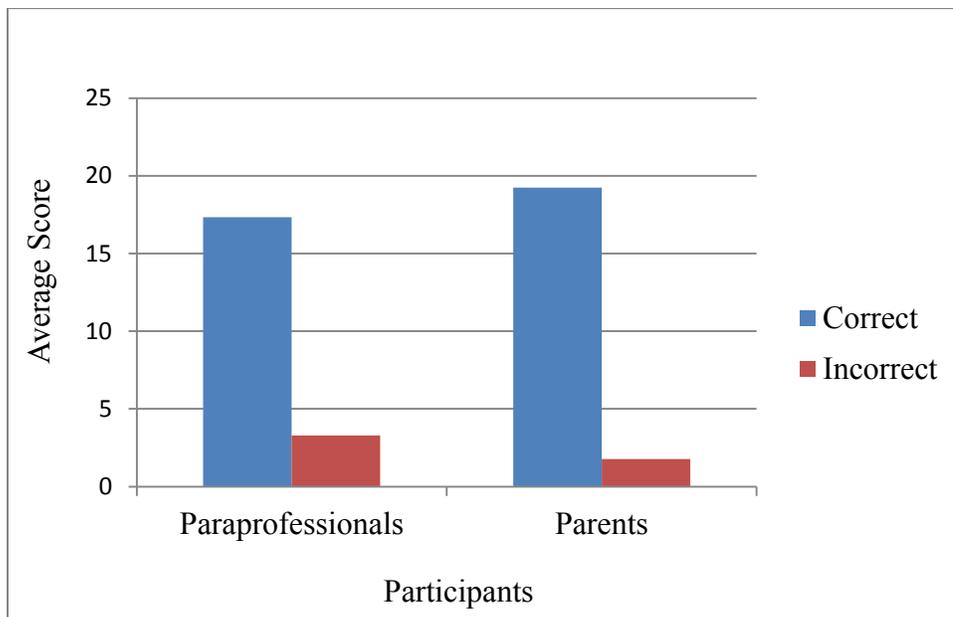


Figure 4-3. Average Score for Correct and Incorrect Responses.

Paraprofessionals scored significantly lower than parents on their knowledge of autism characteristics ( $p < .000$ ). Paraprofessionals' average number of correct responses was 17.34 and parents' was 19.24.

A significant difference was also found in the number of “don’t know” responses for each group. A two-sample *t*-test revealed the number of “don’t know” responses by paraprofessionals was significantly higher than those by parents ( $p < .000$ ). Paraprofessionals’ average number of “don’t know” responses was 2.91 (SD=2.90) compared to parents’ average of 0.98 (SD=1.45). The percentage of participants who responded “don’t know” for each autism knowledge statement is summarized in Table 15 (Appendix J).

### ***Item Analysis of Autism Knowledge Statements***

A two-sample *Z*-test was used to determine if a significant difference existed between groups on specific autism knowledge statements using a significance criterion of ( $p=.05$ ). Analysis revealed a significant difference on seven of the 22 statements administered in the survey. The follow statements were identified: “autism is a developmental disorder,” “most children with autism are also mentally retarded,” “most children with autism are more intelligent than scores from standardizes tests indicate,” “autism occurs more commonly among higher socioeconomic levels,” “autistic children usually grow up to be schizophrenic adults,” “children with autism exhibit delayed or impaired communication skills,” and “children with autism engage in repetitive and stereotypical behaviors.”

The percentage of parents who provided a correct response to the statements was significantly higher than the percentage of paraprofessionals who responded correctly on six of the seven statements. The percent of paraprofessionals who responded correctly to the statement, “most children

with autism are also mentally retarded” was shown to be significantly higher (p= .015) than the percent of parents who responded correctly. Table 4-1 summarizes analysis scores for knowledge of autism characteristics.

Table 4-1

*Two-Sample Z-test Scores for Knowledge of Autism Characteristics*

Item no.	Statement	Z-score	P-Value	95% CI
2	Autism is a developmental disorder	2.17	.030	[0.03, 0.25]
6	*Most Children with autism are also mentally retarded.	-2.42	.015	[-0.23, -0.00]
7	Most children with autism are more intelligent than standardized test scores indicate.	2.71	.006	[0.08, 0.28]
15	Autism occurs more commonly among higher socioeconomic levels.	2.81	.004	[0.08, 0.35]
18	Autistic children usually grow up to be schizophrenic adults.	2.00	.045	[0.02, 0.25]
22	Children with autism engage in repetitive and stereotypical behaviors	2.08	.037	[0.03, 0.19]

*Note.* Statements included are those found to have statistical significance.

\*Refers to the only statement paraprofessionals answered correctly more often than parents.

Figure 4-4 compares the percentage of correct responses between each group for those items found to be statistically significant.

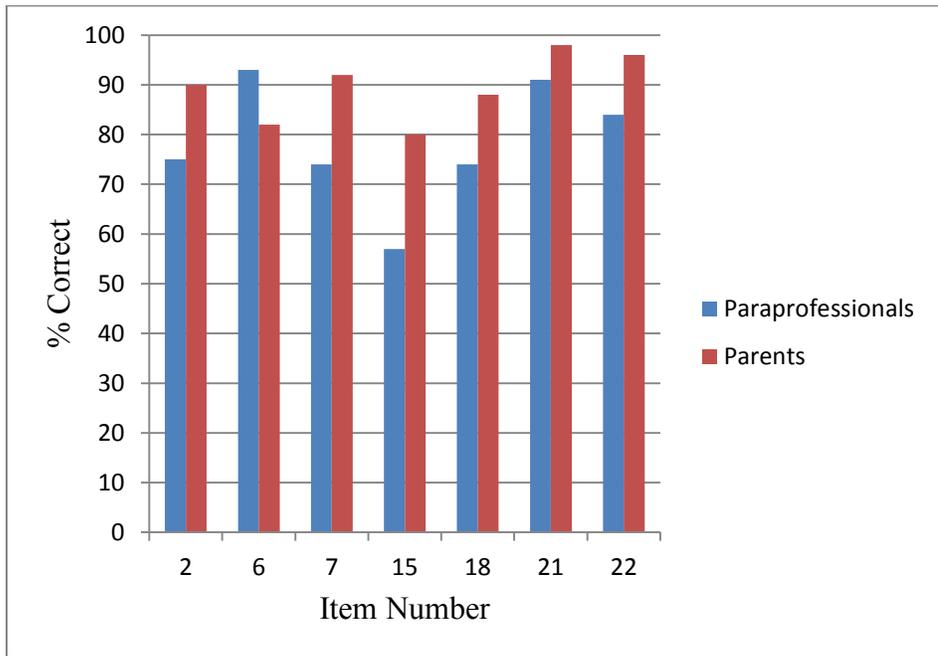


Figure 4-4 Percent of Correct Responses on Statistically Significant Items between Groups.

### **Perceived Levels of Confidence**

#### ***Paraprofessionals***

A total of 154 paraprofessionals completed this portion of the survey. Those who did not complete this section (n=19) were not included in analysis procedures and were classified as missing data. Paraprofessionals were asked to respond to 10 statements examining their perceived levels of confidence in

providing direct supplemental instruction/intervention services to their assigned child diagnosed with autism. Additional statements were included to further examine confidence levels regarding specific skills, responsibilities and qualifications required in their respective professions. Participants were asked to rate their perceived level of confidence for each statement on a scale from 1-strongly disagree to 6-strongly agree. Paraprofessionals' level of agreement for each statement is discussed below.

**“The special education teacher or another professional in the school spent time talking with me about the diagnosis of the child I am currently assigned to.”** The confidence ratings for this statement were as follows: 1 (8.4%), 2 (9.7%), 3 (5.8%), 4(18.2%), 5 (24%), and 6 (33.8%).

**“I feel confident in my ability to recognize signs/symptoms of autism in children.”** The confidence ratings for this statement were as follows: 1 (5.2%), 2 (3.9%), 3 (4.5%), 4 (35.1%), 5 (35.7%), and 6 (15.6%).

**“I feel confident in my ability to explain autism to others.”** The confidence ratings for this statement were as follows: 1 (3.9%), 2 (6.5%), 3 (9.1%), 4 (45.5%), 5 (26.6%), and 6 (8.4%).

**“I feel confident in preparing materials and assisting with informal documentation (e.g., tallying notes for the teacher/service provider to use) for children with autism.”** The confidence ratings for this statement were as follows: 1 (3.9%), 2 (2.6%), 3(3.9%), 4(16.9%), 5 (39.6%), and 6 (33.1%).

**“I feel confident in providing direct supplemental instruction/intervention services to children with autism.”** The confidence ratings for this statement were as follows: 1 (2.6%), 2 (2.6%), 3 (4.5%), 4 (16.9%), 5 (39.6%), and 6 (33.8%).

**“I feel comfortable in talking with the special education teacher, speech-language pathologist, general education teacher and other professionals involved with children with autism.”** The confidence ratings for this statement were as follows: 1 (3.2%), 2 (1.3%), 3 (0.0%), 4 (11.7%), 5 (29.2%), and 6 (54.5%).

**“I feel comfortable in the amount of training I received for providing services to children with autism.”** The confidence ratings for this statement were as follows: 1 (9.1%), 2 (11%), 3 (11%), 4 (26%), 5 (26.6%), and 6 (16.2%).

**“I feel confident in my ability to implement lesson plans and/or behavioral supports designated by the special education teacher or other supervising professionals for children with autism.”** The confidence ratings for this statement were as follows: 1 (2.6%), 2 (1.9%), 3 (4.5%), 4 (15.6%), 5 (41.6%), and 6 (33.8%).

**“I feel that training in autism should be required before working with children with autism.”** The confidence ratings for this statement were as follows: 1 (4.5%), 2 (0.6%), 3 (1.3%), 4 (19.5%), 5 (14.3%), and 6 (59.7%).

**“I feel confident that I was hired for this position based on my experience and/or qualifications for working with children with autism.”**

The confidence ratings for this statement were as follows: 1 (11.7%), 2 (11%), 3 (11.7%), 4 (22.1%), 5 (25.3%), and 6 (18.2%).

Mean confidence levels were calculated for each of the statements and are summarized in Table 4-2. Analysis revealed mean confidence levels of paraprofessionals ranged from 3.93 to 5.26 and were higher than 4 on 8 out of 10 statements

Table 4-2  
*Paraprofessionals’ Mean Confidence Ratings*

Statement	Mean Rating
School professional discussed diagnosis of child	4.41
Ability to recognize signs/symptoms of autism	4.39
Ability to explain autism to others	4.10
Ability to prepare materials and assist with informal documentation	4.85
Ability to provide direct supplemental/ intervention services	4.91
Ability to talk with professionals involved with children with autism	5.26
Amount of training on autism received	4.28
Ability to implement lesson plans/behavioral supports	4.93
Require training in autism prior to provision of services	5.18
Hired based on experience/qualifications	3.93

*Note. Statements from survey were summarized for presentation purposes and may not contain all components.*

Analysis revealed mean confidence levels for paraprofessionals ranged from 3.93 to 5.26 and were higher than 4 on 8 out of 10 statements.

Paraprofessionals somewhat disagreed with the statement, “I feel confident I was hired for this position based on my experience and/or qualifications.”

Paraprofessionals somewhat agreed they were confident in their ability to provide direct supplemental support/intervention to children with autism.

Paraprofessionals mostly agreed that training in autism should be required prior to the provision of services and they somewhat agreed they were

confident in the amount of training received in autism. Further,

paraprofessionals somewhat agreed they were confident in preparing materials and documents, explaining autism to others, and recognizing signs/symptoms

of autism.

Two more survey items were included in this section of the survey to further enhance general understanding of paraprofessionals’ knowledge in the area of autism. Paraprofessionals were asked to respond to the statement “who do you believe should make the diagnosis of autism?” A list of professionals was provided and included: psychologist, physician/pediatrician, speech-language pathologist, team and other. Participants were given the opportunity to supply their own typed response in the event their choice was not listed (see Table 16, Appendix J).

A majority of paraprofessionals (83.8%) responded that all of the above as a team should make the diagnosis of autism. Few paraprofessionals believed the psychologist should make the diagnosis of autism and even fewer

(1.3%) selected speech-language pathologist. Two paraprofessionals (1.3%) selected 'other' and provided their own typed response. One of the participants suggested parents in combination with a team of professionals should make the diagnosis of autism whereas the other participant stated a center specializing in autism should take this responsibility in order to prevent the misdiagnosis of children.

The final question for this section of the survey requested parents explain what they believe causes autism. A variety of responses were collected and analyzed. Responses were divided into categories of the most frequently occurring responses. Frequently occurring responses were tallied for each category and a percentage was calculated. Less frequent responses were given their own category. The top three responses for paraprofessionals were 'don't know,' 'genetics' and 'causes could vary.' Less frequent responses included 'developmental,' 'during pregnancy' and 'processed food.' The remaining responses are summarized in the appendix (see Table 17, Appendix J).

### ***Parents***

A total of 48 parents responded to this section of the survey. One parent did not complete this section; therefore, a missing data label was assigned during data analysis procedures. Parents were asked to rate their perceived level of confidence in the paraprofessionals' ability to provide instructional support to children with autism using a 6-point Likert scale ranging from 1-strongly disagree to 6-strongly agree. Additional statements

regarding autism and paraprofessionals were included to further investigate parents' confidence in their own knowledge of autism, confidence in the paraprofessionals' knowledge of autism, the amount of training in autism received by paraprofessionals, supervision, reason for hire, and whether or not they feel comfortable communicating with their child's paraprofessional. The perceived levels of confidence of parents for each statement are discussed below.

**“The special education teacher or another professional in the school spent time talking with me about the diagnosis of my child”** The confidence ratings for this statement were as follows: 1 (29.2%), 2 (12.5%), 3 (14.6%), 4 (16.7%), 5 (10.4%), and 6 (16.7%).

**“I feel confident in my ability to recognize signs/symptoms of autism in children.”** The confidence ratings for this statement were as follows: 1 (4.2%), 2 (2.1%), 3 (4.2%), 4 (20.8%), 5 (35.4%), and 6 (33.3%).

**“I feel confident in my ability to explain autism to others.”** The confidence ratings for this statement were as follows: 1 (2.1%), 2 (0.0%), 3 (6.3%), 4 (20.8%), 5 (35.4%), and 6 (35.4%).

