AN EXAMINATION OF EDUCATION SERVICES FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS IN RURAL AREAS

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AN EXAMINATION OF
EDUCATION SERVICES FOR CHILDREN WITH
AUTISM SPECTRUM DISORDERS IN RURAL AREAS

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Education
at the University of Kentucky

By
Melissa A. Murphy, M.S.

Lexington, KY

Co-Directors: Dr. H. Thompson Prout, Professor of School Psychology
and Dr. Lisa A. Ruble, Professor of School Psychology

Lexington, KY

2013

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ABSTRACT OF DISSERTATION

AN EXAMINATION OF
EDUCATION SERVICES FOR CHILDREN WITH
AUTISM SPECTRUM DISORDERS IN RURAL AREAS

Much research and media attention in recent years has focused on Autism Spectrum Disorders (ASD), a pervasive developmental disorder that impacts children in multiple areas of their lives. Early identification and intervention, as well as access to mental health, behavioral, and pediatric services for this population are crucial to their later outcomes and quality of life (American Academy of Pediatrics, 2001; Blane & Borden, 2008; Jacobson & Mulick, 2000; Rogers & Vismara, 2008). Unfortunately, research suggests that access to educational services may be complicated for individuals living in rural areas (Applequist, 2009; Collins et al., 2005, Ludlow, Conner, & Schechter 2005; Pennington, Horn & Berrong, 2009). Therefore, the purpose of this project was to investigate education services for children with ASD in rural areas.

Education services were assessed via a survey of 42 parents of children with ASD and a review of educational records. Contrary to previous research, results from this study indicated that parents in more rural areas reported more satisfaction with educational counseling services and a lower age of diagnosis when compared to parents in more urban areas. Similarly, parents in more rural areas reported a higher number of services and more frequent educational counseling services (i.e., more direct service hours) compared to parents in more urban areas. Results of this study were interpreted from an adapted version of Andersen’s Behavioral Model of Access to Care. Possible explanations for these findings, as well as limitations, directions for future research, and implications are discussed.

KEY WORDS: Autism; Rurality; Autism and Special Education; Parent Satisfaction with Special Education; Student Outcomes
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AN EXAMINATION OF EDUCATION SERVICES FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS IN RURAL AREAS

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05/24/2013
For my husband and our soon to be “Baby Grant,” none of this would be possible without your unconditional love and support. You show me every day that together, all things are possible.

For my parents, who told a little girl that she could be anything she wanted and never wavered in that belief and provided continuous love and encouragement.

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Chapter One

Literature Review and Rationale

Autism Spectrum Disorders (ASD) are pervasive developmental disorders that impact children’s social and communication development. Much media and research attention has focused on ASD and the increase in prevalence of these disorders in recent years (Fombonne, 2005) with recent estimates indicating as many as 1 in 88 children diagnosed with ASD in their lifetime (Autism and Developmental Disabilities Monitoring Network, 2012). Early identification and intervention of children with ASD has been found to significantly improve future outcomes and functioning (American Academy of Pediatrics, 2001; Blane & Borden, 2008; Rogers & Vismara, 2008). Moreover, access to mental health and pediatric services for this population is crucial to their later outcomes and quality of life (American Academy of Pediatrics, 2001; Blane & Borden, 2008; Exkorn, 2005; Reichow, 2012). Unfortunately, there is evidence to suggest that children with ASD are underserved (Liptak et al., 2008; Ruble, Heflinger, Renfrew, & Saunders, 2005), especially those living in rural areas (Chen, Liu, Su, Huang, & Kim, 2008; Mandell, Novak, & Zubritsky, 2005). While educational services are often considered a universal service available to children with disabilities (i.e., required by law), research suggests that access to these important services may be complicated for individuals living in rural areas due to limited availability of highly trained educational professionals (Collins et al., 2005; Ludlow et al., 2005), limited choices for specific services (Applequist, 2009), or disability-specific specialists (Pennington et al., 2009).

Autism
The term “autism” was first used by Leo Kanner in 1943 after his work with 11 individuals who displayed socially withdrawn behaviors. The terms “autism” and “childhood schizophrenia” were often used interchangeably in the past (Tidmarsh & Volkmar, 2003), although today they are seen as two distinct disorders. Hans Asperger later coined the term “Asperger’s Disorder” which was largely associated with males who displayed detachment from society and limited adaptability (Attwood, 1998).

The etiology of this disorder is still controversial and debated amongst researchers. Pre- and perinatal influences have been highlighted as potential risk factors, including infections that may occur in the womb (Nelson, 2001). Additional research has investigated the possible influence of genetics and 5 to 20 genes could contribute to the development of autism (Lauritsen & Ewald, 2001). Controversial attention has been given to the allegation that childhood vaccinations and diets high in mercury content could be linked to this disorder. However, there has been no research to support these claims (Hvid, Stellfeld, Wohlfahrt & Melbye, 2003). Rutter (2005) argued that isolating one single cause is improbable and stated that it is much more likely there are multiple influences to the development of ASD rather than separate risk factors or causes.

**Definition and Symptoms of Autism.** The three primary symptoms associated with ASD are (1) deficits in social interaction, (2) deficits in language and, (3) odd, routine, or repetitive behaviors. These symptoms are often present before the age of two (Kronenberger & Meyers, 2001). The *Diagnostics and Statistical Manual* (DSM-IV-TR) defines autism as “the presence of markedly abnormal or impaired development in social interaction and communication and a markedly restricted repertoire of activity and interests” (American Psychiatric Association [APA], 2000, p. 70). Impaired social
interaction can manifest in several ways, including disinterest in others, minimal eye contact, little to no pretend play in early childhood, lack of sharing interest or joint attention, or an inability to read social cues. Communication deficits often include delayed or regression of language development, limited ability to initiate or sustain conversations, or use of idiosyncratic language. Restricted interests or a desire for repetition can manifest as wanting to hear the same song or watch the same movie repeatedly, using self-stimulating behaviors such as hand flapping or head nodding, or being preoccupied with parts of objects as opposed to focusing on the object as a whole (APA, 2000).

The DSM-IV-TR (APA, 2000) currently includes Autistic Disorder, Asperger’s Syndrome, Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS), Childhood Disintegrative Disorder, and Rett Syndrome within the category of ASD. Each of these disorders differs in the presence and severity of the three primary symptoms of autism. Developmental milestones for children with Autistic Disorder typically include: early delays in language, disinterest in others, sensory difficulties, little to no pretend play, and lack of joint attention. Children with Asperger’s Syndrome often display disinterest in others and limited or no initiation of interactions, two-way communication, and emotional thinking. A diagnosis of PDD-NOS is utilized when children do not completely meet the full requirements of autism or Asperger’s. Developmental milestones for PDD-NOS often include: disinterest in others, limited verbal and nonverbal communication skills, and fixation on certain objects or topics. Children with Rett’s Disorder have a similar presentation to children with Autistic Disorder, Asperger’s Syndrome, and PDD-NOS, with symptoms including regression.
following normal functioning; loss of language, motor skills, and interest in social relationships. A distinct indicator for this disorder is the deceleration of head growth. Children diagnosed with Childhood Disintegrative Disorder often have deficits following normal development for at least two years in the areas of language, motor skills, interest in social relationships, and bowel or bladder control.

Childhood Disintegrative Disorder and Rett Syndrome occur less frequently and are often not included in research of ASD where the target population is children who are on the autism spectrum (APA, 2000). Therefore, for the purposes of this research, the terms autism and ASD will refer to children with Autistic Disorder, Asperger’s Syndrome, and PDD-NOS.

**Prevalence of Autism.** The prevalence of autism has drastically increased in recent years (Fombonne, 2005) with present estimates indicating that as many as 1 out of 88 children (1%) have or will be diagnosed with ASD in their lifetime (ADDM, 2012). However, it is unclear as to whether this increase is due to a genuine increase in the rate of ASD, or due to broadened diagnostic criteria, improvements made in screening for and diagnosing ASD, as well as changes in the diagnostic label from other categories used in the past (Fombonne, 2005). Additionally, discrepancies are evident from state to state in terms of the diagnostic criteria used to identify children with ASD, as well as the requirements of the professional qualified to diagnose ASD (Yeargin-Allsopp et al., 2003). This can also lead to problems in determining accurate prevalence rates and generalizing these rates from one state to another.

Males have been found to be four to five times more likely than girls to be diagnosed with autism (APA, 2000). Also at an increased risk are the siblings of children
with autism as they are at least 10 times more likely to be diagnosed than children who do not have a sibling with autism. For Autistic Disorder, children are likely to have an associated diagnosis of Intellectual Disability (approximately 48%, Autism and Developmental Disabilities Monitoring Network, 2012). Additionally, there is a wide range of behavioral symptoms often present for children with ASD, including inattention, hyperactivity, aggression, self-injurious behaviors, and atypical responses to different sensory stimuli. Approximately 25% of children with ASD also have seizures that develop in adolescence (APA, 2000).

**Diagnosis of Autism.** Diagnosis of ASD can be complicated given that “manifestations of the disorder vary greatly depending on the developmental level and chronological age of the individual” (APA, 2000, p. 70). Accurate diagnosis is dependent on the competency and professional judgment of the individuals involved in the diagnostic process. ASD is frequently diagnosed by medical professionals, such as pediatricians or family practitioners, as well as psychologists. ASD specialists are becoming increasingly more prevalent and many pediatricians are referring to these centers and other professionals (including schools) for a more comprehensive diagnostic process. In a study evaluating prevalence of ASD in a metropolitan area, Yeargin-Allsopp and colleagues (2003) found that 40% of children with ASD in their sample were identified through an educational setting only. This finding suggests that school systems are taking on more responsibility in identifying children with ASD.

There are several diagnostic tools available for ASD including rating scales, systematic observation tools, and interviews. They vary in the modalities they utilize, including parental report or interview methods (e.g., Autism Diagnostic Interview,
Revised), observational techniques (e.g., Childhood Autism Rating Scale, Second Edition), or semi-structured observational assessments (e.g., Autism Diagnostic Observation Schedule [ADOS]). The use of the ADOS requires lengthy training and supervision, but it often provides an accurate and reliable diagnosis (Kleinman et al., 2008) and is considered to be the “gold standard” for a diagnosis of ASD.

Due to the differences in the qualifications of diagnostic personnel and assessment methods, early identification of ASD may be difficult. There are many factors that can impede the early diagnosis of ASD, including multiple diagnoses in younger children and the inability to distinguish the symptoms of ASD from other disorders in childhood (Ozonoff et al., 2007). How do parents differentiate from a developmental delay in language and delays that could be early indicators of ASD? There is much research that is needed in this area to help parents, educators, and health care providers to identify additional early indicators that can differentiate between a developmental delay and actual early warning signs and symptoms of ASD. Early identification of ASD has been increasingly found to be crucial to improvement in children’s later outcomes as this provides the foundation for treatment specific to the child’s needs (American Academy of Pediatrics, 2001; Blane & Borden, 2008; Rogers & Vismara, 2008) and is cost-beneficial (Jacobson & Mulick, 2000). Further, researchers have found that parents notice atypicalities in their child’s development as early as one year of age.

Early identification has increased dramatically over the years due to more frequent well-child physician visits and increased public awareness of the disorder (Fombonne, 2005). Ten years ago the average age of diagnosis was 6 to 7 years
(Fombonne, 2005; Mandell, Listerud, Levy, & Pinto-Martin, 2002); currently, reports from the Center for Disease Control (CDC) indicate a diagnostic age range from 41 to 60 months (3.5 to 5 years; Autism and Developmental Disabilities Monitoring Network, 2012). This is a significant improvement for enhancing the outcomes of these children due to its direct connection to early intervention services, which have repeatedly been shown to have drastic impacts for children with ASD (e.g., Blane & Borden, 2008; Corsello, 2005; Luiselli, Cannon, Ellis, & Sisson, 2000; Rogers & Vismara, 2008). Unfortunately, there remain needed improvements in this area as not all children are diagnosed at such an early age, especially those of ethnic minority backgrounds, lower socioeconomic status, (Mandell et al., 2005) and those living in rural areas (Chen et al., 2008).

Typically, most parents notice significant delays around 18 months and often these delays are in the area of communication ability (Johnson & Myers, 2007). Unfortunately, there is a large gap between the age at which the parent first expresses concern to their pediatrician and the age at which a diagnosis is made. This delay is potentially due to the length of the diagnostic process and large wait time associated with seeing a qualified diagnostic professional. Research has found a 22.5 month period between parents’ first concerns and diagnosis (Samms-Vaughn & Franklyn-Banton, 2008), nearly two years lost to opportunities for interventions.