**“I feel comfortable talking with my child's paraprofessional about how my child is doing at school.”** The confidence ratings for this statement were as follows: 1 (4.2%), 2 (6.3%), 3 (4.2%), 4 (14.6%), 5 (18.8%), and 6 (52.1%).

**“I feel confident in the paraprofessional's ability to provide instructional support to my child with autism.”** The confidence ratings for

this statement were as follows: 1 (6.3%), 2 (2.1%), 3 (25.0%), 4 (25.0%), 5 (18.8%), and 6 (22.9%).

**“My child’s paraprofessional is knowledgeable about autism.”**

The confidence ratings for this statement were as follows: 1 (6.3%), 2 (6.3%), 3 (25.0%), 4 (31.3%), 5 (16.7%), and 6 (14.6%).

**“I feel paraprofessionals are properly trained in autism.”** The

confidence ratings for this statement were as follows: 1 (27.1%), 2 (14.6%), 3 (27.1%), 4 (20.8%), 5 (6.3%), and 6 (4.2%).

**“My child’s paraprofessional is properly supervised by the special education teacher or other faculty member(s).”** The confidence ratings for this statement were as follows: 1 (4.2%), 2 (8.3%), 3 (14.6%), 4 (37.5%), 5 (16.7%), and 6 (18.8%).

**“I feel that training in autism should be required before working with children with autism.”** The confidence ratings for this group were as follows: 1 (2.1%), 2 (0.0%), 3 (2.1%), 4 (2.1%), 5 (10.4%), and 6 (83.3%).

**“I feel confident that my child’s paraprofessional was hired for this position based on their experience and/or qualifications for working with children with autism.”** The confidence ratings for this statement were as follows: 1 (27.1%), 2 (16.7%), 3 (14.6%), 4 (25.0%), 5 (10.4%), and 6 (6.3%).

Analysis revealed parents’ mean confidence levels ranged from 2.77 to 5.69 (see Table 4). Mean ratings were higher than 4 on 6 out of 10 statements. Parents rated themselves as somewhat confident in the paraprofessionals’

ability to provide instructional support to their child. Parents mostly disagreed with the statement that their child’s paraprofessional was hired based on experience and/or qualifications. Similarly, parents mostly disagreed that paraprofessionals are properly trained in autism and somewhat disagreed that their child’s paraprofessional was knowledgeable about autism. Parents somewhat disagreed that the special education teacher or another professional spoke with them about the diagnosis of their child. Table 4-3 summarizes parents’ mean confidence ratings for each statement.

Table 4-3

*Parents’ Mean Confidence Ratings*

Statement	Mean Rating
School professional discussed diagnosis of my child	3.17
Ability to recognize signs/symptoms of autism	4.81
Ability to explain autism to others	4.94
Comfortable talking with my child’s paraprofessional	4.94
Paraprofessionals’ ability to provide instructional support	4.17
Paraprofessional is knowledgeable about autism	3.90
Paraprofessionals’ are properly trained in autism	2.77
Paraprofessional is properly supervised	4.10
Require training in autism prior to provision of services	*5.69
Hired based on experience/qualifications	2.94

*Note. Statements from survey were summarized for presentation purposes and may not precisely match item statement on survey. \*Indicates strong level of agreement.*

As in the paraprofessional survey, parents were administered two additional questions regarding their beliefs as to what causes autism, and who should make the diagnosis of autism.

Parents were asked, “Who do you believe should make the diagnosis of autism?” A list of professionals was provided and included an “other” option in the event the parents’ response was not listed (see Table 18, Appendix J). A majority of parents (79.2%) stated that all of the listed professionals as a team should make the diagnosis of autism. A total of 12.5% of parents selected psychologist and even fewer (6.3%) believed the physician/pediatrician should make the diagnosis of autism. One parent provided a typed response and stated that a pediatric neurologist trained in autism in combination with the other listed professionals should make the diagnosis as a team.

The final question for this section of the survey requested parents explain what they believe causes autism. A variety of responses were collected and analyzed. Responses were divided into categories of the most frequently occurring responses. Frequently occurring responses were tallied for each category and a percentage was calculated. Less frequent responses were given their own category. The top three responses for parents were, ‘various causes of autism,’ ‘don’t know’ and ‘vaccinations.’ Fewer parents believed that autism was a disorder occurring ‘at birth,’ or as a result of ‘environmental’ factors. The remaining responses are summarized in the appendix (see Table 19, Appendix J).

## **Percentage of Agreement in Paraprofessionals' Provision of Services**

Mean ratings were compared between the two groups on four perceived level of confidence statements sharing the same or similar subject matter using a significance criterion of ( $p=.05$ ). Only those statements that could be closely related on each version of the survey were compared. A percentage of agreement was calculated for each statement and significant differences were found on 3 out of the 4 confidence statements compared.

The first statement compared was "I feel paraprofessionals are properly trained in autism." Although the paraprofessionals' version of this statement reads, "I feel comfortable in the amount of training I received for providing services to children with autism," the underlying focus for both statements was to determine if paraprofessionals were receiving a sufficient amount of training in autism. A significant difference was found between the groups ( $p=.000$ ). Paraprofessionals were significantly more confident in their amount of trainings received in autism than parents, 95% CI [0.22, 0.52],  $Z=4.91$ .

The second statement compared was, "I feel that training in autism should be required before working with children with autism." No significant difference was detected with this statement. Both groups strongly agreed with this statement.

The third statement compared the perceived level of confidence that the paraprofessional was hired based on his/her experience and/or qualifications in autism. Parents were asked to indicate their level of

agreement while referring to their child's paraprofessional; whereas paraprofessionals were asked to indicate their level of agreement based on their own employment experience. A significant difference was found between the two groups. Paraprofessionals agreed to this statement significantly more often than parents ( $p=.004$ ). While mean ratings revealed that overall, paraprofessionals somewhat disagreed (3.93) and parents mostly disagreed (2.94) with this statement, further analysis revealed that paraprofessionals agreed with this statement more often, 95% CI [0.08, 0.39],  $Z=2.96$ .

The fourth and final statement compared participants' perceived level of confidence in the paraprofessionals' ability to provide instructional support to children with autism. Parents' version of this statement read "I feel confident in the paraprofessionals' ability to provide instructional support to my child with autism." Paraprofessionals' version of the statement read, "I feel confident in providing direct supplemental instruction/intervention services to children with autism." While confidence statements for each group of participants were worded differently, the (PI) considered "instructional support" and "direct supplemental instruction/intervention services" to represent the same job task.

A significant difference ( $p=.001$ ) was found when comparing confidence levels between the two groups. Paraprofessionals were significantly more confident than parents in their ability to provide instructional support to children with autism, 95% [0.09, 0.37],  $Z=3.27$ .

Figure 4-5 illustrates the percentage of agreement between paraprofessionals and parents on their perceived level of confidence in the paraprofessionals' provision of support services.

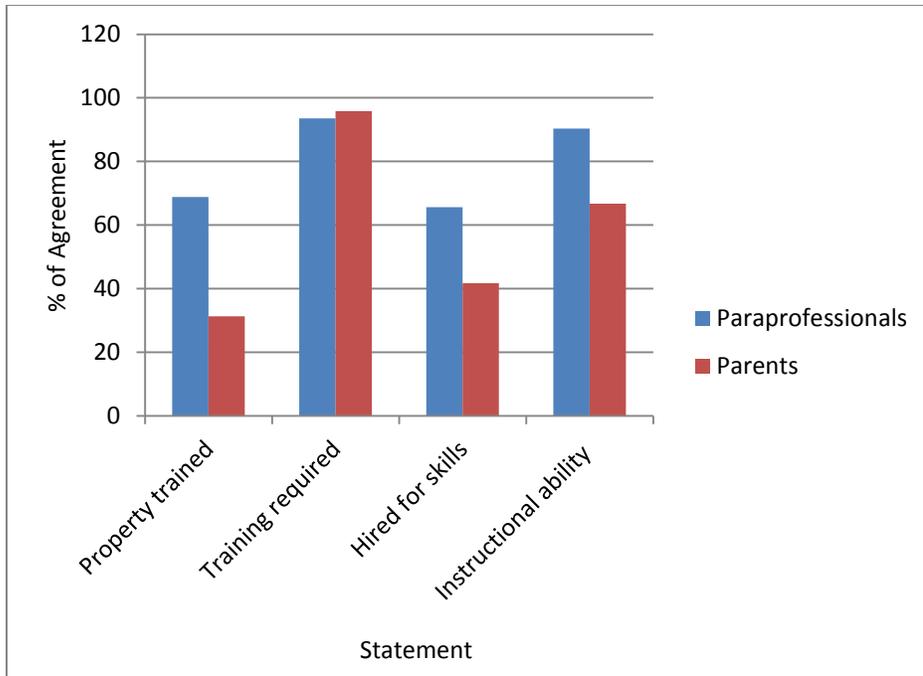


Figure 4-5 Percentage of Agreement between Paraprofessionals and Parents on Paraprofessionals' Provision of Services.

### **Additional Statistics**

Additional comparisons were made on specific items within the paraprofessionals' survey to determine if paraprofessionals' percent correct in their knowledge of autism statements were influenced by any one of the following areas from their background: highest level of education received,

number of attended trainings/workshops in autism and previous experience in working with children with autism. Significant differences were found on two of the three correlations. A significant difference was found for those paraprofessionals who attended zero trainings/workshops in autism, and those who reported attending 3 to 4 trainings/workshops in autism ( $p=.015$ ). In other words, those paraprofessionals who reported attending zero and 3 to 4 trainings/workshops in autism scored significantly higher in their knowledge of autism characteristics.

A significant difference was found between paraprofessionals' previous experience in autism and their percent correct when responding to knowledge of autism statements ( $p=.006$ ). Those paraprofessionals who reported having previous experience with autism scored significantly higher in their knowledge of autism characteristics. No significant difference was found between paraprofessionals' highest level of education completed and their percent correct in their knowledge of autism characteristics.

## CHAPTER 5

### Discussion

As mentioned in previous literature, it takes a village of knowledgeable individuals to educate a child with an autism spectrum disorder (ASD) (Scheuermann et al., 2003). The incredible diversity of the disorder paired with the increasing number of children being diagnosed and entering the public school system has created unique challenges for educators responsible for creating an individualized, appropriate education for all students. As surges in the number of autism cases continue, an increase in the reliance on paraprofessionals has also been observed to meet these demands; however, appropriate utilization of paraprofessionals in the educational setting has been in question. This study's findings highlight several pressing issues regarding the preparedness, knowledge, confidence, training and previous experience in autism among paraprofessionals hired to provide one-to-one instructional support to children diagnosed with autism in the Kentucky public school system. Further, concerns were noted with regards to parent's perceived levels of confidence in the paraprofessional's abilities to provide instructional support to children with autism and their overall knowledge of the disorder.

#### **Paraprofessionals' Knowledge of Autism**

Students with ASD receiving one-to-one instructional support may spend a majority of their day with the paraprofessional. With increasing demands for inclusion in the general education curriculum combined with the overall unpredictable nature of the disorder itself, it is essential paraprofessionals are knowledgeable about autism so appropriate instruction and support services can be provided.

Paraprofessional's knowledge of autism characteristics was determined in several ways. First, the percentage of correct responses for each knowledge statement was examined to determine in which areas of autism paraprofessionals were most proficient and which areas warranted a greater cause for concern in light of their assigned roles and responsibilities within their respective positions (Williams et al., 2011). Second, paraprofessional's average number of correct responses were calculated and compared to the average number of correct responses supplied by parents. Finally, a more in-depth statistical analysis was conducted comparing responses to individual autism statements between each group to determine if a significant difference was present in responses to any one statement. Responses to "don't know" statements were counted separately when determining the percentage of correct versus incorrect statements.

Results from the knowledge portion of the survey indicated that while a percentage of paraprofessionals responded correctly to each of the 22 statements, a percentage also responded incorrectly, suggesting that a portion of paraprofessionals hired to provide instructional support services to students with autism hold inaccurate beliefs in certain areas of their autism knowledge. Paraprofessionals' mean score of correct responses to knowledge of autism statements was 17.26. Further, paraprofessionals' mean number of incorrect responses was 3.29. Knowledge of autism statements was reviewed to determine which statements had the lowest percentage of correct responses and which statements had the highest percentage of correct responses. Statements where 60% or less of the paraprofessionals supplied a correct response were considered to be areas of concern which may warrant further investigation. Three statements were identified as areas of concern: "autism is an emotional disorder,"

(51.2%), “it is difficult to distinguish between autism and childhood schizophrenia,” (43.2%) and “autism occurs more commonly among higher socioeconomic levels” (57.4%).

Approximately 51% of paraprofessionals provided a correct response when disagreeing with the statement “autism is an emotional disorder.” Children with autism may struggle with regulating and controlling their emotions for a variety of different reasons. Tantrums and signs of irritability may occur in the presence of sensory difficulties, frustrations associated with communicating wants and needs or for reasons unknown to the observer. Autism was once thought to be an emotional disorder resulting from inadequate parenting. While research has long since disproved this theory and concluded that autism is a developmental disorder, it may not be surprising why so few paraprofessionals provided a correct response to this statement due to its long history of dispute (Mesibov, Adams, & Klinger, 1997; Rutter, 1971).

Paraprofessionals may consider autism to be an emotional disorder due to their personal experiences in managing behaviors. A previous study revealed that “paraprofessionals spend one fifth of their time providing behavioral supports to students” (Giangreco & Broer, 2005). Likewise, implementing behavior management plans is described as one role that may be assigned to the paraprofessional. The inaccurate belief that autism is an emotional disorder may negatively impact service delivery methods. Paraprofessionals may focus their efforts on only one aspect of the disorder, neglecting other areas of need. Further, paraprofessionals may not understand the function of an emotional outburst or meltdown and attribute them solely to behavioral mismanagement issues, not as possible communicative attempts or frustrations associated

with their environment. It is important for paraprofessionals to know that autism is not an emotional disorder so that appropriate methods of communication and service delivery can be provided and their assigned child's needs are being met.