**Early Intervention.** The effectiveness and importance of early intervention is critical for the development of children with ASD. Studies have repeatedly shown that early intervention is vitally important in the treatment of ASD, and can have significant impacts on their future development (American Academy of Pediatrics, 2001; Blane &
Borden, 2008; Boyd, Odom, Humphreys, & Sam, 2010; Corsello, 2005; Luiselli et al., 2000; Rogers & Vismara, 2008). In a review of early intervention programs, Rogers and Vismara (2008) found that all studies included in the review demonstrated some improvement in communication, language, and IQ, as well as decreased stereotypic behaviors. Findings from this meta-analytic review indicate the importance of early intervention and demonstrate the impressionability of ASD behaviors in early childhood. Various components of intervention have been found to be more important than others, including the addition of parents into the treatment and intervention process, as well as program intensity (Hume, Bellni & Pratt, 2005).

Unfortunately, the information currently available for parents and caregivers of children with ASD is still lacking (Corsello, 2005; Reichow, Barton, Boyd, & Hume, 2012). Corsello (2005) highlights the insufficient amount of research that compares intervention treatment programs in early childhood and the need for more studies that evaluate the breadth of methodologies used to evaluate the effectiveness of early intervention. One such study was a review completed by Eikeseth (2009) that evaluated the methods and treatments used by clinicians and educators with children with ASD. Eikeseth (2009) found three primary methods of intervention available in the literature: (1) Applied Behavior Analytic Interventions (ABA), (2) Treatment and Education of Autistic and Communication Handicapped Children (TEACCH) program, and (3) The Denver Model. ABA interventions concentrate on applying learning principles to the acquisition of new skills, such as social, emotional, and language skills. The TEACCH model incorporates techniques to enhance autonomy in children and the teaching of a communication structure based on gestures, pictures, signs, or printed words. The
Denver Model incorporates play-based therapy founded on Piaget’s cognitive development theory, as well as language development and some behavior analytic approaches to address stereotypic behaviors. In the twenty-five studies evaluated in this review, the most commonly used method of intervention was ABA. Results indicated that ABA techniques had the greatest level of scientific merit and magnitude of results according to Eikeseth’s (2009) definition, which included measures of the study’s design, diagnosis validation, dependent variables, treatment fidelity, and number of studies demonstrating positive outcomes. This review provided further information about the types of services important to include in the comprehensive treatment of children with ASD in early childhood and provides additional evidence regarding suggestions that providers should take into consideration when designing interventions for children with ASD.

**Interventions for Students with Autism**

Parents of children with ASD have a variety of different treatment or service options available to them. On average, children with ASD use four types of community services in addition to those received in the public school system (Ruble & Mcgrew, 2007). Unfortunately, some services advertised to parents or caregivers of children with ASD lack empirical support (Heflin & Simpson, 1998; Simpson et al., 2005) and none of the treatments available have been found to be effective for all individuals with ASD (APA, 2000; Exkorn, 2005), thereby making decisions about treatment approaches more difficult for professionals as it must be resolved on a case-by-case basis. Additionally, parents must suffer from the high costs for the treatment of autism. The multitude of
services that are often utilized results in a total life-time cost of 3.2 million dollars (Ganz, 2006).

The goal of treatment and services for children with ASD is not to cure autism, as there is no yet known “cure.” The goal often is to provide accommodations and services to help children with ASD lead an adapted life that allows them to function successfully in society. Currently, there are several promising and well established treatments for children with ASD.

One such type of treatment is that of ABA, which was briefly described previously related to its impact in early intervention. ABA interventions center on the works by Ivar Lovaas and his colleagues from the 1960s (Lovaas & Simmons, 1969). As stated previously, this method applies learning principles to skill-based instruction. ABA interventions also highlight the importance of the integration of children with ASD with their typical peers so as to generalize newly acquired skills to different, more realistic settings. Core facets of this methodology include early intervention, parental involvement, and intensive, comprehensive treatment that is tailored to the individual’s needs and strengths.

ABA can be broken down into specific types of behavior interventions applicable to children with ASD. One such intervention is Discrete Trial Training (DTT; Lovaas & Simmons, 1969), in which targeted behaviors are broken down into small units of instruction, typically no longer than 5-20 seconds. Children with ASD are taught behaviors that build upon one another in a non-distracting environment and are consistently rewarded for completing the smaller unit of behavior until it is mastered.
This method is very intensive and requires accurate and consistent data collection to inform progress and future instruction.

Another method of ABA is Pivotal Response Training (PRT; Koegel, Koegel, Vernon, & Brookman-Freeze, 2010). PRT attempts to build on DTT by increasing children with ASD’s motivation to respond to stimulus and prompts. Key components of PRT include (1) choice in activity and rewards, (2) reward of approximations/attempts, (3) uninterrupted learning environment, and (4) multiple components or examples of new constructs. Additionally, PRT attempts to integrate generalization of skills with the use of typical peers to gain attention and reward positive social behaviors.

Structured teaching is another form of treatment available to children with ASD and is based on cognitive developmental research. It was developed based on the works of Jean Piaget, William Wundt, Howard Gardener, and Roger Sperry (Exkorn, 2005). The components of structured teaching are based on an understanding of the needs of children with ASD and outline clear expectations for how behaviors should be demonstrated. All expected behaviors are explicitly taught with an understanding of the needs of the child in which accommodations are made to the existing environment that promote successful learning of targeted behaviors (e.g., visual schedules, picture prompts, discrete trial learning). The overarching goal of structured teaching is to promote independent functioning of the child with ASD (Exkorn, 2005).

The primary model of treatment based on structured teaching is the TEACCH program, which was described briefly previously. The TEACCH model was founded by Eric Schopler in 1971 (Schopler, Brehm, Kinsbourne, & Reichler, 1971) and has been considered the most influential special education form of intervention for children with...
autism (Eikeseth, 2009). In addition to concentrating on teaching forms of communication and increasing student’s autonomy, the TEACCH program incorporates the education of parents into the intervention plan and allows them to take an active role in their child’s treatment and services.

Parents and providers have several treatment options for services for children with ASDs. Unfortunately, along with increased attention and funding allotted to this population, there has been a significant amount of treatment approaches advertised to families and service providers that have little to no empirical support (Heflin & Simpson, 1998; Simpson et al., 2005). Simpson and colleagues (2005) provided an overview of evidence-based practices (EBPs) for children with ASD and outlined five domains of intervention: interpersonal relationships, skill-based, cognitive, physiological/biological/neurological, and other. Another key component to students’ later outcomes is that of early intervention (American Academy of Pediatrics, 2001; Blane & Borden, 2008; Corsello, 2005; Luiselli et al., 2000; Rogers & Vismara, 2008). Additionally, intensity of services (or duration or amount of services) has been found to significantly influence student outcomes in social, cognitive, and communicative functioning (Luiselli et al., 2000).

Despite the existence of a variety of treatment options, there is some research to suggest that children with autism are an underserved population (Liptak et al., 2008; Ruble et al., 2005). Access to services for children with autism is limited, especially for children from poor families (Liptak et al., 2008). Ruble et al. (2005) found that a nationally representative sample of children with autism receiving Medicaid accessed one-tenth of the expected amount of services. Additionally, 40% of parents in one survey
reported difficulty in obtaining preferred services in their communities for their children with autism (Kohler, 1999). Parents of children with ASDs are often less satisfied with their child’s services when compared to parents of children with other similar disabilities (Bitterman, Daley, Misra, Carlson & Markowitz, 2008; Montes, Halterman, & Magyar, 2009), further highlighting deficiencies in services for this population. These findings indicate that children with ASD may have difficulty accessing services in their communities and have implications of the importance of educational services in the public school system for this population.

**Special Education Services for Children with Autism**

Children with ASD also have a range of services available to them from the public school system through special education services. The Individuals with Disabilities Education Act (IDEA) mandates that children with disabilities receive or have access to a Free and Appropriate Public Education (FAPE; U.S. Department of Education, Office for Civil Rights, 2010), which includes accommodations within the classroom, specially designed instruction to address any educational deficits, and related services to help them be successful in school. However, an important differentiation between services provided in the community and those within the public schools is the idea that schools are interested in how the disability influences their educational performance and how school personnel can make accommodations accordingly (Waltz, 2002).

More than 378,000 children between the ages of 3 to 21 in 2009 received special education services under the autism category of eligibility (U.S. Department of Education, 2012). According to Kentucky’s Special Education report for 2011, 3,927
(ages 3-21, 3.8% of all students who received special education services) children received special education services under the autism category of eligibility (Kentucky Department of Education, 2009). Unfortunately, there are limitations to looking only at a student’s primary disability category as research has indicated that children may not be listed under the Autism category of eligibility, with some research (Yeargin-Allsopp et al., 2003) indicating that as few as 41% of children with a diagnosed ASD had Autism as their primary special education category of eligibility listed on their Individualized Education Program (IEP). The other 59% of children with ASD in this study had other disabilities, such as Intellectual Disabilities or Speech/Language Impairment as their primary disability. Primary disability category for their study was determined by the category under which the child received special education services. Instructions provided by IDEA (U.S. Department of Education, Office of Special Education Programs, 2006b; P.L. 108-466, Code of Federal Regulations [CFR]) state that a student’s primary category of eligibility should be determined by the disability that most impacts the child’s functional or academic skills and abilities. Therefore, this result could have occurred due to more prioritized disabilities or differing educational needs of the student. Findings from this study have implications for sampling methods utilized in educational research.

Consistent with the increase in the number of children diagnosed with ASD (Autism and Developmental Disabilities Monitoring Network, 2012; Fombonne, 2005), schools have also seen an increase in the number of students with ASD that they are required to serve. Based on the most recent report from the National Center for Education Statistics (U.S. Department of Education, 2012), the number of children served under the autism category of eligibility has nearly quadrupled since 2000. Much
attention is being paid to the training of individuals involved in the educational programming for this population, including special education teachers. At present, there are many needed improvements in the training received by special education teachers related to serving students with ASD. Recent research has suggested teachers need additional information regarding implementing scientifically based interventions (Barnhill, Polloway, & Sumutka, 2011; Morrier, Hess, & Heflin, 2011), indicating that educators require more support from their training programs and school districts to be able to provide more appropriate services to these students.

Services in the schools can take many different forms and are dependent upon the needs of the child. These services could include speech therapy, occupational therapy, physical therapy, specially designed instruction, and services by a school psychologist (National Institute of Mental Health [NIMH], 2007). Services may be provided by a trained therapist, paraprofessionals, or teachers, dependent upon the parameters specified in the student’s IEP (U.S. Department of Education, Office of Special Education Programs, 2006b). The culmination of these comprehensive services may cost a school district annually from $12,000 at age 6 years to around $6,200 at ages 18 to 22 years (Ganz, 2007). Some examples of school-based services and the research behind them are discussed.

Speech and language therapy often focuses on the acquisition of pragmatic (e.g., asking for help) and social (e.g., conversational skills) language and uses a variety of tools to aid in communication (e.g., communication boards or other augmentative language tools, and picture schedules). This service is considered to be effective at improving communication development for children with ASD (Goldstein, 2002) and has
been identified as one of the most frequently utilized services for this population (Bitterman et al., 2008). Occupational therapy services in the schools focus on fine and gross motor skills and provide sensory therapy and other aids through the use of weighted vests, swings, and other motor stimulating devices that help children with ASD better integrate their sensory environment. Further, occupational therapy has been found to be an evidence-based interventions for areas such as sensory integration, social skill training, parent-mediated training, and behavioral interventions (Case-Smith & Arbersman, 2008) and was also identified by Bitterman et al. (2008) as a frequently employed service for children with ASD in the schools. Physical therapy, similar to occupational therapy, may focus on providing services aimed at controlling body movements (fine and gross motor skills) and is recognized as a necessary and frequently utilized school-based service for this population (Bitterman et al., 2008).

Specialized academic instruction (or specially designed instruction) is one of the most frequently utilized educational services for students with ASD (Bitterman et al., 2008) and centers on the student’s educational programming to address any identified academic deficits. Depending on the needs of the students and their educational achievement, students with ASD may receive specialized academic instruction in the reading, writing, and math content areas. Additionally, specialized academic instruction may also consist of instruction in appropriate social skills, adaptive skills, or appropriate behaviors. The specific method of delivery of educational content may include behavioral principles described previously (e.g., PRT, structured teaching).

Other services in the schools may include social skills training (SST) as well as the behavior approaches described previously (e.g., ABA). SST may include video
modeling, social stories, as well as social skills groups that allow children with ASD to practice new social skills with other peers (White, Keonog, & Scahill, 2007). SST may be integrated throughout the student’s daily curriculum or be provided through individualized direct instruction. Video modeling, social narratives, naturalistic interventions (e.g., those occurring in the classroom), self-monitoring, social skills groups, and visual supports have all been identified as EBPs in social skills training for students with ASDs (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010).

Currently, there is very little information available concerning the quality of services and interventions provided to students with ASD in the public school setting. At present, there is only one study that has investigated specific interventions provided to children with ASD in the public school system alone (see Hess, Morrier, Heflin, & Iveyk, 2008). Hess and colleagues (2008) utilized a survey approach to analyze teacher report of interventions employed with students with ASD in the public school system in one southern state. The survey consisted of a comprehensive list of interventions utilized with students with ASD with the purpose of inventorying teacher’s most frequently utilized practices. Analyses included 185 respondents and consisted of educators who were currently teaching students with ASD. Their results indicated that many of the interventions implemented by the school system lacked empirical evidence with only 28% of teachers reporting frequently using an EBP or promising intervention with their students with ASD. These findings provide further support provided to schools and educators to be better able to identify appropriate EBPs for this population.