Only 43.2% of paraprofessionals supplied a correct response for the statement "it is difficult to distinguish between autism and childhood schizophrenia." Autism was considered a form of schizophrenia for years. While Kanner distinguished the disorder from childhood schizophrenia in the early 1940's, he also specified the commonality of social isolation between the two (Mesibov et al., 1997). Kanner's discovery, paired with Blueler's initial use of the term over 100 years ago, was what ultimately convinced other prominent researchers in history to consider autism as merely one of the features of schizophrenia, not a separate condition all on its own (Mesibov et al., 1997).

Schizophrenia and autism do share other features including resistance to change and inappropriate interactions or emotions. However, as Kanner and several other researchers in past and recent history have explained, other key characteristics exist among the two disorders that are present in one disorder and absent in the other.

Due to the long history of autism and its difficulties with receiving a label all on its own, it is not surprising that paraprofessionals and other professionals alike have experienced difficulties in distinguishing the two disorders. However, it is imperative that paraprofessionals understand the key components of schizophrenia not present in autism including the rare diagnosis of mental retardation, development of language and inconsistent peaks and valleys experienced during the course of the disorder. These are features not consistent with autism. Inaccurate and outdated beliefs in this area may lead paraprofessionals to believe that their assigned child with autism will develop language

without necessary intervention. Further, paraprofessionals may have too high of expectations for their students with regards to their academic performance and may expect them to get better suddenly. These outdated beliefs can impact service delivery methods and effective communication with their assigned child if they continually challenge them in ways that are inappropriate for their specific needs.

Approximately 57% of paraprofessionals provided a correct response for the statement “autism occurs more commonly among higher socioeconomic levels.” Approximately 40% responded that they did not know. The belief that autism occurred more frequently among higher income families was observed by Kanner in the 1940’s who stated that autism was more likely to occur in children of parents who were more intelligent and financially secure (Mesibov, et. al, 1997). These convictions were shared among other researchers in the early 1970’s until referral bias was identified to be the most likely cause for this belief (Tsai, Stewart, Faust, & Shook, 1982). Paraprofessionals who hold this inaccurate belief may develop their own bias. Since research has shown that paraprofessionals can serve as important connectors between the parents of the children they serve and educators, this may lead to differential treatment in the children they work with. It is important that paraprofessionals remain unbiased when providing services and communicating with parents so that the child’s goals remain the top priority and his/her needs are appropriately met.

A higher percentage of paraprofessionals responded correctly to the following statements: “autism is a developmental disorder” (75.3%), “most children with autism are more intelligent than scores from standardized tests indicate” (73.5%), “autism can be diagnosed as early as 18 months” (59.9%), “even with early intervention, the prognosis

for independent community functioning of children with autism is poor” (58%), and “autism is generally evident before age 3” (68.5%).

Approximately 75% of paraprofessionals correctly identified autism as a developmental disorder. Research has defined autism as a developmental disorder that can be diagnosed as early as 18 months (Centers for Disease Control, 2012). It is important for paraprofessionals to be aware of the typical and atypical development of children so that a better understanding of the impacts of autism in all areas of development can be evident. A basic understanding of development is needed so that paraprofessionals understand how with age, characteristics of the disorder may change. As a result, their level of support or methods of service delivery may need to be adjusted, as well. Approximately 74% of paraprofessionals indicated that “children with autism are more intelligent than scores from standardized tests indicate.” Inaccurate beliefs in this area may cause the paraprofessional to have lowered expectations for their assigned child. A previous study examining the use of paraprofessionals revealed that 70% were making higher-level instructional decisions with regards to their academics (Giangreco & Broer, 2002). This statistic is alarming and poses great concern in situations where paraprofessionals are unsure about the cognitive abilities of the children with autism with whom they work with. Inappropriate selection of academic tasks and methods of service delivery not commensurate with the child’s learning styles and level of functioning could be detrimental to the child and cause much undue stress and anxiety.

Approximately 60% of paraprofessionals stated that autism could be diagnosed as early as 18 months. According to the CDC (2012), autism can be diagnosed as early as 18 month and reliably at 24 months. An increase in the early identification and diagnosis of

children with ASD has resulted in an increase in the number of children with ASD in the school system requiring special education services. Inaccurate beliefs to this statement may indicate that paraprofessionals may not be able to recognize those particular differences in early development that can signal a red flag suggestive for autism. It is important that paraprofessionals understand typical and atypical development in children so that progression or regression in development can be monitored.

Only 58% of paraprofessionals correctly opposed the statement that “even with early intervention services, the prognosis for independent community functioning of children with autism is poor.” The prognosis for children with autism is determined on an individualized basis. As children get older, proper treatment and maturity may result in the improvement of some autism symptoms. Some children are able to grow up to lead normal lives with minimal support. Some may require more support than others. It is important for paraprofessionals to understand that each child’s situation is different and that reasonable expectations should be made for each child, regardless of severity.

Approximately 68% of paraprofessionals responded correctly by agreeing to the statement “autism is generally evident before age 3.” Results indicate that more education may be needed in this area. Emphasis on the importance of early diagnosis and early intervention has created an increase in the demand for paraprofessionals to work in early intervention programs. It is important for paraprofessionals to recognize normal development in children to truly understand the impacts and presentation of the disorder with regards to communication, social interaction and repetitive behaviors, patterns, interests and/or activities typically seen in the ASD. If a child has received a late diagnosis of an ASD, his/her intervention plan may be different than that of a child who

received an early diagnosis and subsequent early intervention. As research suggests, early intervention can greatly impact long-term outcomes for children with autism (Mesibov et al., 1997). Regardless of their participation in early intervention services, no two children with autism exhibit the exact same characteristics in the same exact ways. It is important paraprofessionals understand the diversity of the disorder so that they treat each individual student with autism as just that, an individual with unique needs.

According to the DSM-IV-TR, autism is defined by impairments and behaviors in three specific areas: impairments in communication, impairments in social interaction, and restrictive and repetitive patterns of behavior, interests, and activities. Impairments in communication can be seen in several different disorders, so it is essential that impairments in social interaction are recognized in order for a correct diagnosis to be made and the implementation of appropriate treatment methods follow. Paraprofessionals assigned to children with autism need to be aware of these three characteristics.

Overall, paraprofessionals were aware of the three defining features of autism; however, the lowest percentage of correct responses occurred within the statement regarding impairments in socialization. Approximately 89% of paraprofessionals supplied a correct response. Remarkably, twelve paraprofessionals indicated that social impairments were not a feature of autism, and six indicated they did not know. It is crucial that paraprofessionals are aware of the social impairments seen in autism because it is the hallmark feature of the disorder. Paraprofessionals who are unaware that children with autism exhibit social impairments may consider this to be a part of their personality and not encourage them to interact. Inadequate beliefs in this area can impact service delivery and interactions with the child. The paraprofessional may not know how to

effectively interact with the student or how to encourage social interaction with his/her peers, inadvertently encouraging the child's isolation from the social world.

Paraprofessional results from the knowledge portion of the survey indicate that paraprofessionals need more education and training in the basic characteristics of autism. Inaccurate beliefs that children with autism are deliberately noncompliant may impact service delivery and behavior management strategies. Research indicates that children with autism may be misdiagnosed with attention deficit disorder or have a comorbid diagnosis due to their lack of focus and difficulties with attentiveness. Research also indicates that children with autism may be misdiagnosed as having oppositional defiant behaviors due to this lack of attention and their essential need for sameness in their environment. (McCoy, 2011; Remington, Sloman, Konstantareas, Parker & Gow, 2001). It is important for paraprofessionals to understand that children with autism have impairments in communication that can interfere with their ability to receive, interpret and respond to a message. What may appear to be noncompliance may be a misunderstanding of a message that needs to be conveyed in a different way.

It is essential that paraprofessionals understand that children with autism communicate in different ways. Some are able to verbally express themselves, while some may require the use of an AAC device. Research indicates that approximately one third to one half of children with autism do not use functional speech. Being aware of the child's primary modes of communication and their communication goals are important for the appropriate exchange of information in order to maximize instruction time, minimize child and paraprofessional frustrations, and promote appropriate use and understanding of alternative augmentative devices if the child's needs dictate.

Children with autism may require lifelong support depending upon their severity and level of functioning. The signs and symptoms are not outgrown. While research shows that with early intervention, the long-term outcomes for children diagnosed with autism are favorable, the core deficits do not simply disappear. If paraprofessionals believed that with proper treatment their assigned children will eventually outgrow their disorder, this may result in the spreading of incorrect information among parents, creating a false sense of hope. Paraprofessionals may also not take their roles as seriously if they believed that regardless of what they do, their assigned child with autism will eventually outgrow their disorder. Overall, results from this study indicated that paraprofessionals recognized the importance of special education services and early intervention, but struggled with some of their knowledge of autism.

#### **Comparison between Paraprofessionals' and Parents' Knowledge of Autism**

Results indicated that paraprofessionals scored significantly lower than parents in their knowledge of autism characteristics. Parents' mean score for percent correct in their knowledge of autism characteristics was 19.24 compared to paraprofessionals' mean score of 17.34. While a significant difference was found between the two groups, these findings should be approached with caution. It can be expected that parents may know more about autism than paraprofessionals. However, according to a study conducted in 2012, a study looking specifically at parents' knowledge of autism in the areas of identification and diagnosis has not been conducted (Newell & Knight, 2012). This could mean that parents are not aware of the important signs and symptoms of autism crucial for the early identification of the disorder and subsequent early intervention services shown to be imperative in treatment (Mesibov et al., 1997).

Consequently, the literature suggests that parents are the teachers' ultimate resource and their child's number one advocate regarding educational services (Friend & Cook, 2010). Parents provide valuable information to school personnel about how autism impacts their child's daily life. As such, parents may know more about autism through their daily life experience in living with the disorder and learning how to cope with its impacts when compared to paraprofessionals. Dymond, Gilson, and Myran (2007) revealed that parents often times felt more knowledgeable about autism than the school personnel working with their child with autism. Further, parents stated that they felt that had to train school personnel in how to appropriately educate their child (Dymond et al., 2007). This study discussed the important of educator training in autism as this could impact service delivery methods and paraprofessional supervision.

According to Ghere and York-Barr (2007), reports have been made by paraprofessionals claiming that their supervising teacher lacks adequate autism knowledge. Freschi (2002) suggests that training in autism should be ongoing throughout the year and should be attended by all parties who provide services to the child with autism.

While parents did score significantly higher than paraprofessionals on their knowledge of autism characteristics, it is to be noted that a percentage of parents responded incorrectly to each knowledge statement as well. Previous studies have shown that parents and school professionals both hold outdated beliefs regarding specific knowledge of autism characteristics that are inconsistent with current research (Haggard, 2010; William et al., 2011).

Significant differences were found on the following statements: “autism is a developmental disorder,” “most children with autism are also mentally retarded,” “most children with autism are more intelligent than scores from standardized tests indicate,” “autism can be diagnosed as early as 18 months,” “it is difficult to distinguish between autism and childhood schizophrenia,” “autism occurs more commonly among higher socioeconomic levels,” “autistic children usually grow up to be schizophrenic adults,” and “children with autism engage in repetitive and stereotypical behaviors.”

Parents scored significantly higher on all knowledge statements with the exception of one. Paraprofessionals provided a correct response more frequently on the statement “most children with autism are also mentally retarded.” Research shows that mental retardation occurs in 55% of individuals diagnosed with ASD. The parents who participated in this study may have a child or children diagnosed with both autism and mental retardation. As a result, parents may think that mental retardation is merely a part of autism that every child has to live with. Parents may have also received inaccurate information from a source they used in order to obtain information about autism. According to the parents’ background information portion of the survey, approximately 84% of parents indicated that they received their information about autism from the internet. The credibility of the source(s) parents used on the internet cannot be validated at this time. Inaccurate information may be circulating about autism on the internet. Parents may have received this inaccurate information via an online source which has led them to believe that all children have mental retardation. It is important that parents receive accurate information about autism from a credible source so that they set

appropriate expectations for their children with autism and convey accurate information about their child's diagnosis to educators working with the child.

### **Paraprofessionals' Perception of Etiology of Autism**

Paraprofessionals responded to an open-ended text question by supplying their own response. Responses were placed into categories representing the most frequently occurring responses found among teach group. Inter-rater reliability was established for the group. The top 3 most frequent paraprofessional responses are discussed.

The most frequently occurring response by paraprofessionals was 'don't know.' This response is consistent with the literature in that the cause of autism is largely unknown at this point in time. The second most frequently occurring response was "genetics". A total of 24 paraprofessionals provided this response. Research has indicated a possible genetic link to autism. Twin and family studies conducted over the years have attempted to find a link suggesting that autism can be inherited. While evidence does support this claim, it is still uncertain if a mutated gene or several mutated genes are to blame for the wide range of symptoms seen in the disorder. The third most common response was "causes could vary." A total of 17 paraprofessionals provided this response. This is also consistent with past and current research. Currently, there is no one particular cause of autism. Research has suggested that autism could be a combination of various nature versus nurture factors, and that it is unlikely that one specific cause will ever be found.

### **Parents' Perception of Etiology of Autism**

Twenty-six parents stated that there were "various causes of autism". This response is consistent with current research in that there has not yet been one specific

cause identified for autism. Several different theories have been suggested throughout the years ranging from inadequate parenting, prenatal and perinatal maternal drug use and the mental state of the mother during pregnancy. The second most frequently occurring response was “don’t know.” A total of 8 parents supplied this response. This is also consistent with literature. While researchers have hypothesized and tested several theories since the first mention of autism over 100 years ago, a definitive cause of the disorder has yet to be identified. The third most frequently occurring responses were genetics and vaccinations. Four parents believed that genetics were to blame for autism. Research has identified genetics as a plausible candidate for the cause of autism through twin and family studies. Risk factors have been identified revealing that a child may be more susceptible to autism if another member of his/her family was diagnosed with the disorder.

A total of 4 parents believed that vaccines are to blame. The MMR and thimerosal vaccines have been hypothesized to be one of the causes of autism; however several studies have been conducted to disprove this theory and the findings remain the same: there is no relationship between vaccines and autism (CDC, 2012).

Open-ended text responses revealed that paraprofessionals and parents’ most frequent perceptions as to the possible etiologies of autism were not too far off track. While a few participants’ responses were unrelated and questionable, a majority were closely related to current research evidence. The sources paraprofessionals and parents use in order to obtain knowledge can be very beneficial; however, some information provided may not be true. Parents and paraprofessionals alike are cautioned when using the internet to scrutinize the web for autism definitions.

### **Sources Used by Paraprofessionals to Acquire Knowledge about Autism**

Approximately 74% of paraprofessionals indicated they received a majority of their knowledge from the child's teacher. Paraprofessionals are considered to be assistants to the general or special education teacher. The child's teacher or another licensed professional assume the supervisory role and direct the paraprofessional's job tasks; in other words, paraprofessionals are to carry out specific roles and responsibilities as assigned by the supervising teacher. It is crucial that the child's teacher is knowledgeable about autism so that appropriate information can be conveyed to the paraprofessional; however studies have shown that teachers and other educators may not be so confident in understanding even the very basics of autism characteristics and intervention (Friend & Cook, 2010, p.181).

The second and third most frequently chosen resources used by paraprofessionals to obtain knowledge about autism were workshops and the internet. Approximately 67% of paraprofessionals selected workshops as one of their main sources of autism knowledge. This is encouraging as this could suggest that paraprofessionals are receiving some type of training in order to learn more about autism, given that the workshops were led by knowledgeable personnel portraying accurate information. The third most frequently used resource was the internet. While the internet may provide some valuable information on autism, it is questionable as to whether the exact sources used by the paraprofessionals were credible sources portraying accurate information.

### **Sources Used by Parents to Acquire Knowledge about Autism**

Approximately 71% of parents who participated in this survey stated that they received their information from support groups while an even higher percentage, 84%,

indicated their information about autism came from the internet. While the credibility of either source cannot be validated at this time, parents may be misinformed by either source as to the cause of autism which could impact their beliefs and perspectives of the disorder.

Findings from the knowledge portion of the survey indicate that both paraprofessionals and parents hold outdated beliefs in some areas of their knowledge of autism. More education in autism needs to be provided to both groups so that appropriate services can be provided to children with autism receiving special education services in the public school system. Paraprofessional roles are becoming increasingly important with the influx of children diagnosed with autism entering the public schools.

Consequently, parents have been identified as the teachers' most valuable resource when gathering information and developing an individualized plan for the child with autism. An important educational partnership is formed when all members of the collaborative team are knowledgeable about autism and use current best-practices and research-based interventions.

Paraprofessionals have been shown to be valuable connectors between parents of the children they serve and the school (Chopra et al., 2004). It is essential that accurate information about autism is acquired by both groups so that appropriate goals are being established and the child's needs are being met. Further, since paraprofessionals indicated that a majority of their knowledge came from the child's teacher, and studies have shown that both special and general education teachers may not be confident in their knowledge or provision of services to children diagnosed with autism, greater attention may need to

be focused on the knowledge of all school personnel working with children with autism and not just paraprofessionals (Friend & Cook, 2011).

### **Paraprofessionals' Perceived Levels of Confidence and Knowledge in Autism**

It is important that paraprofessionals are confident in their knowledge of autism and in their provision of support services so that children with autism are receiving an individualized education specific to his/her needs. The literature suggests that paraprofessionals who are not properly trained or supervised when performing their assigned duties could cause the child to regress in his/her skills learned. The following confidence statements not only sought out to determine if paraprofessionals are confident in their knowledge and provision of support services to children with autism, but to determine if paraprofessionals feel they are appropriately trained and supervised in their specific job tasks, as well.

**“The special education teacher or another professional in the school spent time talking with me about the diagnosis of the child I am currently assigned to.”**

Paraprofessional responses indicated they were somewhat confident with this statement. The special or general education teacher is usually designated as the supervising professional. It is important that the supervising professional ensures that the paraprofessional understands the diagnosis of autism. If paraprofessionals are not proficient in the child's diagnosis, then training should be provided at the request of the supervising professional and paraprofessional themselves. In other words, the supervising professional must ensure that the paraprofessional employed to work with the child with autism receives training in areas of need in order to properly execute assigned job tasks.

Paraprofessionals indicated that they received a majority of their knowledge on autism from the child's teacher in the background portion of the survey. It should be expected that paraprofessionals would rate their confidence higher with this statement if they did, in fact, receive a majority of their autism knowledge from this source. The literature emphasizes the importance of open-lines in communication between paraprofessionals and professionals at all times to ensure that the educational needs of the student are met and that all training needs are identified and met for the paraprofessional working with the child.

**“I feel confident in my ability to recognize signs/symptoms of autism in children”**

Paraprofessionals indicated that they were somewhat confident in recognizing signs/symptoms of autism in children. It is important that paraprofessionals be aware of what typical and atypical development looks like in children on and off the spectrum so that they can better understand the impact a diagnosis of autism can have on all areas of the child's life. Several characteristics of autism may be seen in other disorders including attention deficit disorder, mental retardation and schizophrenia. Each disorder has a separate course of treatment and prognosis. Due to these shared characteristics, it is important that paraprofessionals are able to point out the salient features of autism that define the disorder so that appropriate treatment methods and techniques are used, instruction time is maximized and the child's learning styles and communication modalities are identified and used effectively.

Paraprofessionals' perceived levels of confidence in this area are somewhat consistent with their knowledge of autism characteristics. Not all paraprofessionals provided a correct response when responding to various early developmental

characteristics about autism such as differentiating autism from an emotional disorder and the age at which autism can be detected and diagnosed. More education is needed in this area so paraprofessionals are better prepared to point out possible red flags suggestive of autism in children and implement appropriate early intervention based on the child's present levels of functioning.

**“I feel confident in my ability to explain autism to others”**

Understanding the characteristics of autism, including its three salient features and how these impact the child is one way to ascertain the amount of knowledge the paraprofessional has acquired. Paraprofessionals should be able to explain what autism is, specific characteristics exhibited by their assigned child and what areas of the child's life are impacted as a result. This basic knowledge will help paraprofessionals understand their child's need for intervention and how to provide appropriate instructional support services.

**“I feel confident in preparing materials and assisting with informal documentation (e.g., tallying notes for the teacher/service provider to use) for children with autism.”**

Paraprofessionals indicated that they were somewhat confident regarding this statement. According to the study of personal needs in special education, paraprofessionals spend at least 10% of their time in several activities including modifying materials and collecting student data (SPeNSE, 2000). When describing the roles of the paraprofessionals, the National Resource Center for Paraprofessionals indicates that paraprofessionals may assess learner performance, evaluate the effectiveness of education programs and related services as well as identify learner needs

under the direction of his/her supervising professional. It is important for paraprofessionals to feel confident in their abilities to assist with materials and documentation so that the child's progress can be tracked appropriately. Tracking progress and assessing learner performance is imperative when determining if the tasks currently being assigned to the child are appropriate for his/her learning styles and cognitive abilities.

Those who disagreed with this statement may suggest that paraprofessionals are not properly trained or supervised in engaging in these specific job tasks. As in the study by Giangreco and Broer (2002), each special education paraprofessional may expect to receive less than 2% of the special educator's time in training, supervision, or other professional direction. Paraprofessionals may not know how to prepare materials and document due to lack of guidance from their supervising professional. It is important that paraprofessionals are provided with clear roles, expectations and training in areas that warrant more skills and knowledge.

**“I feel confident in providing direct supplemental instruction/intervention services to children with autism.”**

Paraprofessionals indicated that they were somewhat to mostly confident in providing direct supplemental instruction/services to children with autism. According to the Individuals with Disabilities Education act (2004), paraprofessionals are legitimately employed to assist in the delivery of services to students, are not the primary service providers, and are entitled to training for their duties. While it is encouraging that paraprofessionals are somewhat to mostly confident with their abilities to implement support services to their assigned children with autism, findings still suggest that more

training and/or education needs to be provided in autism in order to increase these levels of confidence.

Paraprofessionals are seen as an integral part of their assigned child's educational plan. A previous study found that paraprofessionals spent nearly 70% of their time making high-level instructional and curricular decisions without supervision. Ghere and York-Barr (2007) suggest in their study that paraprofessionals reported that teachers were not proficient in guiding their work. This could negatively impact treatment outcomes for the student with autism who require specialized, evidence-based instruction

**“I feel comfortable in talking with the special education teacher, speech-language pathologist, general education teacher and other professionals involved with children with autism.”**

Paraprofessionals indicated that they were mostly confident in talking with the special education teacher or other professionals involved with the child. Collaboration is an important component of the child's education plan. While the paraprofessional is not typically considered to be a member of the child's collaborative team, it is still important that paraprofessionals understand what the goals and objectives are for their assigned student with autism. It is encouraging that paraprofessionals are comfortable in communicating with other professionals in the educational setting as open-lines of communication are essential when determining what is best for the student, what needs to be adjusted and how. Any adjustments to the child's educational plan must be communicated across disciplines to ensure consistency in different environments.

According to the literature, paraprofessionals may be seen as a support rather than an educator, so they may be absent during IEP meetings or other activities that

address the child's needs, learning styles and other important information. It is important the child's goals are communicated to the paraprofessional so that he/she can understand what, why, where and how services are to be rendered and what his/her roles are in the process in helping the child attain his goals.

**“I feel comfortable in the amount of training I received for providing services to children with autism.”**

Paraprofessionals indicated that they were somewhat confident in the amount of training they received for providing services to children in autism. According to the literature, paraprofessionals may not receive prior training to prepare them for their respective roles in working with children with autism. Likewise, it is suggested that training be a continuous process, not a one-time in-service training event on the general characteristics of autism. Further, the literature suggests that some school districts do not provide specific trainings as initial preparation for a specific role; rather, training in specific areas may be provided at the request of the supervising professional working with the paraprofessional. Some paraprofessionals may be hired based on their previous experience in autism, level of education, or equivalent experience as determined by the school district personnel. Consequently, these paraprofessionals may feel confident in the amount of training they have received due to their prior competencies. Others may be hired out of necessity who have had no previous experience in working with children with autism but who are simply available and willing to accept the position.

A majority of paraprofessionals indicated that they have had previous experience in working with children with autism. A total of 37 paraprofessionals indicated that they had attended zero trainings or workshops in autism whereas 36 indicated that they

attended 5 or more. A total of 34 paraprofessionals stated that he/she has attended 1 to 2 trainings. This disparity in the number of trainings or workshops attended in autism is concerning. While it is encouraging that many paraprofessionals indicated that they have had previous experience in working with children with autism, the wide range of workshops/trainings attended may suggest a lack of consistent training needed to work with students with complex disabilities. The literature suggests that training should be continuous and should include all members of the child's collaborative team because positive results in the students overall growth can be one of the potential outcomes (Freschi, 2002).

**“I feel confident in my ability to implement the lesson plans and/or behavioral supports designated by the special education teacher or other supervising professionals for children with autism.”**

Paraprofessionals were somewhat to mostly confident in their abilities to implement lesson plans and/or behavioral supports. The National Resource for Paraprofessionals reports that paraprofessionals “assist with the delivery of instruction and other direct services as assigned by the certified/licensed professional practitioners” (Likins, 2002, p. 6). It is encouraging that paraprofessionals are confident in providing services designated by the supervising professional. This may suggest that paraprofessionals are properly supervised and given appropriate guidance when working with their assigned children with autism. It is important that both supervising teachers and paraprofessionals of children with autism are trained and knowledgeable about the disorder because as the literature suggests, positive results can usually be observed in the

students overall growth if both parties have appropriate knowledge and skill in their respective roles (Freschi, 2002).

**“I feel that training in autism should be required before working with children with autism”**

Fortunately, paraprofessionals were very confident that training in autism should be provided prior to the provision of services. This may suggest that paraprofessionals are aware of the importance of training and how it can impact service delivery. Little outcome data exist in the literature regarding paraprofessionals. According to reviews of the literature between 1991 and 2000, an increasing need for training, supervision, role clarification and outcome data regarding the paraprofessional population was needed in order to obtain a better understanding of their roles in working with children with disabilities in general. Children with autism may spend more time with the paraprofessional than anyone else in the school. It is important that paraprofessionals are properly trained prior to working with children with autism so that they have an idea of what to expect. As the literature suggests, the initial training provided to paraprofessionals may not be sufficient in preparing him/her for their assigned jobs tasks. It is important that paraprofessionals do not go in “blind” and have some training or knowledge of the student prior to the provision of services.

**“I feel confident that I was hired for this position based on my experience and/or qualifications for working with children with autism.”**

Paraprofessionals somewhat disagreed with this statement. The qualifications required for paraprofessionals in general can vary across the U.S. and even from district to district. Little research exists in the literature regarding specific qualifications for

paraprofessionals hired to provide one-to-one instructional services to children with autism. Prior to the reauthorization of the No Child Left Behind Act in 1997 (NCLB), educators simply hired paraprofessionals based on their own perceptions of what they thought made a paraprofessional “qualified” for their anticipated roles (Friend & Cook, 2010). This could include the amount of education they had completed or trainings and specialized courses. The NCLB (1997) provided guidelines for educators; however these guidelines were still not very specific.

Attempts were made to locate competency documents provided by the Kentucky Department of Education (KDE) outlining specific skills paraprofessionals should possess in order to appropriately provide services to children diagnosed with ASD; however, a document of this caliber could not be located. While a document pertaining to both autism and paraprofessional roles in autism could not be found, a PowerPoint presentation was discovered entitled “*Working with Paraprofessionals*” created in 2010 as a training module for teachers and paraprofessionals. This PowerPoint discussed teacher and paraprofessional roles in the Kentucky school system. It suggested that in order to be an effective paraprofessional, he/she needs to exhibit certain characteristics that will help to facilitate a more positive work environment and better performance in activities with regards to their assigned job tasks. These characteristics included: 1) has an intuitive knowledge of each student’s needs and strengths; 2) makes needed changes for each child; 3) does their job in a professional manner; and 4) finds the balance in fulfilling their ultimate responsibility, which is providing preeminent support in the educational care of his/her students (Barkley, 2010) While these specific traits may be

important to possess, specific traits needed in those paraprofessionals who work with children with autism were not provided during this presentation.

This is concerning because the number of children with autism continues to rise as does the number of available paraprofessional positions. While documents provided by KDE as described above may help teachers and paraprofessionals understand their roles and expectations in a general sense, it is important that this same, detailed information is provided regarding children with autism due to the complexity of the disorder the continued influx in the number of cases each year.