The services and resources described above are considered traditional methods of treatment for individuals with ASD in the school system. However, discrepancies may
be seen in the quality and amount of these services for individuals dependent on a variety of environmental and personal characteristics.

**Andersen Behavioral Health Model of Access to Services**

Models of access to services are also important in understanding the complex nature of accessing needed services for students with ASD. One such model is the Anderson Behavioral Model of Access to Care (Andersen, 1995; Aday & Andersen, 1974). The model was originally developed as a method of explaining access to community-based health services and outlines environmental (i.e., health care system and external environment) and personal characteristics (i.e., predisposing, enabling, and need characteristics of the individual and their family). There have been several iterations of the original model that was first proposed in late 1960s (Andersen, 1968) which focused primarily on the family and its characteristics. The model has undergone four revisions and the most recent version (Andersen, 1995) considers child and family characteristics as well as environmental systems, population characteristics, health behaviors, and outcome (Figure 1).
Andersen’s (1995) model consists of three primary driving population characteristics: predisposing, enabling, and need. *Predisposing characteristics* were defined as those that prompt or influence a family or individual to access health services. These consist of demographic characteristics (e.g., gender, age, ethnicity), social structure (e.g., education, occupation), and health beliefs (e.g., attitudes about health care, values, and pre-existing knowledge or experience with health care). *Enabling characteristics* are defined as those that are necessary for health care use to occur and included two types of resources: family and community. Specifically, this characteristic defines what is available to the individual, whether it is related to features of the family (e.g., insurance, monetary resources, transportation) or community (e.g., access to specialists in their area/region, mental health professionals). Lastly, *need characteristics* are those related to the specific needs of the individual seeking services, their perception of need, the extent to which they believe they are healthy and require medical assistance, etc. It also takes
into consideration evaluated need or the assessment of a medical professional of the needs of the individual. Andersen’s model includes an evaluation of both the health care system as well as potential environmental influences on access to care to explain possible external factors that might impact health care use.

Specific to ASD, researchers have utilized the Andersen Behavioral Model of Health Care Use to assess access to care for students with ASD (Thomas, Ellis, McLaurin, Daniels, & Morrisey, 2007). Their research demonstrated that these three characteristics (predisposing, enabling, and need) are applicable to this specific population of individuals and their use of health care. Results from their study indicated that access to care was less for ethnic minority families (predisposing), families with low levels of education (predisposing), and families living in non-metropolitan areas (predisposing), suggesting that health care usage for students with ASD is a product of many factors and may be better understood when using the Andersen Behavioral Model of Health Care Use as a framework.

While the aforementioned model has been utilized to better understand access to health care use, it also has implications for access to and use of services within the public education system. The three primary population characteristics outlined in Andersen’s model (1995) have direct application to educational services. A proposed adaption of this model to educational services can be found in Figure 2.
Characteristic | Adapted Definition for Educational Services for Students with ASD
---|---
Predisposing | Predisposing characteristic for use of educational services include the following: demographic characteristics (ethnicity, level of education), social structure (e.g., ability to advocate for educational services, and understand and access information related to special education law, community status such as the region the individual attends school in), beliefs about special education or educational services (e.g., are they willing to have their child identified as a student with a disability, what are their previous experiences with the school system), and diagnosis of ASD.

Enabling | Similar to health care use, enabling characteristics are those necessary for educational services to take place and include family resources (e.g., SES, ability to attend school meetings, access to information about educational policies and procedures, availability of time to attend meetings) and community resources (e.g., both access to and time availability of various service providers within the school environment; the school’s overall awareness and understanding of ASD; access to a resource room or other alternative placements; availability of alternative communication devices, technology assistance for students).

Need | Need characteristics are related to the specific requirements of the student with ASD to be successful within an educational environment. These characteristics may include both the perception of need (e.g., perceived level of functioning, family and/or school expectations for the student, school and family beliefs about what is important for the student) as well as evaluated need (e.g., determination of adverse impact to provide access to educational services as they align with federal and state laws).

*Figure 2. Proposed adaptation of the Andersen Behavioral Model of Health Care Use personal characteristics as it applies to educational services for students with ASD.*

This adapted model aligns directly with several of the original factors defined by Andersen (1995) but for a school context. Of additional consideration is the role of school funding, school size and population, and the community resources that might impact if a family seeks out school-based services, which would be considered the environmental characteristics in Andersen’s model. Also important is parent satisfaction with educational services as it relates to student outcome, which aligns with Andersen’s...
Figure 3 combines these factors with the three defined population characteristics.

Figure 3. Adapted Andersen Behavioral Model of Access to Educational Services for Students with ASD. This model of educational services highlights the contextual nature of educational services and identifies potential factors to consider when examining access and service utilization for students with ASD in rural and urban areas. Of key consideration to this study is external environment (i.e., rurality) and education behaviors and outcomes.

As discussed previously, based on the guidelines provided by IDEA, children with disabilities are legally required to have access to a Free and Appropriate Public Education (FAPE; U.S. Department of Education, Office for Civil Rights, 2010). This does not, however, require that all schools provide the same level or quality of services as educational services may vary from school to school dependent on the amount of available resources. This adapted framework offers a conceptual model for examining educational services with students with ASD in rural and urban areas and the relationship
that may exist between the environmental characteristic of the external environment (i.e., rurality) and the amount, frequency, and satisfaction with educational services a child with ASD receives in the school. Access to educational services may differ for those living in rural areas due to a lack of resources and special circumstances related to living in more remote, lower populated areas, including personnel shortages and limited training (Pennington et al., 2009). Therefore, special considerations have to be made when considering the types of services received by children with ASD in rural areas.

**Rurality**

According to the 2000 Census, 2,305 counties in the United States are considered to be rural, defined as “any incorporated place or CDP (Census Designated Place) with fewer than 2,500 inhabitants that is located outside of a UA (Urban Area)” (Bureau of the Census, 2001, p. 12-1). This constitutes 83% of the nation’s land. Rural counties provide homes for over 65 million Americans (U.S. Department of Human and Health Services, Rural Task Force, 2002; Bureau of the Census, 2001). This represents a significant portion of individuals living and working in rural areas in the U.S. and receiving services there. Moreover, 25% of public school districts in the U.S. are defined as residing in a rural county.

Service use and educational involvement differs for individuals living in these communities. Related to psychological services, individuals living in rural areas use fewer mental health services than those living in urban areas (Hauenstien et al., 2006). Fear and stigma of mental health services (Hoyt, Conger, Valde, & Weihs, 1997; Willging, Waitzkin, & Nicdao, 2008), as well as lack of available resources (Baldwin et al., 2006; Hendryx, 2008; Johnson, Brems, Warner, & Roberts, 2006; Thomas, & Holzer,
2006) all combine to negatively influence the utilization of mental health services for individuals living in rural areas. Additionally, seeking out help or other services is often viewed as a weakness as there is a culture of thought in rural areas where individuals believe that problems should be taken care of within the home (Salyers & Ritchie, 2006). Taken together, these cultural influences may adversely impact the level of active participation parents of children with ASD have with their child’s educational needs and the types of services they seek outside of the school system. Rural families have been found to participate less in the special education (Trussell, Hammond, & Ingalls, 2008) and IEP process (Deslandes, Royer, Potvin, & Leclerc, 1999; Friend, 2005; Rock, 2000; Simpson, 1996) when compared to urban families, indicating that rural parents may be less involved in their child’s special education services in addition to not seeking supplementary community services (e.g., mental health; Hoyt et al., 1997). These findings are discouraging in light of the importance of parental involvement to student outcomes (Hughes & Kwok, 2007; Jeynes, 2007) and highlight the need for increased public awareness and community involvement from professionals.

Rural counties experience problems related to enabling characteristics of the community that are specific to their area and are a function of their population size. One significant problem that greatly impacts the resources and funds available to special education programs in rural areas is that schools are funded based on attendance (U.S. Department of Education, Office of Special Education Programs, 2006c). Rural schools have fewer students enrolled, thus, they receive lower federal and state funding than schools in urban areas. Additionally, rural counties have a smaller local population to
receive local taxes and funds from, thereby increasing the influence of a low population’s
effects on a school system’s available funding.

**Mental Health Services and Rural Areas**

It is a well-established finding that disparities exist between the number of
available mental health professionals in rural areas (enabling characteristic of the
community) compared to their urban counterparts (e.g., Baldwin et al., 2006; Hendryx,
2008; Johnson et al., 2006; Thomas & Holzer, 2006). Reports have indicated that there
were nearly three times as many psychiatrists per 100,000 individuals and greater than
1.5 times as many non-psychiatric mental health providers per 100,000 in urban areas
compared to those in rural areas (Baldwin et al., 2006). Specific to child and adolescent
mental health care providers, Thomas and Holzer (2006) similarly found a large disparity
between the number of child and adolescent psychiatrists in rural areas versus those in
urban areas. These findings highlight the significant discrepancies of access to mental
health services in rural versus urban areas.

Further evidence of limited access to services was provided by Hauenstein et al.
(2007). Results from this study indicated that individuals living in rural areas received
less mental health treatment than those in urban areas. This finding is especially
discouraging in light of the evidence of the efficaciousness of services for children with
ASD. Moreover, this further demonstrates the disparities in services related to
individuals living in rural areas compared to those living in urban areas and suggests that
individuals with ASD in these areas may have poorer outcomes due to this shortage.

**ASD Community Services in Rural Areas**
Specific to individuals with ASD, there is currently limited research available that investigates differences in both the availability and quality of services as well as the differences in outcomes for individuals living in rural areas. However, the research that is available is consistent with the findings of mental health care shortages (enabling characteristic) in general (Chen et al., 2008; Mandell et al., 2005; Murphy & Ruble, 2012). Murphy and Ruble (2012), for example, investigated access to community services for students with ASD using an existing data set of parents of children with ASD in one Southern state. Results indicated that parents in rural areas reported more difficulty in accessing professionals trained in serving students with ASD. Further, rural parents indicated higher priority for behavior and occupational therapy services compared to urban parents. Findings from this study are consistent with previous research and suggest that families of children with ASD must seek needed services outside of their local communities.

Chen and colleagues (2008) explored the factors related to the use of autism-related services as well as the process of seeking services in urban versus rural communities. Children in rural areas in their study were diagnosed 14 months later than those in urban areas and were involved in the diagnostic process 1.6 months longer. Similarly, Mandell et al. (2005) sought to identify the clinical and demographic factors that may influence the age at diagnosis for children with ASD. Using mail-back surveys to a community sample of parents or caregivers whose child had ASD, the researchers found that children in rural areas were diagnosed at a later age than their urban counterparts (i.e., 0.4 years or 4.8 months later). These results demonstrate that the community in which the individual lives (i.e., rural or urban) correlates with the services
they receive, or in this circumstance, the age at which they are diagnosed with ASD. Given the importance of early intervention services (American Academy of Pediatrics, 2001; Blane & Borden, 2008; Rogers & Vismara, 2008), it appears that children with ASD in rural areas begin these much needed services at a later time and this delay could critically impact their future outcomes.

The implications from these studies suggest that providers for children with ASD in rural areas are lacking, unable to provide important treatments within their community, and are insufficient to identify children with ASD at an early age. Of additional importance are the implications for special education programs in rural areas. Based on the multitude of findings concerning the shortage of mental health professionals and pediatric specialists in rural areas (e.g., Baldwin et al., 2006; Hendryx, 2008; Johnson et al., 2006; Thomas & Holzer, 2006), it may be assumed that children with ASD in rural areas receive few services outside of the public school system due to a lack of availability. This conclusion has significant implications for special education programs and the types of services they provide children with ASD, as they may be the only form of services the child receives or has available to them.

**Special Education in Rural Areas**

Special education services in rural areas are difficult to define and measure. It is an area that has not been well explored and often has limitations in the methodological strategies utilized. For example, children in special education are required to have an IEP (IDEA, 2004). This IEP states annual goals for the student and lists the accommodations, supplementary aids, and direct services the child receives (e.g., 60 minutes of Speech Therapy per week). Special education law stipulates that IEPs are an educational
contract; therefore, if a service or accommodation is present on the IEP, the school is legally obligated to provide that service to the extent that it is expressed (U.S. Department of Education, Office of Special Education Programs, 2006b). However, due to personnel shortages and the time consuming nature of this task, it is not always possible to evaluate every student’s special education service delivery to determine whether an individual is receiving exactly what is stated on the IEP. Additionally, some IEP services or accommodations are vaguely stated (Giangreco, Dennis, Edelman, & Clonniger, 1994; Ruble, McGrew, Dalrymple, & Jung 2010), thereby making evaluation of the treatment integrity of those services difficult.