Findings indicate that paraprofessionals are in need of specialized training in autism specifically to improve their confidence and knowledge of autism characteristics. Adequate knowledge of the disorder is imperative for the appropriate provision of support services to students diagnosed with autism.

### **Parents' Perceived Levels of Confidence in Paraprofessionals' Instructional Abilities**

Parents were asked to rate their perceived levels of confidence in the paraprofessional's ability to provide instructional support. Parents are critical members of the child's educational team. Further, parents are their child's number one advocate and most frequent social partner. Parents can provide valuable information to the teacher regarding the child's typical behavior and areas of strengths and weaknesses so appropriate goals can be established within the educational setting. Paraprofessionals assigned as a one-to-one aid to children with autism can greatly benefit from information provided by their child's parents. While paraprofessionals are a great resource to parents and their child with autism, parents have questioned the preparedness and knowledge of

both paraprofessionals and their supervising professionals. Parents often felt as if they had to train their child's teacher how to educate their children. Further, parents stated that they often felt more knowledgeable about autism and specific intervention and instructional strategies than the personnel working with their child (Dymond, Gilson, & Myran, 2007). These results are disconcerting because the child's paraprofessional receives supervision and guidance from the child's teacher.

**“The special education teacher or another professional in the school spent time talking with me about the diagnosis of my child.”**

Parents somewhat disagreed with this statement. The child's teacher is a critical component of his/her collaborative team. Parents and teachers are supposed to work in unison as part of an educational partnership. The Easter Seals created a document for educators outlining tips for working with children with autism and their families. This document suggests that the teacher should build a trusting relationship with parents and be cognizant and respectful of parent input and knowledge whenever possible. Further, it is recommended that the child's teacher is knowledgeable about autism because parents may consider them to be an important source for information about autism (Easter Seals, 2009). Parent responses to this statement suggest a lack of communication between the parent and the child's teacher.

When parents were asked where they obtained a majority of their autism knowledge, the more frequent response was the internet. The child's teacher and paraprofessional were the bottom two sources parents used for information about autism. This is a concern as this could suggest a lack of trust and communication between the

members of the child's collaborative team. Results to this statement are consistent with the results obtained regarding parents' sources used for autism knowledge.

**“I feel confident in my ability to recognize signs/symptoms of autism in children.”**

Parents were somewhat confident in recognizing signs and symptoms of autism in children. Parent responses to this statement are somewhat consistent with their performance on their knowledge of autism characteristics. Parents scored approximately 19 out of 22 questions correctly on average. Parents are often the first to recognize atypical development in their children. It is important that parents are aware of the common signs and symptoms of autism so that he/she can detect any abnormalities in development and obtain an early diagnosis and subsequent early intervention services for their child if warranted. If parents are unable to detect these signs and symptoms, a delay in diagnosis and treatment may be inevitable which can affect the child's long-term outcomes with regards to development and function.

**“I feel confident in my ability to explain autism to others.”**

Parents were somewhat confident in their ability to explain autism to others. Results gathered from this statement compared with the study conducted by Haggard (2010) found that parents continue to hold on to inaccurate beliefs regarding some areas of their autism knowledge that are inconsistent with current research evidence. It is important that parents receive accurate, reliable information from licensed professionals trained in some areas of autism instead of relying heavily upon just a few resources. As discussed earlier, parents indicated that their main resource for autism knowledge was the internet. This is concerning as not all information on the internet is fact and sharing incorrect information with support group members will only confuse parents further and

potentially harm their child if treatment options are chosen based on lack of evidence and false claims.

**“I feel comfortable talking with my child's paraprofessional about how my child is doing at school.”**

Parents indicated that they were somewhat comfortable in talking with their child's paraprofessional. When examining parents' background information, approximately 33% of parents indicated they spoke with their child's paraprofessional on a daily basis followed by 31% who indicated they spoke with their child's paraprofessional 1-2 times per week. Approximately 14% of parents rarely speak to their child's paraprofessional. Results are somewhat consistent with the percent of time parents talk with their child' paraprofessional. Less than half of the parents who took this survey talk with their child's paraprofessional every day. Approximately 18% of parents stated they spoke with their child's paraprofessional only once a month. Results may suggest that if paraprofessionals and parents communicated more often about the child, parents would be more comfortable and confident with their interactions. Maintaining open-lines of communication is an important component for members of the child's collaborative team to remember. Research has shown that parents have more faith and trust in educators when they feel that the individuals working with their child have taken a genuine interest in his/her well-being (McCoy, 2011). This may encourage parents to be more active in their child's intervention process, which research strongly suggests is an important factor in facilitating positive long-term outcomes in children with autism. Paraprofessionals who keep parents up to date with their child's progress even if they do

not routinely ask for it may also encourage parents to be more proactive and facilitate better working relationships within the school community.

**“I feel confident in the paraprofessional's ability to provide instructional support to my child with autism.”**

Parents were somewhat confident in the paraprofessional’s ability to provide instructional support to their children with autism. Findings indicate that parents are less confident in the paraprofessional’s knowledge of autism but more confident in their abilities to provide support which could suggest that more training opportunities need to be focused on autism first. Close to half of parents reported that they speak with their child’s paraprofessional every day and 33% indicated that their child’s paraprofessional always attends his/her IEP meetings. This could suggest that parents who have the opportunity to communicate with their child’s paraprofessional on a more consistent basis may be more confident in his/her abilities to provide instructional support. A key component in the success of the child is parental involvement in the collaboration between educators and other care-providers. Approximately 41% of parents reported that their child has received support from a paraprofessional for more than five years. It is uncertain if some parents were meaning that their child had had the same paraprofessional for that length of time, or if several different paraprofessionals have entered and exited their lives within that time frame. Paraprofessionals who have stayed with the child for a longer period of time may have developed a positive, trusting relationship resulting in increased levels of confidence in their abilities.

**“My child's paraprofessional is knowledgeable about autism.”**

Parents somewhat disagreed with this statement. Paraprofessionals are often seen as support personnel rather than educators. As a result, some school districts do not require their child's paraprofessional to attend meetings, even though the IEP meeting is where paraprofessionals can obtain valuable information related to service delivery, strengths and weaknesses and the child's likes and dislikes. This information can be very valuable when trying to determine the most effective and functional way to communicate with the child. Parents may not be confident in the paraprofessional's knowledge of autism due to those paraprofessionals who are not in attendance at important IEP meetings and based on the number of paraprofessionals their child has had since being enrolled in school. Approximately 33% indicated that their child has had more than 5 paraprofessionals since he/she was first enrolled in school. Approximately 22% stated their child has had two and an estimated 18% of parents indicated their child has had one or three different paraprofessionals since being enrolled in school. Parents may lack confidence in the paraprofessionals' knowledge due to the fluctuation in the number of paraprofessionals coming in and out of their child's life.

**“I feel paraprofessionals are properly trained in autism.”**

Parents mostly disagreed that paraprofessionals are properly trained in autism. This is somewhat consistent with parents' confidence on the paraprofessional's knowledge of autism. This could explain why parents listed paraprofessionals and the child's teacher as the bottom two choices for obtaining knowledge about autism. Consequently, when parents somewhat disagreed that the special education teacher or other professional spent time talking to them about the diagnosis of their child, this could

suggest a lack of communication as a result of an insufficient amount of knowledge about autism which can negatively impact parents' confidence and trust in their child's teacher. This is concerning, because paraprofessionals work under the supervision of the child's teacher or another professional in order to learn about autism and how to perform specific job tasks.

Friend and Cook (2010) revealed that when special and general education teachers were asked what they needed to know about autism, characteristics of ASD and how to collaborate with other members of the team, including paraprofessionals, were among the topics suggested. Further, the pilot study examining the amount of factual autism knowledge among school personnel revealed that their factual knowledge in treatment, assessment and diagnosis was low (Williams et al., 2011). As stated previously, paraprofessionals are assistants to the child's teacher and work under their supervision and guidance. If paraprofessionals are not knowledgeable in a particular area, it is the responsibility of the supervising professional to see that appropriate training or instruction is provided in the paraprofessionals' area(s) of need.

**“My child's paraprofessional is properly supervised by the special education teacher or other faculty member(s).”**

Parents were somewhat confident that the paraprofessionals are properly supervised. This is somewhat consistent with parents' confidence in the paraprofessional's ability to provide instructional support. Paraprofessionals are supposed to work under the supervision of the child's teacher as a lack thereof could impact the paraprofessional's confidence in completing job tasks. When paraprofessionals were asked if they were ever supervised by the special education teacher or another

professional in the school, approximately 92% stated that they received supervision. This is encouraging as previous research studies have indicated that some paraprofessionals perform high-level instructional tasks and curriculum decisions without supervision from the child's teacher (Giangreco & Broer, 2005). Appropriate supervision is important to ensure student needs are being met and no adjustments need to be made to his/her current educational program.

**“I feel that training in autism should be required before working with children with autism.”**

Parents mostly agreed with this statement. This is not surprising considering that parents somewhat disagreed with the amount of autism knowledge and training paraprofessionals had. Results indicate that parents think more training needs to be provided not only for paraprofessionals, but for any personnel working with children with autism. Lack of knowledge about the disorder could result in the inappropriate selection of interventions and waste of important instruction time.

**“I feel confident that my child's paraprofessional was hired for this position based on their experience and/or qualifications for working with children with autism.”**

Parents mostly disagreed with this statement. Results may indicate, in light of previous parent responses, that a lack of confidence exists in the amount of training and knowledge in autism of paraprofessionals. While parents appeared to be somewhat confident in the paraprofessional's ability to provide instructional support to students with autism, the overall lack of knowledge regarding this complex disorder is concerning. More training in autism should take precedence over training paraprofessionals how to provide support in generalized terms.

### **Percentage of Agreement in Paraprofessionals' Provision of Services**

A total of four confidence statements were compared between paraprofessionals and parents. Of the four statements, three were found to have a statistical significance. In the first statement: "I feel paraprofessionals are properly trained in autism," paraprofessionals were found to be significantly more confident than parents in their amount of training in autism. According to the paraprofessional's background information, the amount of training received varied greatly among the group; however a majority indicated they had attended 5 or more trainings or workshops in autism. Consequently, some paraprofessionals consider their daily job as an on-the-job training and may have counted it during completion of the survey.

In the second statement, "the paraprofessional was hired based on his/her experience and/or qualifications in autism," paraprofessionals agreed to this statement significantly more than parents. While paraprofessionals in general disagreed somewhat to this statement based on their mean responses from their survey, approximately 76% stated that they have had previous experience in autism. This, in combination with their reported number of trainings and/or workshops in autism they have attended could have caused this significant difference when compared with parents.

In the third and final statement, "I feel confident in the paraprofessionals'/my ability to provide instructional support to my/my assigned child with autism," paraprofessionals were found to be significantly more confident on their abilities to provide instructional support. Findings from comparisons indicate that paraprofessionals are more confident in their amount of training in autism, their qualifications for their positions and in their abilities to provide instructional support to children with autism.

## **Conclusions**

Findings from this study revealed that parents were significantly more knowledgeable than paraprofessionals in their amount of autism knowledge. Further, paraprofessionals were found to be confident in their amount of autism knowledge, training, and provision of services to children diagnosed with autism. Furthermore, parents were found to be less confident in the paraprofessionals' amount of autism knowledge, amount of training in autism and their ability to provide services to children with autism. Parents were also less confident than paraprofessionals that he/she was hired based their skills and/or qualifications for working with children with autism.

### ***Paraprofessionals' Knowledge of Autism***

Paraprofessionals were found to be significantly less knowledgeable in autism than parents of children with autism. While paraprofessionals appear to be confident in their abilities and knowledge of autism with regards to their respective positions and job tasks, data were approached with caution. A major theme resonated through this study that directly impacts children with autism, their parents and special education paraprofessionals. This theme was a lack of knowledge about autism in both paraprofessionals and teachers who bear the responsibility of guiding paraprofessionals in their daily work. A review of the literature in combination with the parent findings from this study have suggested that it is not the paraprofessionals' abilities to perform their roles and responsibilities that are entirely in question; rather, their knowledge of autism and how it functions within the paraprofessional framework. Several times throughout the literature review, a mention was made regarding educators who confess to their less than adequate knowledge of autism and ability to educate children with the disorder

appropriately. This is a major concern considering the widespread increase of the disorder across the U.S. and in Kentucky public schools.

The number of children diagnosed with autism attending public schools in Kentucky based on the 2010-2011 December Child count identified 3,502 students between the ages 3-21 years. According to the CDC (2012), approximately 1 in 88 children are being diagnosed with autism. The demand for personnel who are trained and knowledgeable about autism is high; however, through extensive research of the state's educational resources, a list of autism competencies specifically for paraprofessionals is not only minimal, but relatively non-existent.

### ***Limited Paraprofessional Personnel Data***

Special education paraprofessional positions are expected to increase in the upcoming years to meet the demands. Confusion mounds when attempting to examine data associated with paraprofessionals supporting students with disabilities. One cannot help but question, how can it be both the fastest growing personnel category as reported in 1997 yet one of the least studied areas in the special education field (Young, Simpson, Myles, & Kamps, 1997)? Attempts at answering this question have been made. Friend and Cook (2010) state that “current practices regarding paraprofessional duties are based largely on intuition and experience and less on knowledge-based, formal data” (p.139). With that said, only one study was found examining the factual knowledge of autism in school personnel and how much they “think” they know about the factual characteristics of autism (Williams et al., 2011).

### ***Paraprofessional Competencies in Autism***

Paraprofessionals are taking on more and more responsibilities when working with children with autism; however, no competencies specifically related to autism knowledge and paraprofessionals have been located so far through an extensive literature review in the state of Kentucky. Autism competencies have been created for paraprofessionals in other states including Virginia and Minnesota. Virginia assembled a team of professionals with years of experience in autism to develop a list of competencies they thought paraprofessionals should be proficient in when working with children with the disorder (Virginia Autism Council, 2010). The findings from the current study suggest that Kentucky public schools would benefit from a similar document.

### ***Autism Training***

The findings from this study suggest a need for more training opportunities to provide instructional support to children diagnosed with autism. The Kentucky Department of Education (KDE, 2010) provided a PowerPoint presentation on their website for educators suggesting how to appropriately interact with the paraprofessional, how the paraprofessional should conduct himself and respond to student needs and how to notify the educator when he feels their educational needs are not being met. This is a push in the right direction when it comes to better preparing both paraprofessionals and professionals to excel in their respective roles. However, results from this study and past studies indicate that while paraprofessionals are entitled to training for their respective positions, the number of those who actually receive it is unknown.

### ***Parent Concerns***

One of the major concerns identified by parents was paraprofessionals' knowledge of autism. Findings suggested that parents were communicating with their child's paraprofessional, and a percentage of paraprofessionals were even attending IEP meetings; however, when parents were asked to rate their confidence in the paraprofessionals' knowledge and abilities, the lowest confidence ratings were related to knowledge and training in autism. If more trainings were offered in autism to both paraprofessionals and teachers, a rise in confidence, trust and perhaps the quality of communication and professional relationships established within the school community will improve.

### **Limitations of the Study**

Several limitations of this study were identified and should be taken into consideration when reviewing and interpreting the results of this study. First, methods used to retrieve participant contact information for both groups may have influenced the results of this study.

At the time of study, no paraprofessional database or listserv was in existence to obtain contact information. While a list of paraprofessionals employed within specific schools in the Kentucky public district were found on several school-generated websites, many of the websites had not been updated for a considerable amount of time. Further, time constraints would not allow visitation to all school websites in Kentucky. The Systems Consultant from the Kentucky Department of Education was contacted to request a list of special education directors (DoSE) within each school district. Once this list was provided, each special education director was contacted to either provide a list of

paraprofessional email addresses or forward a letter containing the link to the survey to the paraprofessionals in their district. Several special education directors declined to associate their school district with the study. Others provided e-mail addresses of all the paraprofessionals within their district; some agreed to forward the request for participation; many did not respond at all. It is unknown how many requests for participation e-mails were received by prospective participants.

Methods for contacting parents of children with autism were somewhat similar. The Kentucky Autism Training Center (KATC) provided a list of contact information for all of the autism support groups across Kentucky. Also, a link to the survey was posted on the KATC blog for non-support group members to see. The support group chairpersons or presidents were contacted using the same method as the DoSE. If a more effective method of contacting the DoSE or support group chairpersons had been discovered, it is possible that the participant turn-out would have been much higher, thus increasing the sample sizes for each group.

Second, the sensitive nature of the study topic regarding personnel preparation and knowledge of a select group of employees within their district may have deterred some DoSE from providing the contact information of their paraprofessionals. Although contact information for the paraprofessionals was most likely displayed on the school's website, no further attempts were made in contacting paraprofessionals in districts whose DoSE were not interested in being associated with the study. Additional attempts in retrieving contact information could have increased the number of participants in the study; however, the researcher did not want to risk compromising the results of the study.

Third, it is unknown how many request for participation surveys were actually received by the DoSE or support group chairpersons. A reminder e-mail was sent two-weeks after the initial e-mail reminding those who had not sent the requests for participation letters or completed the survey to do so within a specific time frame.

Third, the small samples sizes from each group could have impacted the reliability and validity of the results. Over 5, 888 paraprofessionals were employed in the state of Kentucky at the beginning of this study in 2011; however, only 173 participated in the study. Caution should be exercised when interpreting the results as to not over-generalize the information to all paraprofessionals across the state. While the total number of parents in each support group could not be obtained, it can only be assumed that the number of parents who participated in the study, 49, only represents a small portion of this population. Likewise, caution should be exercised during interpretation of results.

Fourth, it is possible that items on the survey could have been misinterpreted. Wording used in a particular statement may have caused confusion which could have affected the response to those particular statements. While the contact information was provided in case any questions or concerns arose, no contacts were made during the study.

Fifth, several limitations were present in terms of the survey design and question selection. Several questions were too broad, specifically those used for including and excluding participants in the study. For example, the study focused solely on paraprofessionals and parents of children with autism who were employed or attended a public school in Kentucky; however a statement was never provided to indicate

participants were from Kentucky. While only those special education directors and support group chairpersons in Kentucky were contacted, it is possible that a few participants were not from this state, harming the validity of the results.

Sixth, participant honesty could play a role in potentially affecting the reliability of the results. Paraprofessionals' responses could have been influenced by another paraprofessional or school employee. Paraprofessionals could have felt as though their job security would be threatened due to the sensitive nature of the study.

Finally, the use of open-ended text questions was found to be very difficult to analyze and useful in terms of the established research objectives. These types of questions would not be used in a subsequent survey of this caliber.

### **Implications and Future Research**

This study highlighted the need for training in autism for special education paraprofessionals who provide one-to-one support for children with autism. Further, this study also highlighted the need for additional training for general education teachers, special education teachers and other school personnel who come in contact with children with autism during their school day. Results indicate a lack of parent confidence in the special education paraprofessionals' knowledge and training in autism and in their abilities to provide instructional support to children with autism. While results indicated paraprofessionals were overall confident in their job tasks and knowledge of autism, results on the knowledge of autism characteristics survey revealed that paraprofessionals were lacking knowledge in certain areas of autism including its etiology, developmental characteristics and other important characteristics essential for the adequate provision of support services for this population.

Future research should focus on reduplicating these results but in a smaller area with a more controlled population. A pilot study could be performed to determine the areas of autism knowledge perceived as important by paraprofessionals in the provision of appropriate services to children with autism. Future studies may focus on identifying tasks for paraprofessionals who provide one-to-one support for children with autism that are appropriate and/or inappropriate to perform in terms of their qualifications and knowledge of the disorder. Future studies may focus on identifying factors that influence paraprofessionals' knowledge of autism, such as the highest level of education received, number of trainings/workshops attended in autism, and previous experience in working with children with autism.

The number of trainings/and or workshops were correlated with paraprofessionals' percent correct on their knowledge of autism statements. A significant difference was found for those paraprofessionals who attended zero trainings/workshops in autism, and those who reported attending 3 to 4 workshops/trainings in autism. In other words, paraprofessionals scored higher in their knowledge of autism characteristics if they attended zero trainings or 3 to 4 trainings. These data are surprising. Those paraprofessionals who attended more trainings/workshops in autism should expect to perform better in their knowledge of autism characteristics. Likewise, those who attended zero trainings/workshops in autism should be expected to perform poorly in their knowledge of autism characteristics.

It is difficult to discern whether the number of trainings attended by paraprofessionals have an effect on their knowledge of autism characteristics, especially since little to no formal data exists with this population. However, there is a general

consensus in the literature that schools should hire the most qualified, knowledgeable paraprofessionals to work with their students.

A significant difference was noted between paraprofessionals' previous experience in autism and their percent correct when responding to knowledge of autism statements. Those paraprofessionals who reported having previous experience with autism scored significantly higher in their knowledge of autism characteristics. No significant differences were found between percent correct on knowledge statements and highest level of education completed. Findings from this study may warrant further investigation into the specific qualifications and competencies needed by paraprofessionals when working with students with disabilities. Further, a more in-depth analysis in previous knowledge, amount of trainings attended in autism and highest level of education completed may help assist school districts in hiring the most qualified, knowledgeable paraprofessionals to work with their students with autism.

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## APPENDICES

APPENDIX A:  
Autism Survey for Special Education Paraprofessionals

## Survey for Paraprofessionals

### SECTION I. Background

- 1.) What is the age of the child with autism you are assigned to as a paraprofessional?  
\_\_\_\_\_
- 2.) What is the gender of the child with autism you are assigned to? M F
- 3.) Was the child diagnosed with autism within the past 10 years? Y N
- 4.) What is the severity of the child's autism?  
a.) mild (high functioning) b.) moderate c.) severe
- 5.) What is your gender? M F
- 6.) Have you had previous experience in working with a child with autism? Y N
- 7.) Where did you receive information about autism? (circle all that apply)  
a.) diagnosing professional b.) internet c.) books d.) support groups  
e.) child's teacher f.) speech-language pathologist  
g.) professional journals h.) workshops i.) seminars j.) college courses
- 8.) Please indicate the "top 3" resources that provided you with the best information about autism.  
a.) diagnosing professional b.) internet c.) books d.) support groups  
e.) child's teacher f.) speech-language pathologist  
g.) professional journals h.) workshops i.) seminars j.) college courses
- 9.) Approximately how many trainings or workshops have you attended in autism?  
a.) 0 b.) 1-2 c.) 2-3 d.) 3-4 e.) 4-5 f.) 5 or more
- 10.) What is the highest level of education you have completed?  
a.) High school diploma or GED b.) Associates degree c.) Bachelor's degree
- 11.) Does the special education teacher, general education teacher, speech-language pathologist or other professional provide you with lesson plans for the child?  
Y N
- 12.) Are you aware of the child's goals as stated in the child's Individualized Education Plan (IEP)? Y N

- 13.) Have you ever been supervised by the special education teacher, speech-language pathologist or other professional when providing instructional support to the child with autism? Y N

## SECTION II. Characteristics of autism

For the following statements on autism, please indicate your level of agreement by selecting “yes”, “no”, or “don’t know.”

- 1.) Autism is an emotional disorder.  
a.) Yes                      b.) no                      c.) don’t know
- 2.) Autism is a developmental disorder.  
a.) Yes                      b.) no                      c.) don’t know
- 3.) Children with autism are deliberately noncompliant.  
a.) Yes                      b.) no                      c.) don’t know
- 4.) Children with autism do not show emotional attachment, even to parents.  
a.) Yes                      b.) no                      c.) don’t know
- 5.) Most children with autism do not talk.  
a.) Yes                      b.) no                      c.) don’t know
- 6.) Most children with autism are also mentally retarded.  
a.) Yes                      b.) no                      c.) don’t know
- 7.) Most children with autism are more intelligent than scores from standardized tests indicate.  
a.) Yes                      b.) no                      c.) don’t know
- 8.) Autism exists only in childhood.  
a.) Yes                      b.) no                      c.) don’t know
- 9.) With proper treatment, most children can outgrow autism.  
a.) Yes                      b.) no                      c.) don’t know
- 10.) Even with early intervention, the prognosis for independent community functioning Of children with autism is poor.  
a.) Yes                      b.) no                      c.) don’t know
- 11.) When children with autism do not respond to a question/direction to which he/she has showed a previous response to, he/she is just being stubborn and noncompliant.  
a.) Yes                      b.) no                      c.) don’t know

- 12.) It is difficult to distinguish between autism and childhood schizophrenia.  
a.) Yes                      b.) no                      c.) don't know
- 13.) Autistic children usually grow up to be schizophrenic adults.  
a.) Yes                      b.) no                      c.) don't know
- 14.) It is important that autistic children receive special education services at school.  
a.) Yes                      b.) no                      c.) don't know
- 15.) Autism occurs more commonly among higher socioeconomic levels.  
a.) Yes                      b.) no                      c.) don't know
- 16.) Autistic children's withdrawal is mostly due to cold, rejecting parents.  
a.) Yes                      b.) no                      c.) don't know
- 17.) Autism is generally evident before age 3.  
a.) Yes                      b.) no                      c.) don't know
- 18.) Autism can be diagnosed as early as 18 months.  
a.) Yes                      b.) no                      c.) don't know
- 19.) Early diagnosis and intervention are important for children with autism.  
a.) Yes                      b.) no                      c.) don't know
- 20.) Children with autism exhibit impaired social skills.  
a.) Yes                      b.) no                      c.) don't know
- 21.) Children with autism exhibit delayed or impaired communication skills.  
a.) Yes                      b.) no                      c.) don't know
- 22.) Children with autism engage in repetitive and stereotypical behaviors.  
a.) Yes                      b.) no                      c.) don't know

### SECTION III. Perceived level of confidence

In the following statements, the term "paraprofessional" is used to refer to teacher's aides, instructional aides, teacher's assistants or instructional assistants.

Use the following scale to rate each statements below:

- (1) strongly disagree, (2) mostly disagree, (3) somewhat disagree, (4) somewhat agree, (5) mostly agree, and (6) strongly agree.

- 1.) The special education teacher or another professional in the school spent time talking  
With me about the diagnosis of the child I am currently assigned to.
- 1                      2                      3                      4                      5                      6
- 2.) I feel confident in my ability to recognize signs/symptoms of autism in children.
- 1                      2                      3                      4                      5                      6
- 3.) I feel confident in my ability to explain autism to others.
- 1                      2                      3                      4                      5                      6
- 4.) I feel confident in preparing materials and assisting with informal documentation  
(e.g., tallying notes for the teacher/service provider to use) for children with autism.
- 1                      2                      3                      4                      5                      6
- 5.) I feel confident in providing direct supplemental instruction/intervention services to  
children with autism.
- 1                      2                      3                      4                      5                      6
- 6.) I feel comfortable in talking with the special education teacher, speech-language  
pathologist, general education teacher and other professionals involved with children  
with autism.
- 1                      2                      3                      4                      5                      6
- 7.) I feel confident in the amount of training I received for providing services to children  
autism.
- 1                      2                      3                      4                      5                      6
- 8.) I feel confident in my ability to implement the lesson plans and/or behavioral  
supports designated by the special education teacher or other supervising  
professionals for children with autism.
- 1                      2                      3                      4                      5                      6
- 9.) I feel that training in autism should be required before working with children with  
autism.
- 1                      2                      3                      4                      5                      6
- 10.) I feel confident that I was hired for this position based on my experience and/or  
qualifications for working with children with autism.
- 1                      2                      3                      4                      5                      6
- 11.) Who do you believe should make the diagnosis of autism?
- a.) psychologist      b.) physician/pediatrician      c.) speech-language pathologist  
d.) team                      e.) other \_\_\_\_\_

12.) What do you believe causes autism?

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<sup>1</sup> This survey was adapted from a previously conducted research study by Haggard (2010).

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<sup>1</sup> Haggard, S. (2010). *A survey of parents and healthcare providers regarding their knowledge of appropriate education options for children with autism*. (Unpublished master's thesis). Eastern Kentucky University, Richmond, KY.