Previous research has utilized a variety of methods to evaluate special education services in rural areas. These methods have included assessing parent satisfaction with special education services, educational placement, home-school communication, number of school personnel or special education teachers, and parent report of access to services. Some examples of these studies are described.

One method utilized to evaluate service quality or implementation of special education services in rural areas is parent satisfaction (i.e., educational outcome in relation to the theoretical model) with the services their child receives. Previous research has indicated that parent satisfaction with educational services is associated with a school’s effectiveness and their child’s achievement (Education Journal, 2006). Interestingly, parent satisfaction with special education services has been found to be related more to the child’s academic and social achievement in the schools as opposed to home-school communication or school involvement (Underwood, 2010). Further, research has demonstrated that parents who have experienced difficulty accessing
additional services from their school had lower satisfaction with their child’s educational services (Leiter & Kraus, 2004). While parent satisfaction is not a direct measure of quality of services, these findings indicate that it may be used as a parameter of the quality of the services their child receives.

Related to school district location (i.e., rural vs. urban), rurality has been found to be associated with parental satisfaction with services (Bulgren, 2002), such that families in rural areas have reported less satisfaction with the services their child receives. This finding is especially important in light of the evidence supporting the necessity of parent satisfaction with educational services as parent satisfaction is crucial to their likelihood of involvement in educational planning (Epstein, 2001) and therefore impacts student outcomes (Hughes & Kwok, 2007; Jeynes, 2007).

A description of parents’ experiences with the special education system using survey data revealed differences in rural and urban parents’ concerns and needs related to their child’s educational services (Applequist, 2009). Rural families reported concerns related to limited choices for the types of services their child receives, their child’s educational placement, and options for available trained personnel. Additionally, rural families were concerned with the shortage of qualified professionals available to work with their child and the overreliance of the school system on paraprofessionals. Overall, they indicated that their child’s educational needs were not addressed by their public school system. These findings indicate that parents of children with special needs in rural areas do not feel they are receiving the necessary services to adequately meet their child’s needs and highlight the importance of further research investigating the types and frequency of services children in special education programs in rural areas are receiving.
Other research has investigated home-school communication, educational placement (Jung & Bradley, 2006), and special education curriculum (Bouck, 2005; Bouck, Albaugh, & Bouck, 2005) in rural areas. For example, previous research has suggested differences in educational placement and home-school communication between rural and urban school districts (Jung & Bradley, 2006). In this study, children in urban areas were placed in special education or pull-out classrooms with greater frequency than those in rural areas, which may be indicative of fewer resources available outside of the general education classroom for students in rural areas. Further, rural families reported less communication between the home and school. Related to educational curriculum, Bouck (2005) found curriculum provided in rural areas to differ from those in urban areas. Children with mild mental impairments in rural areas received similar instruction as those with learning disabilities, whereas those in urban areas received differing curriculum, indicating that students with disabilities in rural areas may not receive educational services that are specific to their individual needs and personal strengths and weaknesses.

Another method of evaluating special education services for children in rural areas is to investigate the number of trained personnel or highly qualified teachers (HQT) in rural areas, as defined by specific mandates in No Child Left Behind (NCLB; P.L. 107-110, U.S. Department of Education, Office of Special Education Programs, 2006a). NCLB specified that schools hire “highly qualified” special educators or one who has met their state’s criteria for certification to teach (including passing the state licensure examination) and meet other requirements such as maintaining a high quality of professional development and continuing education. Attracting and retaining HQTs is a
nationwide problem for special education programs, although this problem is even more pronounced in rural areas (Collins et al., 2005, Ludlow et al., 2005). It is difficult to recruit HQT in rural areas due to decreased pay, higher case loads, and fewer resources available (Pennington et al., 2009). Further, rural special educators report feeling a lack of support and sense of isolation in their schools (Westling & Whitten, 1996). Support for rural special educators is needed and has been recommended to center on research skills, functional approaches to teaching core content, as well as information related to transition options for students with disabilities (Collins, 2007).

An evaluation of special educators in Oklahoma revealed that the average number of special education teachers in primarily rural school districts ranged from .2 to 7.0 with only 32% of these teachers holding certifications in multiple areas of disabilities (i.e., certification in three or more disabilities; Cates & Smiley, 2000). Additionally, in a study that employed a search of national databases surrounding high need areas in special education, Ludlow and colleagues (2005) found personnel shortages that specifically impacted low-incidence disabilities in rural areas. For students with severe disabilities, including ASDs, shortages have been noted since 1998. Areas with the most significant need included the regions of the Rocky Mountains, Western, and Southeastern United States. Further, approximately 80% of rural schools have reported shortages in special education and staff (Knapczyk, Chapman, Rodes, & Chung, 2001). Findings from these pertinent studies indicate that rural school districts are struggling with a consistent problem of finding and retaining qualified professionals and educators to assist students with low-incidence disabilities.
Additional research has sought to describe the state of special education in rural areas compared to their urban counterparts (Pennington et al., 2009). Based on survey data provided by special educators in one Southern state, results indicated that schools in urban areas employed educational specialists (e.g., autism specialists) and had access to more community-based services than those in rural areas. Interestingly, rural educators in this study reported that their students participated in community-based interventions more frequently than their urban counterparts and were more likely to attend professional development trainings offered in their district. Rural districts in this study had a lower ratio of teachers/service providers to students (1:5) in comparison to urban districts (1:8). Findings from this study indicate that despite certain adversities in rural areas, rural school districts have been able to overcome some of these barriers and may have certain advantages to having fewer students. However, while rural areas may have a lower service provider to student ratio (most likely due to the small populations of rural districts), they continue to have disparities in the availability of trained or specialized school personnel and community services. Further, this study provided information from district central office staff regarding basic descriptive information of special education personnel and community resources. For a more accurate depiction of the state of educational services for children with ASD, more research is needed that compares specific service utilization and parent satisfaction with educational services.

There is some research to suggest that high wealth rural school districts may have better access to special education teachers than low wealth rural school districts (Johnson, Elrod, Davis, & Smith, 2000). Johnson and colleagues (2000) sought to compare special education personnel and services in two rural school districts that differed in their local
revenue. The results of this investigation indicated that the high wealth rural school district had approximately 30% more available funding per special education student. This district employed special educators who were better trained and educated and had more teaching experience. Further, the high wealth school district offered more related services and had more skilled and comprehensive assessments than the low wealth school district. This finding suggests that school demographic characteristics (i.e., environmental characteristics) related to the wealth or available revenue of the school district may influence the quality or amount of special education services provided in both rural and urban school districts.

Further research has investigated parent report of access to community and school (i.e., educational) services for children with ASD and made comparisons across levels of urbanicity (Montes et al., 2009) using parent report of the accessibility of services. Access to services in this study was assessed by a single item that asked parents to respond to whether or not (i.e., Yes/No) they have been able to access needed services. Contrary to previous research, parents in more urban areas indicated that they had less access to services than those in more rural areas; however, the researchers did not distinguish between community and educational services. Additionally, this study did not list or identify specific services and therefore provides only a broad idea of parents’ perception of access to services for children with ASD in general.

Specific to educational services for students with ASD, one study has investigated both in-school and out-of-school service use by families of students with ASD to determine access to care (Thomas et al., 2007). Parents in this study were interviewed at two different time points to determine the type, amount, and treatment approaches their
child with ASD received. As summarized previously, results of this study suggested that individuals from an ethnic minority, families with low levels of education, and families living in non-metropolitan areas (as defined by the Rural Urban Continuum Codes [RUCC], Butler & Beale, 1994) accessed fewer services overall. Specific to educational services, speech and language therapy was the most frequently reported service, followed by occupational therapy, and social skills training. Findings from this study provide further support of the disparities in educational services for students with ASD in rural areas.

At present, research indicates that there is a chronic problem related to the persistent shortage of special education personnel available to school districts in rural areas. These findings highlight the disparities between rural and urban school districts related to the availability of services for students with disabilities. Although there is research available concerning the availability of service providers, there is very minimal research inventorying the nature of special education services in rural areas as well as research that chronicles the type, number, and frequency of educational services provided to students with ASD. More research is needed to be able to adequately address these questions and to determine the resources that may be needed by this population.

**Problem Statement**

ASD is a pervasive developmental disorder that significantly impairs children’s social and communication development. As many as 1 out of 88 children have ASD (Autism and Developmental Disabilities Monitoring Network, 2012), and more than 190,000 children in 2009 received special education services under the autism category (U.S. Department of Education, 2009). Children with ASD use an average of four types
of community services in addition to services received in the public school system (Ruble & Mcgrew, 2007). The multiple services used can result in a total life-time cost of 3.2 million dollars (Ganz, 2006). Although the importance of early identification and intervention is clearly established for positive outcomes (American Academy of Pediatrics, 2001; Blane & Borden, 2008; Rogers & Vismara, 2008), limited information is available on the accessibility of services that promote positive outcomes and parent satisfaction with these services (Bitterman et al., 2008). Further, research suggests that, despite the significance of early diagnosis and intervention, access to specialized services is problematic for children with ASD, as research findings have indicated that students with autism are underserved (Liptak et al., 2008; Ruble et al., 2005). This is especially true for children living in rural areas (Chen et al., 2008; Mandell et al., 2005). Currently, research indicates that disparities exist between the number of available behavioral health professionals in rural areas compared to their urban counterparts (Baldwin et al., 2006) and that individuals with ASD in rural areas are diagnosed at a later age than their urban counterparts (Chen et al., 2008; Mandell et al., 2005).

Based on these conclusions, it can be assumed that individuals with ASD have limited access to community services crucial to their future outcomes. One potential avenue of services available to school-aged children with ASD is educational services; however, a consistent shortage in special education teachers and personnel in rural school districts has been noted (Cates & Smiley, 2000; Knapczyk et al., 2001; Ludlow et al., 2005; Pennington et al., 2009). Further, parents in rural areas are less satisfied with their child’s educational services (Bulgren, 2002) and have voiced concerns regarding their child’s educational outcomes and available school personnel (Applequist, 2009).
Specific to ASD, there is a limited amount of research that chronicles the availability, type, and quantity of educational services, and parent’s satisfaction with these services.

**Purpose of the Study**

The purpose of the current study was to investigate the relationship between the degree of rurality on special education services received by children with ASD in public schools in one Southern state. Two modes of assessment were used: parent survey and review of existing educational records.

The primary aim of this study was to examine educational services for children with Autism Spectrum Disorders (ASDs) in rural and urban areas, parental satisfaction with those services, and parent perception of student outcome related to those service. Use of educational services and student outcomes were interpreted within the context of the Adapted Andersen Behavioral Model of Special Education Use proposed earlier to provide a more comprehensive understanding of educational services in rural areas. Use of educational services was evaluated through a parent report of the educational services their child is currently receiving and review of educational records (i.e., IEPs).

Specifically, the study sought to describe the following variables based on the geographic location in which the child receives educational services: (a) the number, type, and frequency of educational services a child with ASD receives (i.e., use of educational services); (b) parental satisfaction with educational services (outcomes from educational services); (c) parent report of student outcomes related to educational services (outcomes from educational services); (d) parental satisfaction with the child’s educational placement (outcomes from educational services); and (e) age of diagnosis (predisposing characteristic).
**Research Questions**

1. Does the amount of services a child with ASD receives differ by degree of rurality?

2. Does parent report of needed educational services differ by degree of rurality?

3. Does the frequency of services a child with ASD receives differ by degree of rurality?

4. Does parent satisfaction with services for their child with ASD differ by degree of rurality?
   
   a. Does parent satisfaction with their child’s frequency of education services differ by degree of rurality?
   
   b. Does parent satisfaction with their child’s educational placement differ by degree of rurality?