APPENDIX B:  
Autism Survey for Parents of Children with Autism

## Survey for Parents of Children with Autism

### SECTION I.

#### Background

- 1.) What is the current age of your child? \_\_\_\_\_
- 2.) What is your child's gender? M F
- 3.) What is your gender? M F
- 4.) What is the severity of your child's autism?  
a.) mild (high functioning) b.) moderate c.) severe
- 5.) Approximately how long has your child received one-to-one instructional support from a special education paraprofessional?  
a.) less than one year b.) 1-2 years c.) 2-3 years d.) 3-4 years  
e.) 4-5 f.) more than 5 years
- 6.) How often do you speak with your child's special education paraprofessional about your child?  
a.) everyday b.) 1-2 times per week c.) once a month d.) every other month  
e.) I rarely speak with my child's special education paraprofessional
- 7.) How frequently does the special education paraprofessional attend your child's Individualized Education Plan (IEP) meetings?  
a.) always b.) frequently c.) sometimes d.) never
- 8.) Approximately what percent of the day does your child spend with the special education paraprofessional?  
a.) 25% b.) 50% c.) 75% d.) 100%
- 9.) Approximately how many different special education paraprofessionals has your child been assigned to since he/she was first enrolled in school?  
a.) 1 b.) 2 c.) 3 d.) 4 e.) 5 f.) more than
- 10.) Where did you receive information about autism? (circle all that apply)  
a.) diagnosing professional b.) internet c.) books d.) support groups  
e.) child's teacher f.) speech-language pathologist  
g.) professional journals h.) child's special education paraprofessionals

## **SECTION II. Characteristics of autism**

**For the following statements on autism, please indicate your level of agreement by selecting “yes”, “no”, or “don’t know.”**

- 1.) Autism is an emotional disorder.  
a.) yes                      b.) no                      c.) don’t know
- 2.) Autism is a developmental disorder.  
a.) yes                      b.) no                      c.) don’t know
- 3.) Children with autism are deliberately noncompliant.  
a.) yes                      b.) no                      c.) don’t know
- 4.) Children with autism do not show emotional attachment, even to parents.  
a.) yes                      b.) no                      c.) don’t know
- 5.) Most children with autism do not talk.  
a.) yes                      b.) no                      c.) don’t know
- 6.) Most children with autism are also mentally retarded.  
a.) yes                      b.) no                      c.) don’t know
- 7.) Most children with autism are more intelligent than scores from standardized tests indicate.  
a.) yes                      b.) no                      c.) don’t know
- 8.) Autism exists only in childhood.  
a.) yes                      b.) no                      c.) don’t know
- 9.) With proper treatment, most children can outgrow autism.  
a.) yes                      b.) no                      c.) don’t know
- 10.) Even with early intervention, the prognosis for independent community functioning of  
children with autism is poor.  
a.) yes                      b.) no                      c.) don’t know
- 11.) When children with autism do not respond to a question/direction to which he/she has  
showed a previous response to, he/she is just being stubborn and noncompliant.  
a.) yes                      b.) no                      c.) don’t know
- 12.) It is difficult to distinguish between autism and childhood schizophrenia.  
a.) yes                      b.) no                      c.) don’t know

- 13.) Autistic children usually grow up to be schizophrenic adults.  
 a.) yes                      b.) no                      c.) don't know
- 14.) It is important that autistic children receive special education services at school.  
 a.) yes                      b.) no                      c.) don't know
- 15.) Autism occurs more commonly among higher socioeconomic levels.  
 a.) yes                      b.) no                      c.) don't know
- 16.) Autistic children's withdrawal is mostly due to cold, rejecting parents.  
 a.) yes                      b.) no                      c.) don't know
- 17.) Autism is generally evident before age 3.  
 a.) yes                      b.) no                      c.) don't know
- 18.) Autism can be diagnosed as early as 18 months.  
 a.) yes                      b.) no                      c.) don't know
- 19.) Early diagnosis and intervention are important for children with autism.  
 a.) yes                      b.) no                      c.) don't know
- 20.) Children with autism exhibit impaired social skills.  
 a.) yes                      b.) no                      c.) don't know
- 21.) Children with autism exhibit delayed or impaired communication skills.  
 a.) yes                      b.) no                      c.) don't know
- 22.) Children with autism engage in repetitive and stereotypical behaviors.  
 a.) yes                      b.) no                      c.) don't know

**SECTION III. Perceived level of confidence**

**In the following statements, the term “paraprofessional” is used to refer to teacher’s aides, instructional aides, teacher’s assistants or instructional assistants.**

**Use the following scale to rate each statements below:**

**(1) strongly disagree, (2) mostly disagree, (3) somewhat disagree, (4) somewhat agree, (5) mostly agree, and (6) strongly agree.**

- 1.) The special education teacher or another professional in the school spent time talking with me about the diagnosis of my child.
- 1                      2                      3                      4                      5                      6

- 2.) I feel confident in my ability to recognize signs/symptoms of autism in children.  
 1                      2                      3                      4                      5                      6
- 3.) I feel confident in my ability to explain autism to others.  
 1                      2                      3                      4                      5                      6
- 4.) I feel comfortable talking with my child's paraprofessional about how my child is doing at school.  
 1                      2                      3                      4                      5                      6
- 5.) I feel confident in the paraprofessional's ability to provide instructional support to my child with autism.  
 1                      2                      3                      4                      5                      6
- 6.) My child's paraprofessional is knowledgeable about autism.  
 1                      2                      3                      4                      5                      6
- 7.) I feel paraprofessionals are properly trained in autism.  
 1                      2                      3                      4                      5                      6
- 8.) My child's paraprofessional is properly supervised by the special education teacher or other faculty member(s).  
 1                      2                      3                      4                      5                      6
- 9.) I feel that training in autism should be required before working with children with autism.  
 1                      2                      3                      4                      5                      6
- 10.) I feel confident that my child's paraprofessional was hired for this position based on their experience and/or qualifications for working with children with autism.  
 1                      2                      3                      4                      5                      6
- 11.) Who do you believe should make the diagnosis of autism?  
 a.) psychologist    b.) physician/pediatrician    c.) speech-language pathologist  
 d.) team              e.) other \_\_\_\_\_

12.) What do you believe causes autism?

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<sup>2</sup>This survey was adapted from a previously conducted study by Haggard (2010).

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<sup>2</sup> Haggard, S. (2010). *A survey of parents and healthcare providers regarding their knowledge of appropriate education options for children with autism*. (Unpublished master's thesis). Eastern Kentucky University, Richmond, KY.

APPENDIX C:

E-mail Request for Contact Information for Special Education Paraprofessionals

February 16, 2011

Kentucky Department of Education Personnel,

My name is Laura Nichole Baker and I am a graduate student at Eastern Kentucky University majoring in Communication Disorders (Speech-language Pathology). I am currently working on a research study where I will be surveying paraprofessionals working in public schools in Kentucky with a high school diploma, GED, or equivalent experience who provide one-to-one instructional support to a child with autism. I am not exactly sure how to get in contact with the paraprofessionals. I intend on constructing a survey via Survey Monkey, or another survey generating website where the paraprofessionals meeting my inclusion criteria will be able to access and complete my survey. Responses are completely confidential, as no identifying information is requested (i.e., name, name of school where employed, address, etc.) of the participants. I came across your contact information via the Kentucky Department of Education website. I saw that you are the contact person for autism, in addition to several other areas, so I thought you may have an idea of how I would come in contact with these paraprofessionals. Do you have any suggestions? Initially, my idea was to acquire a list of e-mail addresses of the paraprofessionals employed in public schools in Kentucky so that I may send a link where the survey can be anonymously completed. Would you happen to know if there is a listserv of e-mail addresses for this population? Your help would be greatly appreciated. If you need any additional information concerning my research study, please let me know and I will provide you with such.

Laura Nichole Baker  
Graduate Student  
EKU

APPENDIX D:  
E-mail Sent to Special Education Director

May 25, 2011

Dear Special Education Director,

My name is Laura Nichole Baker. I am a graduate student pursuing a Master's degree in communication disorders (speech-language pathology) at Eastern Kentucky University. I am conducting a research project that will investigate the perceived levels of confidence and knowledge of autism between special education paraprofessionals in public schools in Kentucky and parents of children with autism, and I need your help. I plan to conduct a survey via SurveyMonkey; however, I first need a method of contacting the special education paraprofessionals assigned to children with autism in your district. ***I am contacting you to request a list of e-mail addresses of the special education paraprofessionals in your district so that I may directly send a request for participation in my study.*** I simply need the e-mail addresses in order to send out the link to the survey. Involvement in this study is completely voluntary and confidential, as no identifying information will be asked. The survey will take only 5-10 minutes of the participants' time to complete.

Would you provide me with a list of e-mail addresses of the special education paraprofessionals in your district? If not, would you be willing to forward the link to my survey to the special education paraprofessionals in your district? If you have any questions, please feel free to contact me, Laura Baker at (606) 233-0008 or at [laura\\_baker47@eku.edu](mailto:laura_baker47@eku.edu). You may also contact my thesis mentor, Dr. Charlotte Hubbard, at (859) 622-3155 or at [charlotte.hubbard@eku.edu](mailto:charlotte.hubbard@eku.edu). Any help that you can give me would be greatly appreciated. Thank you for your time.

Laura N. Baker, B.S.  
Graduate Student  
Communication Disorders Program  
Special Education Department  
Eastern Kentucky University

APPENDIX E:

E-mail Request for Contact Information for Parents of Children with Autism

March 21, 2011

Kentucky Autism Training Center,

My name is Laura Nichole Baker. I am a graduate student in the communication disorders program at Eastern Kentucky University. I am currently working on a thesis about autism, and your help would be greatly appreciated. My thesis will compare ratings of the perceived level of confidence and knowledge of autism among special education paraprofessionals assigned to a child with autism, and parents of children with autism. I plan to conduct a survey via Survey Monkey; however I am having difficulty in determining a method of reaching the parents of children with autism. In order for the survey to be completed, I would need a list of e-mail addresses to reach the parents so that I may send them the link to access and complete the survey. Through the survey generating website, the participants will remain anonymous, and all information is confidential as no identifying information (i.e., school where their child attends, names, etc.) will be requested. The survey will take 5-10 minutes to complete and will ask the parents to respond to simple statements about autism via multiple choice answers.

A second portion of the survey will ask the parents to rate their perceived levels of confidence in the paraprofessional's ability to provide instructional support to their children diagnosed with autism. Again, all information will remain confidential. I simply need the e-mail addresses to distribute the link where the survey can be completed. Can you give me a list of e-mail addresses of parents who use the Autism Training Center? Any help that you can give me would be greatly appreciated. If you need any additional information about my thesis, I would be happy to provide you with such. Thank you for your time.

Sincerely,

Laura Nichole Baker  
Graduate Student  
EKU

APPENDIX F:  
E-mail Sent to Support Group Chairperson

May 25, 2011

Dear Support Group Chairperson,

My name is Laura N. Baker. I am a graduate student pursuing a Master's degree in communication disorders (speech-language pathology) at Eastern Kentucky University. I am conducting a research project that will investigate the perceived levels of confidence and knowledge of autism between special education paraprofessionals in public schools in Kentucky and parents of children with autism, and I need your help. My participants will include special education paraprofessionals assigned to children with autism, and parents of children with autism. I plan to conduct a survey via Survey Monkey; however I first need a method of contacting parents of children with autism. I am contacting you to request a list of e-mail addresses of parents of children with autism who are members of your support group so that I may directly send a request for participation in my study. I simply need the e-mail addresses in order to send out the link to the survey. Involvement in this study is completely voluntary and confidential, as no identifying information will be asked. The survey will take only 5-10 minutes of the participants' time to complete.

Would you provide me with a list of e-mail addresses of parents of children with autism who are members of your support group? If not, would you be willing to forward the link to my survey to your members? If you have any questions about this study, please feel free to contact me, Laura Baker, at (606) 233-0008 or at [laura\\_baker47@eku.edu](mailto:laura_baker47@eku.edu). You may also contact my thesis mentor, Dr. Charlotte Hubbard, at (859) 622-3155 or [charlotte.hubbard@eku.edu](mailto:charlotte.hubbard@eku.edu). Any help you can give me would be greatly appreciated. Thank you for your time.

Sincerely,

Laura N. Baker , B.S  
Graduate Student  
Communication Disorders Program  
Special Education Department  
Eastern Kentucky University

APPENDIX G:  
Introduction Letter to Special Education Paraprofessionals

September 13, 2011

Dear Special Education Paraprofessional,

My name is Laura N. Baker. I am a graduate student in the Communication Disorders Master's degree program at Eastern Kentucky University. I am conducting a research project titled: Perceived Levels of Confidence and Knowledge of Autism Between Special Education Paraprofessionals in Kentucky Schools and Parents of Children with Autism. The purposes of my study are (1) to examine the knowledge of autism among special education paraprofessionals assigned to children with autism; (2) to compare their knowledge of autism to the knowledge of parents of children with autism; (3) to examine special education paraprofessional's perceived levels of confidence in providing instructional support to children with autism; and (4) to examine parent's perceived levels of confidence in the special education paraprofessional's ability to provide services to children with autism. Research in this area is limited. Analysis of the above factors may encourage more training opportunities for special education paraprofessionals in the area of autism which may benefit you and the child you are providing services to.

I am inviting you to be a part of this research study based on your classification as a special education paraprofessional assigned to a child diagnosed with autism in the public school system in Kentucky. You will be asked to complete an online survey regarding your knowledge of autism, your perceived levels of confidence in your ability to provide services to children with autism, and a short background information section. Your involvement in this study is completely voluntary and anonymous. Your completion of the survey indicates your informed consent to participate in my study. No one, including myself or members of the research team, will know that the information provided came from you, as no identifying information, (i.e., name) is requested. The information gathered from this study will be published as group results and cannot be traced back to any one paraprofessional. The survey will take approximately 5-10 minutes to complete, and there is no penalty if you choose not to participate. You may choose to stop the survey at any time, or not to participate at all. There is no more than minimal risk in participating in this study.

Please help me complete my research project. Your participation will be greatly appreciated. Complete the online survey by 09/27/11 by visiting the link provided: <http://www.surveymonkey.com/s/paraprofessionalsurvey>. Please do not include any identifying information in the survey to protect your confidentiality. All data will be analyzed at Eastern Kentucky University. As a participant, you may receive a copy of the results upon completion of the study. To request a copy of the results, you may contact me via e-mail or phone. If you have any questions about this study or your participation, please contact me, Laura Baker, at (606) 233-0008 or [laura\\_baker47@eku.edu](mailto:laura_baker47@eku.edu). You may also contact my thesis mentor, Dr. Charlotte Hubbard at (859) 622-3155 or [charlotte.hubbard@eku.edu](mailto:charlotte.hubbard@eku.edu). Thank you for your time.