5. Does parent report of student outcome related to educational services differ by degree of rurality?

6. Does age of diagnosis differ by degree of rurality?

**Predictions**

It is predicted that:

a. No a priori predictions are made related to the number and frequency of services utilized by public schools for children with ASD or parent report of student outcome related to educational services given that there is no pre-existing research surrounding this question.

b. Parental satisfaction with services, amount of services, and educational placement will be related to the rurality of the county in which the
child’s school is located, such that parents in rural areas will be less satisfied with services.

c. Children with ASD in rural areas will have been diagnosed at a later age compared to their urban counterparts.
Chapter Two

Methodology

Participants

Participants were sampled from rural and urban parent support groups across the state of Kentucky. The participants in this study included 42 parents of children with Autistic Disorder, Asperger’s Syndrome, or PDD-NOS ($N_{males} = 36$). Parents had to be 18 years or older to participate. The age range for the child with ASD was from 3 to 21 years old. The child was required to currently attend public schools in Kentucky. One participant lived and received services in Indiana and was excluded from analyses (Final $N = 41$). No other exclusionary limits were applied. Demographic characteristics of the sample was consistent with the state (Tables 1 and 2), with the exception of family income.
Table 1

*Overall Participant Demographics*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Age</td>
<td>--</td>
<td>10.2 years (4.5)</td>
</tr>
<tr>
<td>Child Biological Sex – Male</td>
<td>36 (88%)</td>
<td>--</td>
</tr>
<tr>
<td>Child Diagnosis</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Autism</td>
<td>26 (63%)</td>
<td>--</td>
</tr>
<tr>
<td>Asperger’s</td>
<td>11 (27%)</td>
<td>--</td>
</tr>
<tr>
<td>PDD-NOS</td>
<td>4 (10%)</td>
<td>--</td>
</tr>
<tr>
<td>Child LRE</td>
<td>26 (63%)</td>
<td>--</td>
</tr>
<tr>
<td>General Education</td>
<td>9 (22%)</td>
<td>--</td>
</tr>
<tr>
<td>Resource Room</td>
<td>6 (15%)</td>
<td>--</td>
</tr>
<tr>
<td>Child Level of Functioning*</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>No Spoken Language/Some Single Words</td>
<td>5 (13%)</td>
<td>--</td>
</tr>
<tr>
<td>Mostly Single Words or Some Single Word Phrases</td>
<td>4 (11%)</td>
<td>--</td>
</tr>
<tr>
<td>Mostly 2 or 3 Word Phrases with Some Grammatical Mistakes</td>
<td>8 (21%)</td>
<td>--</td>
</tr>
<tr>
<td>Mostly 3 or More Word Phrases with Few Grammatical Mistakes</td>
<td>21 (55%)</td>
<td>--</td>
</tr>
<tr>
<td>Parent Level of Education</td>
<td>--</td>
<td>16 years (2)</td>
</tr>
<tr>
<td>Less than High School</td>
<td>0 (0%)</td>
<td>--</td>
</tr>
<tr>
<td>High School Degree/GED</td>
<td>1 (2%)</td>
<td>--</td>
</tr>
<tr>
<td>Some College</td>
<td>14 (34%)</td>
<td>--</td>
</tr>
<tr>
<td>Associate’s Degree</td>
<td>3 (7%)</td>
<td>--</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>16 (39%)</td>
<td>--</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>5 (12%)</td>
<td>--</td>
</tr>
<tr>
<td>Doctorate/Professional Degree</td>
<td>2 (5%)</td>
<td>--</td>
</tr>
<tr>
<td>Family Income</td>
<td>--</td>
<td>$63,175 ($35,553)</td>
</tr>
<tr>
<td>Child Taking Medications</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>22 (55%)</td>
<td>--</td>
</tr>
<tr>
<td>No</td>
<td>19 (45%)</td>
<td>--</td>
</tr>
<tr>
<td>Percent F/R lunch in Sample</td>
<td>--</td>
<td>57% (17%)</td>
</tr>
</tbody>
</table>

*Missing data from 3 participants*
Table 2

*Kentucky Demographic Characteristics*

<table>
<thead>
<tr>
<th>Variable</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Family Income</td>
<td>$47,033</td>
</tr>
<tr>
<td>Percent F/R Lunch*</td>
<td>56%</td>
</tr>
<tr>
<td>Number of Exceptional Children Served*</td>
<td>102,370</td>
</tr>
<tr>
<td>Number of Children with Autism Served*</td>
<td>3,927</td>
</tr>
</tbody>
</table>

*Note: Based on Kentucky Department of Education report from school statistics from December, 2011.*

School demographic characteristics were calculated based on the parent’s identification of their child’s school name. The percentage of Free/Reduced Lunch in schools was obtained from the Institute for Education Sciences (IES) that provides data on schools across the nation based from fiscal year 2009. Using their report of the number of Free/Lunch students in each school, the sample consisted of an average of 58% of students receiving Free/Reduced lunch (National Center for Education Statistics School Profile Data, 2012).

Parents were invited to participate in the study via a multi-component, adaptive sampling approach. The initial method of recruitment occurred through parent support group listservs in Kentucky, requests distributed at parent support group meetings through a study flyer, flyers posted at selected pediatricians’ offices, as well as university and director of special education listservs. Parent support group leaders were contacted regarding the dissemination of a flyer at their regular group meetings that provided their members with information concerning their voluntary participation in the study. For
parents who participated in the phone version of the survey, they were asked to contact the primary investigator by either email or telephone to establish a date and time to complete the phone survey. For parents who completed the electronic version of the survey, they were instructed to follow a link embedded in the email invitation to the online survey. Due to these sampling methods, the response rate is unknown. Participants’ personal data were de-identified after data were collected by assigning them an individual identification number.

**Instrumentation**

The independent variable in this study was the geographic location within which the child with ASD received educational services (i.e., degree of rurality of the county the school district was located in). The dependent variables in this study included: (a) the number, type, and frequency of educational services a child with ASD receives; (b) parental satisfaction with educational services; (c) parent report of student outcomes related to educational services; (d) parental satisfaction with the child’s educational placement; and (e) age of diagnosis.

**Rurality.** Differences exist in the current definition of rurality. Traditional approaches have evaluated the population size of a county or community to determine whether it is rural or urban, and often treat it as a dichotomous construct of rural versus urban (Arnold, Biscoe, Farmer, Robertson, & Shapley, 2007). More recently, research takes into consideration both the population of a county as well as the proximity of the county to a metropolitan area. One such measure is the Rural-Urban Continuum Codes (RUCC; Butler & Beale, 1994), which occur on a scale from one to nine, where one indicates more urban areas and nine indicates more rural areas. This type of
measurement allows rurality to be considered on a continuum and has been found to be more accurate than a dichotomous measure (Haunstein et al., 2007).

Rurality of a student’s school district was determined by the county where the child currently received educational services. Rurality of a county was based on the RUCC, which align counties to certain geographic regions that have been labeled according to their population size and location (Butler & Beale, 1994). The codes that are used in this study were updated in 2003 and are available through the United States Department of Agriculture (USDA) website (USDA, 2003).

**Parent Survey of Educational Services.** This survey was developed by the experimenter to describe the following variables based on the area in which the child receives educational services: (a) the number, type, and frequency of educational services a child with ASD receives; (b) parental satisfaction with educational services; (c) parent report of student outcomes related to educational services; (d) parental satisfaction with the child’s educational placement; and (e) age of diagnosis. More specifically, parents were asked to report the type (service options included speech therapy, behavior management, occupational therapy, physical therapy, social skills training, specialized academic instruction, counseling services, as well as an ‘other’ category) and frequency of educational services a child with ASD receives. These seven services were chosen due to previous research establishing their effectiveness with this population and are commonly utilized services for children with ASD (Bitterman et al., 2008; Exkorn, 2005). An “other” category was included to allow analyses of any additional services that may not occur as frequently as the previous seven. Parents were also asked if there were any additional services they would like their child to receive from their school. This
item allowed for analyses of any unmet needs in the public school system for children with ASD.

Parents were also asked to report on the frequency their child received a specific service based on hours of direct service per week. Additionally, parents were asked if they believe their child should receive more of a specific service. The survey item “Do you feel your child should receive more of this service?” was used to assess parents’ opinion about the appropriateness of the amount of a certain service their child was currently receiving.

The survey also assessed parents’ satisfaction with the services their child receives and the reported least restrictive environment, or the child’s educational placement in the school setting (e.g., general education classroom, resource room, or self-contained). Research has demonstrated that parental satisfaction with services is an important component in outcomes as well as parental involvement and communication with the school (Laws & Milward, 2001). Parental satisfaction was measured on a scale of 1 (Very Unsatisfied) to 4 (Very Satisfied).

Finally, parents were asked to indicate child outcome related to each educational service they received. They were asked to indicate their level of agreement with the following three questions (0 = Strongly Disagree to 5 = Strongly Agree): “As a direct result of this service, my child’s ____ has improved at school;” “As a direct result of this service, my child’s ____ has improved at home;” and “As a direct result of this service, my child’s ____ is better.” Each question was specific to the service the questions pertained to (e.g., speech language services asked about speech or language skills). Internal consistency for the measure of student outcome was calculated at the individual
service level and was found to range from good (>0.8) to excellent (>0.9; Cronbach’s alpha range = 0.84 - 0.94) using criteria provided by George and Mallery (2003).

Demographic information was collected at the conclusion of the survey. This portion of the survey collected data on the child’s age (in years and months), child’s educational placement (options include general educational classroom, resource room, self-contained room and was defined as the setting the child is in for more than 50% of the day), gender (defined as biological sex), child’s current diagnosis (Autism, Asperger’s Syndrome, or PDD-NOS), age at diagnosis (in years and months) and location of diagnosis (as reported by the caregiver), socio-economic status (reported by the parent as a continuous variable of their annual household income), parent’s level of education (reported by the parent as a continuous variable of number of years of education as well as highest level of education attained), the county or school district where the child currently receives educational services, and the school the child is currently attending. Child’s specific diagnosis was included to allow for potential analyses at his or her specific disability level. Additionally, parent report may be more informative than only utilizing child’s educational classification as previous research has indicated discrepancies in using the primary category of eligibility alone (Yeargin-Allsopp et al., 2003).

Child’s communication level was also reported by parents using the same parameters as those used for the ADOS. Parents were asked to report the best description of their child’s language from the following options: (a) no spoken language or some single words; (b) mostly single words or some 2-3 word phrases; (c) mostly 2 or 3 word phrases with some grammatical mistakes; or (d) mostly 3 or more word phrases with few
grammatical mistakes. This question was included to serve as a proxy for child’s level of functioning due to the significant relationship between child’s communication level and overall functioning (Kjellmer, Hedvall, Fernell, Gillberg, & Norrelgen, 2012; Liss et al., 2001).

**Method of measurement.** During the first wave of recruitment, respondents in this study completed the survey via phone-interview questionnaires. This method was decided based on the needs of the population (i.e., those in rural areas) to be sampled and yielded 26 participants. Strengths of using a phone survey to address the research questions included the ability to directly answer participants’ questions as they arise, the ability to explain in detail what certain services for their child with ASD might entail, as well as describing other jargon-type concepts that could potentially be misunderstood during a self-administered survey. Weaknesses of using this method of survey include issues such as the survey and method may not be standardized as it is contingent upon the interaction between the interviewer and the respondent. There is also some effect of the interviewer on the responses provided, such as interviewer bias (i.e., because there is a personal interaction with the participant, the interviewer may subtly influence the participant’s responses).

The phone interview questionnaire was created on the internet survey management system Qualtrics. The instrument was designed as a phone-script and allowed the experimenter to record participant responses directly into the survey. Additionally, space was provided to note any questions or comments made by participants throughout the instrument. The survey interview script is included in Appendix A.
During the second wave of data recruitment, the survey was opened up to an online platform to allow participants to complete the survey at their convenience. The wording of the email sent to the parent support group listservs, university support groups, and the Kentucky Directors of Special Education Listserv is included in Appendix B. This method of data collection yielded an additional 15 participants. All questions remained the same and this additional method of data collection did not change the types of questions asked or the type of data collected (Appendix C).

**Pretesting.** The phone survey was piloted with 24 parents of children with ASD. Results of the pilot were used to improve the items and response categories in the survey. Additionally, parents were asked to provide feedback about the survey itself. This feedback was used to either adjust questions or to add new questions per their request. Some parent suggestions regarding additional questions were not related to the research questions or purpose of the proposed project (e.g., asking questions about community-based services) and were not utilized in the revision of the instrument.

This survey was evaluated at three levels using Rasch analytic procedures (Bond & Fox, 2007): the coherence of the data, the rating scale structure of the instrument, and the individual items included on the instrument. This analysis was performed for two different constructs: (1) does the child receive a service in the school (Yes/No); and (2) how satisfied are parents with that service (rating scale of 1 to 4). In the pre-testing study, parents were asked to report on the frequency their child received a specific service on an amount of minutes per day, week, or month (dependent on how frequently they received the service). Based on feedback from respondents and preliminary analyses of the data, frequency of services was not evaluated using Rasch analyses as the
method of response was decided to be inappropriate for the question and has been altered for this study as described previously.

The target population in the pre-testing study was parents of students with ASD (limited to Autistic Disorder, Asperger’s syndrome, and PDD-NOS) who 1) received educational services in rural and urban public schools in the state of Kentucky and 2) were between the ages of 3 and 21 years. Parents were contacted via an electronic mailing list of parent support groups (N = 7) in Northern, Eastern, and Central Kentucky. All parents of students on this list were contacted via e-mail regarding their voluntary participation in the study.

A total of 24 parents completed the survey. The average annual income was approximately 71,913 dollars. The average number of years of education reported by respondents was approximately 17 years. The most frequent child diagnosis was autism (75%), followed by Asperger’s (16%) and PDD-NOS (8%). The average age of the child receiving services was 11.21 years.

The results of the pilot study for the survey instrument indicated that the survey designed was appropriate to address the research questions stated. Most items for both constructs correlated well with each other, indicating unidimensionality of the measure. Rasch analyses revealed that the category responses for construct 1 (Does the child receive a service in the school [Yes/No]) and the rating scale structure for construct 2 (How satisfied are parents with that service [Rating scale of 1 to 4]) were appropriate. Significant revisions to the instrument included the adjustment to the response options for frequency of service delivery and the addition of questions related to other wanted
services and outcomes related to services. All other questions remained the same for the current study.

**Individualized Education Program (IEP).** Students’ IEPs were reviewed to confirm parents’ report of services. Students’ IEPs contained specific information on the services the child is receiving as well as the frequency with which he or she receives it. Further, the IEP provided information about the child’s educational placement and any accommodations he/she received in the classroom. This document was provided by parents via e-mail, mail, or requested from their schools. A total of 17 IEPs were returned, with two of those containing incomplete data. This small number was likely due to the IEP not being a required component for participating in the study. Interestingly, all parents (100%) who participated in the phone survey indicated they would be willing to send a copy of their child’s IEP; however, only 42% of participants successfully sent their child’s IEP despite numerous follow-up attempts via email.

Data from the IEP were entered directly into SPSS according to the participant’s assigned ID number and was used to validate parents’ report of services. At present, there is no available research evaluating parent report of special education services, therefore, this document allowed for comparisons between parents’ report and existing educational records.

**Sampling Methods**

Parents were contacted to participate in the study by three different adaptive sampling methods: online parent support group electronic mailing list, flyers distributed at parent support group meetings across the state of Kentucky, as well as flyers disseminated to special education directors across the state and targeted community
service providers and pediatricians. Participants were recruited with the intent of a matched sample using quota sampling procedures so that the final response list would be approximately 50% urban and 50% rural, as determined by the suggested dichotomization of the Rural-Urban Continuum Codes (Butler & Beale, 1994). Based on these guidelines, counties with codes 1-3 were considered urban, and counties with codes 4-9 were considered rural for sampling purposes.

For parents recruited through electronic mailing lists, respondents were contacted via mass e-mail distributed to the parent support group list. At the time of subject recruitment, there were a total of 42 parent groups listed on the Kentucky Autism Training Center’s list of support groups (Kentucky Autism Training Center, 2011). All group leaders were contacted regarding participation in the study with a total of 20 agreeing to share the study information to their group members. The researcher had no information concerning the number of individuals who received the email or total number of subjects invited to participate. The e-mail consisted of a cover letter (see Appendix D) informing the parent or caregiver of the researcher’s intent to conduct the research study and provided instructions of how to participate. Parents who decided to participate in the study were asked to email the primary investigator with a phone number and two dates and times that were convenient for them. A second email was sent two-weeks following initial contact to remind parents of the opportunity to participate in the study. For participants recruited through flyers at parent support group meetings, group leaders were contacted regarding disseminating a flyer at their meetings. The flyer contained information regarding parents’ participation in the study.
The parent groups that agreed to participate in the study were also provided with a study flyer to provide at their group meetings (Appendix E). The cover letter included information concerning the importance of the current research study, as well as discussed why their participation was needed and important. Parents had the option of either contacting the researcher directly (via phone or email) or by informing their parent group leader about their desire to participate in the study.

These recruitment procedures were completed using an adaptive sampling method, such that parents were invited to participate in the study across different waves of recruitment until the desired sample was met. In the initial wave, all parent support groups in Kentucky were contacted regarding participation in the study, with particular emphasis on those in rural counties (as defined previously). Approximately two months following the initial request to participate, it was determined that more participants were needed. Therefore, new requests were sent to all 20 parent support groups regarding attending their monthly meetings in an attempt to recruit additional participants. Due to a low response of group leaders, inactive groups, and scheduling conflicts, only two groups (one in Central Kentucky and one in Northwestern Kentucky) had available times for the researcher to attend the meeting and present information about the study. Finally, during the last wave of recruitment, parent support groups sent out a new request asking parents to complete an online version of the survey (Appendix C). All waves were employed to recruit participants; however, they did not yield the expected response number.

Approximately seven months were utilized to recruit participants across a variety of methods described above until all efforts were exhausted, yielding a final total number of participants of 41 parents in Kentucky who successfully completed the survey.
For participants recruited through flyers disseminated by special education directors and targeted community service providers and pediatricians (N = 34 providers), key personnel (i.e., special education directors across the state, community service providers and pediatricians) were contacted regarding their posting the study flyer (Appendix E). Recruitment procedures were similar to that of participants recruited through parent support groups and included the study flyer. Special education directors across the state were accessed via a distribution list at the Kentucky Department of Education, and were requested to post the study flyer at their local schools (email correspondence in Appendix F). Community service providers and pediatricians that frequently service children with ASD (e.g., Weiskoff Center in Louisville, Kentucky, Kentucky Children’s Hospital) were similarly requested to post the study flyer.

**Procedures**

Phone surveys were completed by a single trained researcher in a standardized manner to alleviate potential experimenter effects, or the influence of the experimenter on participant responses. Verbal consent to participate in the study provided over the phone at the beginning of the phone survey was accepted. Similarly, for participants who completed the electronic version of the survey, consent was provided at the onset of the survey.

At the beginning of the phone survey, parents were requested to share their child’s most current IEP. They were informed that sharing this document was completely voluntary and that not sharing the IEP would not prevent participation in the phone survey. However, that it would further aid the study by providing the researcher with additional information about their child’s educational experiences. Parents who agreed to
share this information were instructed to do so in one of two ways: (1) by providing their school with a release of records form that allowed the primary investigator to contact the school for the information, or (2) by mailing, emailing or faxing the primary investigator directly with a copy of the IEP. IEPs received were matched to the participant’s phone or online survey information (by assigned participant ID) and entered into the data management system.

**Data Analyses**

**Preliminary Analyses.** Data were transferred from the online survey management system, Qualtrics into Excel for Windows with all identifying information removed. A new variable that assesses rurality was created based on the dimensions previously provided. All survey data were coded and any available educational documentation was entered. The data were then transferred into PASW SPSS Version 20.0 for Windows. Analyses were completed at the individual service level. The unit of analysis in the current study is at the individual child level. The design of this study is a non-experimental, correlational design.

Preliminary analyses were conducted to determine if statistical assumptions were met. A box and whisker plot was generated to look for outliers in the data that may influence results and indicated that data fell in the expected parameters. Tests of normality including tests of skewness and kurtosis were utilized and indicated that data were not normally distributed. Based on the results of this preliminary analysis, statistical assumptions were not met and therefore, nonparametric statistics were utilized.

**Statistical Procedures.** Due to the small sample size, ordinal data (Gibbons & Chakraborti, 1992; Siegel, 1956), and data that were not normally distributed,
nonparametric statistics were utilized. More specifically, Spearman rank correlations and Chi-square analyses were employed to determine the relationship between the degree of rurality and the following variables: number and frequency of educational services, parent satisfaction with educational services, parent satisfaction with educational placement, parent report of outcome related to individual educational services, and parent report of age of diagnosis. Due to the number of research questions and statistical tests completed, a $p$-value of less than .01 was used to determine if the findings were significant to account for the possibility of Type I error. Percent of Free/Reduced lunch in the student’s school was used as a control as it correlated with the independent variable of rurality ($p = .04, r_s = .3$).
Chapter Three

Results

The independent variable in the current study was the degree of rurality of the school within which the participant reported receiving services. Rurality was defined using the definition provided by the RUCC codes (Butler & Beale, 1994), which were last updated in 2003 and are available through the United States Department of Agriculture (USDA) website (USDA, 2003). The sample in this study had a full range of the RUCC from one to nine; however, the distribution of participants indicated more respondents in more urban areas than more rural areas (Figure 4). Using the USDA’s definition of rural (codes 4-9) and urban (codes 1-3), approximately 38% of the sample received services in a rural school district. Analyses were completed to determine the relationship between degree of rurality (i.e., 1-9) and the following dependent variables: (a) the number, type, and frequency of educational services a child with ASD receives; (b) parental satisfaction with educational services; (c) parent report of student outcomes related to educational services; (d) parental satisfaction with the child’s educational placement; and (e) age of diagnosis. Results are provided by individual research question.
Figure 4. The number of participants in the study at each Rural-Urban Continuum Code.

One participant did not provide information regarding the county or district where their child attended school (Total N = 40 in table).
A subset of participants ($n = 17$) agreed to share their child’s IEP as part of the research study. These documents were collected to determine the level of agreement between parent report of services and existing educational records and to serve as a check of the validity of parents’ report of educational services. The total number of services provided to the student according to the IEP provided by the parent was assessed by

*Figure 5.* The number of participants in each Kentucky county. This figure also includes information for each county’s degree of rurality, as defined by the RUCC.
creating a composite score of the total number of services (i.e., the number of services listed on the IEP). This score was compared to the composite score of the total number of services reported by parents (i.e., a sum of the number of services parents’ reported that their child was currently receiving) using Spearman correlation coefficients to determine level of agreement. Correlations ranging from .1 to .3 were considered weak, .31 to .5 were considered moderate, and .51 to 1.0 were considered strong (Gibbons & Chakraborti, 2001). Results revealed parent report of the total number of services aligned moderately with IEP records ($r_s = .45, p = .04$) indicating parents have some knowledge of the type of educational services their child receives.

Similarly, frequency of services according to the IEP was assessed by the total number of service hours provided to the student per week. This score was compared to the parent’s report of the frequency of services using Spearman correlation coefficients to determine the level of agreement. Overall, parent report of the number of service hours strongly aligned (based on parameters described earlier) with data reported on the student’s IEP ($r_s = .52, p = .03$).

Finally, percent agreement between parent report of individual services and IEPs was examined using Cohen’s (1960) kappa. Cohen’s kappa provides a measure of agreement and controls for chance agreement (Fleiss, Levin, & Paik, 2003). A kappa of .60 or greater was considered to be an acceptable level of agreement (Fleiss et al., 2003). Results indicated acceptable agreement rates for all services with the exception of behavior management services ($\kappa = .46, p = .03$) and social skills training ($\kappa = -.123, p = .36$). For these two services, parents reported that their child received this service when their IEP did not include information indicating the student received specially designed
instruction in this area \((N = 7\) parents for social skills training, \(N = 4\) parents for behavior management). Overall, parents’ knowledge and, therefore, report of services were similar to the data maintained in their child’s educational records with the exception of the two services previously discussed (Table 3).

Table 3

*Agreement of Parent Report of Presence of Educational Services and Student’s IEP*

<table>
<thead>
<tr>
<th>Service</th>
<th>Cohen’s kappa</th>
<th>(p)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech or Language Services</td>
<td>.64</td>
<td>.01</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>.46</td>
<td>.03</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>.74</td>
<td>.002</td>
</tr>
<tr>
<td>Social Skills Instruction and Training</td>
<td>-.123</td>
<td>.36</td>
</tr>
<tr>
<td>Specialized Academic Instruction*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Counseling</td>
<td>.60</td>
<td>.01</td>
</tr>
</tbody>
</table>

*Not calculated because specially designed instruction was interpreted as a constant.

Agreement between IEP and parent report was 100%.

**Adapted Andersen Behavioral Model of Educational Service Use**

The research questions assessed below were evaluated within the framework of the adapted version of the Andersen model described previously. Using this model to interpret the results of the research questions allowed an examination of use of educational services and outcomes related to those services within an environmental and personal context, which considers a multitude of components. The specific components
evaluated within the scope of this study and their results are presented in Figure 16. The results of each individual research question will be discussed in further detail below.

Research Question: Does the amount of services a child with ASD receives differ by degree of rurality?

Exploratory analysis at the individual service level was completed to describe the types of educational services parents in Kentucky reported (Table 4). The most frequently reported services were speech or language services (81%), specialized academic services (67%), and occupational therapy services (64%). Physical therapy services were the least frequently reported services with only two parents indicating that their child currently received this service from their school.

Table 4

<table>
<thead>
<tr>
<th>Service</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received Speech or Language Services</td>
<td>34 (83%)</td>
</tr>
<tr>
<td>Received Specialized Academic Instruction</td>
<td>28 (68%)</td>
</tr>
<tr>
<td>Received Occupational Therapy Services</td>
<td>27 (66%)</td>
</tr>
<tr>
<td>Received Behavior Management Services</td>
<td>19 (46%)</td>
</tr>
<tr>
<td>Received Social Skills Instruction and Training</td>
<td>17 (41%)</td>
</tr>
<tr>
<td>Received Counseling Services</td>
<td>9 (22%)</td>
</tr>
<tr>
<td>Received “Other” Services</td>
<td>8 (20%)</td>
</tr>
<tr>
<td>Received Physical Therapy Services</td>
<td>2 (5%)</td>
</tr>
</tbody>
</table>

Total Number of Services | 3.85 (1.7)
Total amount of services was assessed by creating a composite variable of the total number of services that the child receives (i.e., the total number of services the parent endorsed as Yes). On average, parents reported their child received 3.85 educational services (Range = 1-7). A partial Spearman correlation was used to assess the relationship between the degree of rurality and the total amount of services a child with ASD received, using percent Free/Reduced lunch at a school as a control. Results revealed a significant positive relationship between degree of rurality and the number of services received ($r_s = .54, p < .001$), indicating parents in more rural areas were reporting a higher total number of educational services than parents in more urban areas (Figure 6).