Sincerely,  
Laura Baker, B.S.  
Graduate Student  
Communication Disorders Program  
Special Education Department  
Eastern Kentucky University

APPENDIX H:  
Introduction Letter to Parents of Children with Autism

September 13, 2011

Dear Parent,

My name is Laura N. Baker. I am a graduate student in the Communication Disorders Master's degree program at Eastern Kentucky University. I am conducting a research project titled: Perceived Levels of Confidence and Knowledge of Autism Between Special Education Paraprofessionals in Kentucky Schools and Parents of Children with Autism. The purposes of my study are (1) to examine the knowledge of autism among special education paraprofessionals assigned to children with autism; (2) to compare their knowledge of autism to the knowledge of parents of children with autism; (3) to examine special education paraprofessional's perceived levels of confidence in providing instructional support to children with autism; and (4) to examine parent's perceived levels of confidence in the special education paraprofessional's ability to provide services to children with autism. Research in this area is limited. Analysis of the above factors may encourage more training opportunities for special education paraprofessionals in the area of autism which may benefit you and your child with autism.

I am inviting you to be a part of this research study based on your classification as a parent of a child or children diagnosed with autism. In particular, I am looking for parents of children with autism who receive one-to-one instructional support from a special education paraprofessional in the public school system in Kentucky. You will be asked to complete an online survey regarding your knowledge of autism, your perceived levels of confidence in the paraprofessionals ability to provide services to children with autism, and a short background information section. Your involvement in this study is completely voluntary and anonymous. Your completion of the survey will indicate your informed consent to participate in my study. No one, including myself and the faculty advisor, will know that the information provided came from you, as no identifying information, (i.e., name) is requested. The information gathered from this study will be published as group results and cannot be traced back to any one parent. The survey will take approximately 5-10 minutes to complete, and there is no penalty if you choose not to participate. You may choose to stop the survey at any time, or not to participate at all. There is no more than minimal risk in participating in this study.

Please help me complete my research project. Your participation will be greatly appreciated. Complete the online survey by 9/27/11 by visiting the link provided <http://www.surveymonkey.com/s/parentsurvey>. Please do not include any identifying information in the survey to protect your confidentiality. All data will be analyzed at Eastern Kentucky University. As a participant, you may receive a copy of the results upon completion of the study. To request a copy of the results, you may contact me via e-mail or phone. If you have any questions about this study or your participation, please contact me, Laura Baker, at (606) 233-0008 or [laura\\_baker47@eku.edu](mailto:laura_baker47@eku.edu). You may also contact my thesis mentor, Dr. Charlotte Hubbard at (859) 622-3155 or [charlotte.hubbard@eku.edu](mailto:charlotte.hubbard@eku.edu). Thank you for your time.

Sincerely,  
Laura Baker, B.S.  
Graduate Student  
Communication Disorders Program  
Special Education Department  
Eastern Kentucky University

APPENDIX I:  
E-mail Reminder Letter

September 28, 2011

Hello,

My name is Laura N. Baker. I am a graduate student in the Communication Disorders Master's degree program at Eastern Kentucky University. You may have received a request for participation e-mail inviting you to participate in my research study: Perceived Levels of Confidence and Knowledge of Autism Between Special Education Paraprofessionals in Kentucky Schools and Parents of Children with Autism. This letter is a reminder to those of you who have not yet completed my survey but would still like to participate in my study. Please do so by 10/14/11. I would very much appreciate your input. If you have any questions, please feel free to contact me, Laura Baker, at (606) 233-0008 or [laura\\_baker47@eku.edu](mailto:laura_baker47@eku.edu). You may also contact my thesis mentor, Dr. Charlotte Hubbard at (859) 622-3155 or [charlotte.hubbard@eku.edu](mailto:charlotte.hubbard@eku.edu). Thank you for your time.

Sincerely,

Laura N. Baker , B.S  
Graduate Student  
Communication Disorders Program  
Special Education Department  
Eastern Kentucky University

APPENDIX J:  
Data Tables

Data Tables

**Table 1. Severity of Child’s Autism**

Severity	Paraprofessionals’ Assigned Children (n=173)
Mild (high-functioning)	32.95% (57/173)
Moderate	38.7% (67/173)
Severe	20.8% (36/173)
Don’t know	7.5% (13/173)

**Table 2. Paraprofessionals’ Typed Responses for ‘Other’ Professional**

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**Paraprofessional Typed Responses for ‘Other’ Professional  
(n=33)**

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Weiskopff Child development Center- Louisville; 1<sup>st</sup> Steps of  
 Kentucky-KRCC  
 Had children in my own classroom  
 Special Education teachers  
 District autism specialist  
 Certified teacher  
 PD every year  
 Child’s parents  
 Learning curve of working with kids with autism.  
 His mother  
 I’m also the parent of a 19-year-old son with autism.  
 Child’s parents, T.V. news programs about autism  
 I have been employed here for 17 years  
 Participated in TEACCH program in N.C.  
 Parents  
 Child’s Parents  
 School Therapist  
 Being a director of a daycare  
 My QMRP group  
 Working hands on hands

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**Table 2. (continued)**

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Other paraprofessionals  
Aids with more experience  
I did NOT receive any training nor did I have an experience with autistic children until after I had already worked in that unit for a year. I was clueless!  
Aids with more experience  
Worked with a class that was all autistic for 2 years  
Didn't receive any information  
Parent of a child with autism  
Occupational therapist  
Special Education teacher  
Autism specialist  
ABS Applied Behavior Services and his parents  
Relatives with children who have mild (high-functioning autism)

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**Table 3. Paraprofessionals' Top Three Resources for Autism Knowledge**

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<b>Resource</b>	<b>% of Paraprofessionals (N=173)</b>
Child's teacher	65.9% (114/173)
Workshops	60.7% (105/173)
Internet	48.0% (83/173)
Speech-language pathologist	22.5% (39/173)
Seminars	34.7% (60/173)
Books	37.6% (65/173)
College courses	13.9% (24/173)
Support groups	9.8% (17/173)
Professional journals	6.9% (12/173)

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**Table 4. Paraprofessional Typed Responses for Top Three ‘Other’ Professional**

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**Paraprofessional Typed Responses  
(n=25)**

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First Steps program through KRCC  
Central office staff  
Self-experience  
Special Education Teachers  
Working one-to-one with students with autism  
District autism specialist  
I learned best hands on and working with them  
PD every year  
His mother  
My own personal experiences  
Doctor  
Parent  
Child’s parent  
School therapist  
Working hands on hands  
Working directly with students diagnosed with autism  
I learned through trial and error  
Aids with more experience  
Personal interaction with an autistic child  
Specialist  
Experience  
School Counselor  
Hands on experience  
ABS and parents

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**Table 5. Number of Trainings/Workshops Attended in Autism**

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<b>Number of trainings</b>	<b>% of Paraprofessional (n=173)</b>
0	21.4% (37/173)
1-2	19.6% (34/173)
2-3	17.3% (30/173)
3-4	13.9% (24/173)
4-5	6.9% (12/173)
5 or more	20.8% (36/173)

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**Table 6. Highest Level of Education Completed by Paraprofessionals**

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<b>Level of Education</b>	<b>% of Paraprofessional (n=173)</b>
High School Diploma or GED	48.6% (84/173)
Associate's Degree	18.5% (32/173)
Bachelor's Degree	32.9% (57/173)

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**Table 7. Severity of Child's Autism by Parents of Children with Autism**

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<b>Severity of Autism</b>	<b>% of Parents' Children (n=49)</b>
Mild (high-functioning)	28.6% (14/49)
Moderate	51.0% (25/49)
Severe	16.3% (8/49)
Don't know	4.1% (2/49)

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**Table 8. Amount of time Parents' Child Received One-to-One Support**

<b>Time (in years)</b>	<b>% of Parents' Children (n=49)</b>
<1	8.2% (4/49)
1-2	12.2% (6/49)
2-3	28.6% (14/49)
3-4	6.1% (3/49)
4-5	4.1% (2/49)
>5	40.8% (20/49)

**Table 9. Frequency of Contact between Parents and Paraprofessional**

<b>Frequency</b>	<b>% of Parents (n=49)</b>
Everyday	32.7% (16/49)
1-2 times per week	30.6% (15/49)
Once a month	18.4% (9/49)
Every other month	4.1% (2/49)
Rarely	14.3% (7/49)

**Table 10. Frequency of Paraprofessional Attendance in IEP Meetings**

<b>Frequency</b>	<b>% of Parents (n=49)</b>
Always	40.8% (20/49)
Frequently	12.2% (6/49)
Sometimes	10.2% (5/49)
Never	36.7% (18/49)

**Table 11. Percent of Day Child Spends with Paraprofessional**

<b>% of Day with Paraprofessional</b>	<b>% of Parents' Children (n=49)</b>
25%	40.8% (20/49)
50%	14.3% (7/49)
75%	18.4% (9/49)
100%	26.5% (13/49)

**Table 12. Number of Different Paraprofessionals Assigned to Child**

<b>Severity of Autism</b>	<b>% of Parents' Children (n=49)</b>
1	18.4% (9/49)
2	22.4% (11/49)
3	18.4% (9/49)
4	8.2% (4/49)
5	0.0% (0/49)
>5	32.7% (16/49)

**Table 13. Parents' Typed Responses for 'Other' Professional**

<b>Parents' Typed Responses for 'Other' Professional (n=20)</b>
I have Master's degree in Special Education
Doctor
Daycare then Weisskopf Center
Weisskopf development center in Louisville
Originally from Pediatric specialist
Doctors; behavior analysts; autism specialists
T.V.
ABA therapists
Doctor's office

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**Table 13. (continued)**

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Psychiatrist  
Weisskopf Center in Louisville  
Doctor  
His Doctors  
Private therapist  
Medical community  
Weisskopf Center in Louisville  
Diagnosing psychologist  
Physicians and I am a counselor by profession  
Autism conferences  
Conferences/seminars

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**Table 14. Percent Correct on Autism Knowledge Statements between Groups**

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<b>Item Number</b>	<b>Paraprofessionals (n=162)</b>	<b>Parents (n=49)</b>
1	51.2% (83/162)	61.2% (30/49)
2	75.3% (122/162)	89.8% (44/49)
3	93.2% (151/162)	95.9% (47/49)
4	79.6% (129/162)	85.7% (42/49)
5	79.6% (129/162)	75.5% (37/49)
6	93.2% (151/162)	81.6% (40/49)
7	73.5% (119/162)	91.8% (45/49)
8	97.5% (158/162)	100% (49/49)
9	59.9% (97/162)	89.8% (44/49)
10	81.5% (132/162)	85.7% (42/49)
11	58.0% (94/162)	59.2% (29/49)
12	93.8% (152/162)	95.9% (47/49)
13	43.2% (70/162)	77.6% (38/49)
14	96.9% (157/162)	98.0% (48/49)
15	57.4% (93/162)	79.6% (39/49)
16	95.1% (154/162)	100% (49/49)
17	68.5% (111/162)	75.5% (37/49)
18	74.1% (120/162)	87.8% (43/49)
19	98.8% (160/162)	100% (49/49)
20	88.9% (144/162)	100% (49/49)
21	90.7% (147/162)	98% (48/49)
22	84.6% (137/162)	95.9% (47/49)

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**Table 15. Percent of ‘Don’t Know’ Responses between Groups**

<b>Item Number</b>	<b>Paraprofessionals (n=162)</b>	<b>Parents (n=49)</b>
1	8.0% (13/162)	2.0% (1/49)
2	8.0% (13/162)	0.0% (0/49)
3	3.7% (6/162)	0.0% (0/49)
4	4.9% (8/162)	0.0% (0/49)
5	6.2% (10/162)	6.1% (3/49)
6	3.1% (5/162)	6.1% (3/49)
7	17.9% (29/162)	8.2% (4/49)
8	1.9% (3/162)	0.0% (0/49)
9	27.8% (45/162)	6.1% (3/49)
10	17.3% (28/162)	6.1% (3/49)
11	26.5% (43/162)	8.2% (4/49)
12	4.3% (7/162)	0.0% (0/49)
13	51.9% (84/162)	16.3% (8/49)
14	1.2% (2/162)	0.0% (0/49)
15	39.5% (62/162)	18.4% (9/49)
16	4.3% (7/162)	0.0% (0/49)
17	22.8% (37/162)	6.1% (3/49)
18	25.9% (42/162)	12.2% (6/49)
19	1.2% (2/162)	0.0% (0/49)
20	3.7% (6/162)	0.0% (0/49)
21	2.5% (4/162)	0.0% (0/49)
22	8.6% (14/162)	2.0% (1/49)

**Table 16. Paraprofessional Responses to Who Should Make Autism Diagnosis**

<b>Professional</b>	<b>% of Paraprofessionals (n=154)</b>
Psychologist	5.2% (8/154)
Physician/pediatrician	8.4% (13/154)
Speech-language pathologist	1.3% (2/154)
All of the above as a team	83.8% (129/154)
Other Professional	1.3% (2/154)

**Table 17. Paraprofessionals' Typed Responses for Autism Etiology**

<b>Category of Response</b>	<b>No. of Paraprofessionals (n=154)</b>
Don't know	48
Born with it	6
Genetics	24
Vaccinations	10
Developmental	3
During pregnancy	3
Combination	14
Environmental	5
Cause could vary	17
Chemical imbalance	9
Processed food	2
God's plan	1
Birth control pills used by preteens	1
No response	6
Birth defect	1
No	1
Neurological	3

**Table 18. Parent Responses to Who Should Make Autism Diagnosis**

<b>Professional</b>	<b>% of Parents (n=48)</b>
Psychologist	12.5% (6/48)
Physician/pediatrician	6.3% (3/48)
Speech-language pathologist	0.0% (0/48)
All of the above as a team	79.2% (38/48)
Other Professional	2.1% (1/48)

**Table 19. Parents' Typed Responses for Autism Etiology**

<b>Category of Response</b>	<b>No. of Parents (n=48)</b>
Various causes	26
Don't know	8
God's will	1
Genetics	4
Environmental	3
At Birth	2
Vaccination	4