![Figure 6](image_url)

*Figure 6. Average number of parent reported educational services by degree of rurality.*

Results revealed a significant positive relationship between degree of rurality and the number of services a parent reported ($r_s = .54, p < .001$).
Research Question: Does parent report of needed educational services differ by degree of rurality?

Parent report of additional services they wish their child were receiving was assessed by the item “Do you feel there are any services in the school your child is not receiving that you would like them to?” (Yes/No response option). Participant responses were evaluated for trends related to the type of additional or needed services parents most frequently reported (Table 5). Parents most frequently cited social skills training and instruction (42%) as being an additional needed service, followed by behavior management (32%) and occupational therapy (32%).

Table 5

*Parent Report of Additional Educational Services Needed*

<table>
<thead>
<tr>
<th>Service</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents Reporting Needed Services</td>
<td>19 (46%)</td>
</tr>
<tr>
<td>Services cited by parents:</td>
<td></td>
</tr>
<tr>
<td>Social Skills Instruction &amp; Training</td>
<td>8 (42%)</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>6 (32%)</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>6 (32%)</td>
</tr>
<tr>
<td>Counseling</td>
<td>2 (11%)</td>
</tr>
<tr>
<td>Transition/Job Training</td>
<td>2 (11%)</td>
</tr>
<tr>
<td>Nutritional Services</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Music Therapy</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>1 (5%)</td>
</tr>
</tbody>
</table>
Further, analysis was completed to determine if there was a significant difference by degree of rurality and parents reporting “Yes” to the question related to wanting additional services from their school. No significant difference was revealed by degree of rurality and percentage of parents reporting wanting additional services ($x^2 = 14.4, p = .07$; Figure 7).

![Figure 7](image)

Figure 7. Percent of parents within each degree of rurality responding “Yes” to the question related to wanting additional school-based services by degree of rurality.

Research Question: Does the frequency of services a child with ASD receives differ by degree of rurality?

Frequency of services was assessed by the total number of educational service hours (for all seven services) provided to a child per week. Parents, on average, reported their child received 13.7 hours of direct educational services per week (Range = .5 - 55.50 hours per week). This number refers to the direct hours of specially designed
instruction the student receives in school only (provided either as a specially designed instruction or as a related service) and is a measure of the total amount of the direct service hours they received from the seven services asked about in the survey (including specially designed instruction or special education services provided by a special education teacher). There was a wide range of direct service hours per week with some parents reporting their child to receive more hours of service than in a typical 35-hour school week. This finding is likely due to some parents’ report of their child receiving 35 hours of specialized academic instruction (i.e., special education/resource time) services in a week, in addition to services provided by related personnel (e.g., Occupational Therapy, Physical Therapy, Speech or language). Interestingly, neither hours of specialized academic instruction (rs = -.27, p = .19) nor total service hours (rs = -.26, p = .14) were significantly related to parents’ report of child’s current communication level, which was used as a measure of the child’s level of functioning. This finding is surprising given the significant relationship between child’s level of functioning and the amount of educational support they receive (White, Scahill, Klin, Koenig, & Volkmar, 2007).

Partial spearman correlations using schools’ percent Free/Reduced lunch as a control did not reveal a significant relationship between degree of rurality and the total number of services hours reported by parents (rs = .34, p = .05; Table 6). Based on the information collected in this sample, there does not appear to be a significant relationship between the frequency of educational services and degree of rurality (Figure 8).
Table 6

*Frequency of Educational Services*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$ (SD)</th>
<th>$r_s$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialized Academic Instruction</td>
<td>14.5 (12.6)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>4.7 (7.7)</td>
<td></td>
</tr>
<tr>
<td>Speech or Language Services</td>
<td>2.8 (10.5)</td>
<td></td>
</tr>
<tr>
<td>Social Skills Training &amp; Instruction</td>
<td>2.8 (3.3)</td>
<td></td>
</tr>
<tr>
<td>Behavior Management</td>
<td>2.0 (3.2)</td>
<td></td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>.92 (1.9)</td>
<td></td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>.63 (.18)</td>
<td></td>
</tr>
<tr>
<td>Counseling</td>
<td>.7 (.3)</td>
<td></td>
</tr>
<tr>
<td>Total Number of Service Hours Per Week</td>
<td>13.7 (10.0)</td>
<td></td>
</tr>
<tr>
<td>Control F/R Lunch</td>
<td>.34</td>
<td></td>
</tr>
<tr>
<td>No Control</td>
<td>.29</td>
<td></td>
</tr>
</tbody>
</table>
Analysis was also completed at the individual service level. Of the seven services assessed in the survey, specially designed instruction had the highest average number of direct service hours, followed by speech or language services (Table 6). Spearman correlations were also calculated at the individual service level to determine if there was a significant relationship between hours of direct service by individual service reported and degree of rurality. Analysis revealed a significant relationship between degree of rurality and the frequency of counseling services (\( r_s = 1.0; p < .001 \)) indicating parents in more rural areas reported their child to receive more direct hours of counseling per week (Table 7) when compared to those in more urban areas.
Table 7

*Correlations for Frequency of Services by Degree of Rurality and Individual Service Level*

<table>
<thead>
<tr>
<th>Service</th>
<th>Control</th>
<th>Spearman’s $r_s$</th>
<th>Significance ($p$-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech or Language Services</td>
<td>No Control</td>
<td>.13</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.16</td>
<td>.4</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>No Control</td>
<td>-.4</td>
<td>.1</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>-.3</td>
<td>.3</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>No Control</td>
<td>.24</td>
<td>.3</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.29</td>
<td>.2</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>No Control</td>
<td>-1.0</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Social Skills Instruction and Training</td>
<td>No Control</td>
<td>.1</td>
<td>.8</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.08</td>
<td>.8</td>
</tr>
<tr>
<td>Specialized Academic Instruction</td>
<td>No Control</td>
<td>.05</td>
<td>.8</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.1</td>
<td>.7</td>
</tr>
<tr>
<td>Counseling</td>
<td>No Control</td>
<td>.87</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>1.00</td>
<td>.00*</td>
</tr>
<tr>
<td>Other</td>
<td>No Control</td>
<td>-.28</td>
<td>.6</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>-.06</td>
<td>.9</td>
</tr>
</tbody>
</table>

*p < .01
Research Question: Does parent satisfaction with services for their child with ASD differ by degree of rurality?

Parent satisfaction with services was analyzed at the individual service level (1 = Very Dissatisfied to 4 = Very Satisfied). Overall, there was minimal range in the average level of parent satisfaction by service (Average range = 2.6 – 3.7; Table 8) indicating that overall, parent satisfaction did not differ significantly and most parents were more satisfied than dissatisfied with their child’s educational services.

Table 8

*Only 2 participants reported receiving Physical Therapy services from their school*

Table 8

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>3.6 (.5)</td>
<td>1-4</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>3.0 (0)</td>
<td>3*</td>
</tr>
<tr>
<td>Specialized Academic Instruction</td>
<td>3.0 (1)</td>
<td>1-4</td>
</tr>
<tr>
<td>Social Skills Instruction and Training</td>
<td>2.9 (.8)</td>
<td>1-4</td>
</tr>
<tr>
<td>Counseling</td>
<td>2.9 (.9)</td>
<td>1-4</td>
</tr>
<tr>
<td>Speech or Language Services</td>
<td>2.9 (.8)</td>
<td>1-4</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>2.8 (.9)</td>
<td>1-4</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>2.7 (1)</td>
<td>1-4</td>
</tr>
</tbody>
</table>

To examine the relationship between the degree of rurality and parent satisfaction with educational services for children with ASD, analyses included partial Spearman correlations using percent Free/Reduced lunch as a control. There was a significant positive relationship between degree of rurality and satisfaction with educational services.
for counseling services \((p = .01; \text{Table 9})\), such that parents in more rural areas indicated greater satisfaction with their child’s counseling services than parents in more urban areas.

Table 9

*Correlations of Parent Satisfaction and Degree of Rurality by Individual Service*

<table>
<thead>
<tr>
<th>Service</th>
<th>Control</th>
<th>Spearman’s (r_s)</th>
<th>Significance ((p\text{-value}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech Language</td>
<td>No Control</td>
<td>.13</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.19</td>
<td>.3</td>
</tr>
<tr>
<td>Behavior</td>
<td>No Control</td>
<td>.36</td>
<td>.1</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.35</td>
<td>.2</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>No Control</td>
<td>.10</td>
<td>.6</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.10</td>
<td>.6</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>No Control</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Social Skills Training and Instruction</td>
<td>No Control</td>
<td>.19</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.16</td>
<td>.56</td>
</tr>
<tr>
<td>Specialized Academic Instruction</td>
<td>No Control</td>
<td>.45</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.43</td>
<td>.03</td>
</tr>
<tr>
<td>Counseling</td>
<td>No Control</td>
<td>.72</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.84</td>
<td>.01*</td>
</tr>
<tr>
<td>Other</td>
<td>No Control</td>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.06</td>
<td>.9</td>
</tr>
</tbody>
</table>

*\(p < .01\)

**Does parent satisfaction with their child’s frequency of educational services differ by degree of rurality?** Parents’ satisfaction with the frequency of their child’s educational services was assessed by the item “Do you feel your child should receive more of this service?” (Yes/No). More parents who reported their child received
Occupational Therapy services from their school indicated they would like their child to receive more of that service (77%) in comparison to the other six services in the survey (Table 10). Overall, the majority of parents indicated they would like their child to receive more of each of the seven services they were reporting from the school with the exception of specialized academic instruction. When examined by degree of rurality, however, no significant differences were found, suggesting that desire for additional service time is similar across degrees of rurality (Table 11).

Table 10

*Parent Report of Needing Additional Service Time by Service*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Therapy</td>
<td>21 (77%)</td>
</tr>
<tr>
<td>Counseling</td>
<td>6 (67%)</td>
</tr>
<tr>
<td>Speech or Language Services</td>
<td>22 (65%)</td>
</tr>
<tr>
<td>Social Skills Training or Instruction</td>
<td>11 (65%)</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>11 (58%)</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>1 (50%)</td>
</tr>
<tr>
<td>Specialized Academic Instruction</td>
<td>11 (39%)</td>
</tr>
</tbody>
</table>

*Note: Percentage indicated is of parents who reported receiving each service (not entire sample)*
Table 11

*Comparison of Parent Report of Needing Additional Service Time by Rurality*

<table>
<thead>
<tr>
<th>Service</th>
<th>$x^2$</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech or Language Services</td>
<td>7.64</td>
<td>.47</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>8.06</td>
<td>.33</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>8.85</td>
<td>.36</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>2.00</td>
<td>.16</td>
</tr>
<tr>
<td>Social Skills Training and Instruction</td>
<td>9.41</td>
<td>.15</td>
</tr>
<tr>
<td>Specialized Academic Instruction</td>
<td>14.34</td>
<td>.57</td>
</tr>
<tr>
<td>Counseling</td>
<td>6.75</td>
<td>.15</td>
</tr>
</tbody>
</table>

Does parent satisfaction with their child’s educational placement differ by degree of rurality? The majority of parents (62%) reported that their child spent the majority of their school day (i.e., the placement in which they spend 50% or more of their school day) in the general education setting, with 24% of students spending the majority of their school day in the resource room, and 14% in a self-contained room. When using percent Free/Reduced lunch as a control, the report of child’s educational placement did not significantly differ by degree of rurality ($p = .30$). Interestingly, educational placement was not significantly related to the child’s current level of communicative functioning ($p = .08, x^2 = 11.33$).

Parents’ satisfaction with their child’s educational placement was determined by an individual item on the survey in the demographic portion of the survey: “How satisfied are you with your child's current educational placement?” (Likert scale of 1= Very
Unsatisfied to 4 = Very Satisfied). This variable was treated as a continuous variable.

On average, parents were satisfied with their child’s educational placement ($M = 2.98$, $SD = .9$) and there was little variation in the average report of satisfaction by degree of rurality (Figure 9). Further, type of educational setting (i.e., general education, resource, self-contained) was not significantly related to parent satisfaction with setting ($p = .13$).}

![Figure 9. Parent report of satisfaction with child’s educational placement (Scale of 1-4) by degree of rurality.](image)

A Spearman partial correlation (using percent Free/Reduced lunch as a control) was used to examine the relationship between degree of rurality and parental satisfaction with educational placement for children with ASD. When using percent free-reduced lunch as a control, results did not reveal a significant relationship between the degree of rurality and parent’s satisfaction with educational placement ($p = .06$; Table 12). It is of note that this finding approached statistical significance. Due to the small sample size
and the correction for Type I error, the sample may have limited power to detect potential differences between groups.

Table 12

_Correlation of Parent’s Satisfaction with Child’s Educational Placement and Degree of Rurality_

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control</th>
<th>Spearman’s $r_s$</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Satisfaction</td>
<td>No Control</td>
<td>.32</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Percent F/R Lunch</td>
<td>.30</td>
<td>.06</td>
</tr>
</tbody>
</table>

**Research Question: Does parent report of student outcome related to educational services differ by degree of rurality?**

Outcome related to service delivery was assessed by calculating the average of three items on the survey: “As a direct result of this service, my child’s ____ (specific service) has improved at school”; “As a direct result of this service, my child’s ____ has improved at home”; and “As a direct result of this service, my child’s ____ is better.” Parents indicated their level of agreement to these three questions using a scale of 1 to 5 (1 = Strongly Disagree to 5 = Strongly Agree, with 3 indicating neither agree nor disagree). Of the seven services on the survey, outcome as a direct result of physical therapy services was ranked the highest ($M = 3.8, SD = .71$), with outcome related to occupational therapy services having the lowest ranking ($M = 3.2, SD = .93$; Table 13). It is of note that only two participants provided a report of student outcome related to physical therapy services.
Table 13

*Parent Ranking of Outcome as a Result of Individual Services*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$ (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Therapy</td>
<td>3.8 (71)</td>
<td>3.33-4.33</td>
</tr>
<tr>
<td>Counseling</td>
<td>3.7 (.8)</td>
<td>2.33-5.00</td>
</tr>
<tr>
<td>Specialized Academic Instruction</td>
<td>3.6 (.9)</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Speech or Language Services</td>
<td>3.5 (.9)</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Social Skills Training and Instruction</td>
<td>3.5 (1.2)</td>
<td>1.70-5.00</td>
</tr>
<tr>
<td>Behavior Management</td>
<td>3.3 (1.1)</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>3.2 (.9)</td>
<td>2.00-5.00</td>
</tr>
</tbody>
</table>

Further analysis was completed at the individual service level using Spearman correlations with percent Free/Reduced lunch as a control. Of the seven services, student outcome did not significantly relate to degree of rurality (Table 14). Overall, there was little difference or range among degree of rurality and the outcome related to the student’s educational services (Figures 10-14).
Table 14

*Correlations Between Degree of Rurality and Outcome As a Result of Individual Services*

<table>
<thead>
<tr>
<th>Service</th>
<th>Control</th>
<th>Spearman’s rho</th>
<th>Significance (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech Language</td>
<td>No Control</td>
<td>-.15</td>
<td>.42</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>-.11</td>
<td>.56</td>
</tr>
<tr>
<td>Behavior</td>
<td>No Control</td>
<td>.03</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.69</td>
<td>.14</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>No Control</td>
<td>.15</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.003</td>
<td>.99</td>
</tr>
<tr>
<td>Physical Therapy†</td>
<td>No Control</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Social Skills Training and Instruction</td>
<td>No Control</td>
<td>.08</td>
<td>.76</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>-.18</td>
<td>.51</td>
</tr>
<tr>
<td>Specialized Academic Instruction</td>
<td>No Control</td>
<td>.17</td>
<td>.42</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.35</td>
<td>.09</td>
</tr>
<tr>
<td>Counseling</td>
<td>No Control</td>
<td>-.03</td>
<td>.93</td>
</tr>
<tr>
<td></td>
<td>% F/R Lunch</td>
<td>.73</td>
<td>.04</td>
</tr>
</tbody>
</table>

† Correlation not calculated due to small sample size.

The following figures represent the average parent rating of outcomes related to each of the services their child received from the school. Any services with fewer than 15 participants reporting that their child received that service (i.e., physical therapy, counseling, and “other”) does not have a figure provided due to the small sample size.
As presented in Figure 10, there was little variation in parent report of student outcome related to their speech or language services by degree of rurality. Overall, parents ranked outcome related to this service as either having no impact on their child’s speech or language skills to having some impact ($M = 3.5$ out of 5).
Figure 11. Average parent rating of outcome related to behavior management services by degree of rurality. No participants with a RUCC of 8 rated student outcome, therefore, no average is reported.

Similarly, there was little variation between degree of rurality and parent ranking of outcome related to behavior management services provided by their school. Overall, parents appeared to believe behavior management services made some impact (albeit minimal) on their child’s behaviors at school ($M = 3.3$ out of 5).
There was little variation in parent report of outcome related to occupational therapy services by degree of rurality. Overall, most parents indicated they neither agreed nor disagreed with the statement indicating their child’s gross or fine motor skills were better as a result of this service ($M = 3.2$).

As there were only two participants who indicated their child received physical therapy services, few real conclusions may be drawn about student outcome related to this service. Overall, parents reported some agreement with the statements regarding their child’s improvement in physical functioning ($M = 3.8$).
Figure 13. Average parent rating of outcome related to social skills training or services by degree of rurality. No participants with a RUCC of 8 or 9 rated student outcome, therefore, no average is reported.

Parent report of outcome related to social skills training did not differ significantly by degree of rurality. Overall, parents indicating some agreement regarding their child’s improvement in social skills as a direct result of school social skills training ($M = 3.5$ out of 5).
Figure 14. Average parent rating of outcome related to specialized academic instruction or services by degree of rurality.

Similarly, parents’ level of agreement regarding their child’s improved academic skills related to specialized academic instruction did not significantly differ by degree of rurality. Overall, parents indicated that they somewhat agreed with the statements regarding their child’s improvement in academic skills as a result of school-based specially designed instruction ($M = 3.6$ out of 5).

Additionally, parent agreement with statements related to their child’s improvement in coping skills as a direct result of counseling services did not significantly differ by degree of rurality ($p = .04, r_s = .73$).

**Research Question: Does age of diagnosis differ across the different levels of rurality?**

Age of diagnosis was assessed by the survey item asking parents’ report of child’s age at diagnosis. On average, parents reported their child to be diagnosed with ASD at
4.5 years of age (SD = 2.8). Analysis consisted of Spearman partial correlations to examine the relationship between degree of rurality and the age diagnosis was completed, using percent Free/Reduced lunch as a control. Results revealed a significant negative correlation between degree of rurality and age of diagnosis ($r_s = -0.4; p = .01$), indicating that parents in more rural areas reported their children to be diagnosed at an earlier age than parents in more urban areas (Figure 15).

**Figure 15.** Average parent report of age of diagnosis by degree of rurality as defined by the RUCC.

Analyses to address this question also included an evaluation of the location at which the child received the diagnosis. Results indicated the majority (69%; Table 15) of children received the diagnosis from a specialist provider or clinic in a metropolitan area in Kentucky (primarily consisting of Lexington, Louisville, and Cincinnati), indicating that if parents did not live in a metropolitan area, they would be required to travel (sometimes significant distances) to receive a diagnosis.
Table 15

*Parent Report of Location of Diagnosis of ASD*

<table>
<thead>
<tr>
<th>Location</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialist in Metropolitan Area</td>
<td>29 (69%)</td>
</tr>
<tr>
<td>School</td>
<td>5 (12%)</td>
</tr>
<tr>
<td>General Psychiatrist/Psychologist</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>Child evaluation clinic</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Family Doctor/Physician</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>

**Results Related to Adapted Andersen Behavioral Model of Educational Service Use**

As indicated previously, the results were also evaluated within the framework of the Adapted Andersen Behavioral Model of Educational Service Use. Correlations between the environmental characteristic of degree of rurality were discussed within each research question presented previously. Additionally, correlations were completed to determine any potential relationships between the population characteristics of parent’s level of education, socio-economic status (as measured by annual income), and child’s level of functioning (as measured by reported communication level). Results are presented in Figure 16 below. Significant relationships were found between the environment characteristic of degree of rurality and the following variables: age of diagnosis ($r_s = -0.4$; predisposing characteristic), total number of educational services ($r_s = .54$; use of education services), frequency (or amount of direct service hours) of educational counseling services ($r_s = 1.0$; use of education services), and parent satisfaction with educational counseling services ($r_s = .84$; outcome variable), with those
in more rural areas indicating an earlier age of diagnosis, more total services, more frequent and more satisfaction with educational counseling services, than those in more urban areas. Additionally, a significant relationship was found for parents’ reported level of education (population predisposing characteristic) and the reported total number of direct educational service hours \( (r_s = .41) \) suggesting that parents who reported a higher level of education were more likely to have a higher amount of direct educational service hours. No other population characteristics were significantly related to participants’ educational service use or the outcome variables of parent satisfaction and parent report of student outcome as a result of individual educational services.
Figure 16. Correlations completed for each factor of the model contained within the scope of this study (ns = not significant). Factors evaluated within the model included the external environment (i.e., degree of rurality) and population characteristics. Population characteristics included the predisposing factors (parent level of education [LOE] and age at diagnosis); enabling resources (parent annual income [SES]); and need characteristics (child level of functioning). Correlations were completed with these variables to determine their relationship with use of education services (frequency, total number of services, and total number of direct service hours), parent reported outcome related to each service, and parent satisfaction with educational services.

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Chapter Four

Discussion

The purposes of this study were 1) to examine educational services for students with ASD in a single southern state and 2) to determine the relationship between degree of rurality and the following variables: (a) the number, type, and frequency of educational services a child with ASD receives; (b) parental satisfaction with educational services; (c) parent report of student outcomes related to educational services; (d) parental satisfaction with the child’s educational placement; and (e) age of diagnosis. Comparisons were made between parent report of educational services and educational records (i.e., IEPs) from a subset of participants to determine the validity of parent report of educational services for participants in this study. Results indicated moderate to strong agreement, suggesting that parents’ report of educational services was an accurate measure of current services received by their child at school.

Due to the lack of prior research specific to educational services for students with ASD, many of the research questions were investigative in nature. However, based on previous research, two hypotheses were examined. The first hypothesis was parents in more rural areas would report less satisfaction with educational services compared to parents in more urban areas. The second hypothesis was children in rural areas would receive a later age of diagnosis compared to children in more urban areas. Results of this study are limited due to the small sample size and the distribution of participants across the degrees of rurality as measured by the RUCC. Contrary to previous research, results from this study indicated that parents in more rural areas reported more satisfaction with educational counseling services and a lower age of diagnosis when compared to parents.
in more urban areas. Similarly, parents in more rural areas reported a higher number of services and more frequent educational counseling services (i.e., more direct service hours) compared to parents in more urban areas.

Results were interpreted from the framework of an Adapted Andersen Behavioral Model of Educational Service Use proposed previously. This model proposes that access to and use of educational services should be evaluated from the context of environmental and population characteristics. Environmental characteristics within the present study were the significant leading consideration of use of services and consisted of the degree of rurality of the school district in which the student received services in. Predisposing population characteristics were taken into account with respect to family demographics (parent level of education) and age of diagnosis. Additionally, enabling resources were evaluated and included parent income level. Need characteristics were also included in the assessment of the model and included child’s level of functioning (as measured by communication level). The educational behaviors evaluated consisted of use of services (total number of services, frequency of services, and reported needed services). Outcome was evaluated as parent report of student outcomes related to a specific educational service and satisfaction with services (individual service satisfaction, satisfaction with frequency of services, and satisfaction with students’ educational placement). Results were inconsistent with prior investigations of community-based services for students with autism (Thomas et al., 2007) and revealed significant relationships between the environment characteristic of degree of rurality and predisposing characteristics, educational behaviors, and outcome variables with those in more rural areas indicating an earlier age of diagnosis, more total services, more frequent and more satisfaction with
educational counseling services, than those in more urban areas. Additionally, a significant relationship was found for parents’ reported level of education (population predisposing characteristic) and the reported total number of direct educational service hours suggesting that parents who reported a higher level of education were more likely to have a higher amount of direct educational service hours, a finding consistent with previous research investigating the Andersen model and community-based services for students with autism (Thomas et al., 2007). Possible explanations for these findings, as well as limitations, directions for future research, and implications are discussed.

**Total Number of Educational Services**

As a measure of educational service use, the total number of educational services was evaluated. On average, parents reported their child received a total of 3.85 educational services, with those in more rural areas reporting a higher amount of educational services on average than those in more urban areas. This finding is inconsistent from previous research which has suggested that children with ASD in more rural areas receive fewer services in general (Murphy & Ruble, 2012; Thomas et al., 2007) and have access to fewer special education teachers and related service personnel (Cates & Smiley, 2000; Knapczyk et al., 2001; Ludlow et al., 2005; Pennington et al., 2009). One possible explanation for this inconsistent finding was the distribution of participants across the RUCC with those in the most rural codes (8 and 9) reporting a very high number of services in comparison to the other codes (4 and 6 services respectively). Additionally, this study utilized a different method of defining rurality than the previous studies investigating educational services (i.e., RUCC). Further, the majority of previous research had utilized school/provider report of personnel, whereas
the current study assessed access to services via parent report. Another possible explanation for the differences in findings is the low sample size of the current study. Although this finding is inconsistent with previous research, it is consistent with the ideas posed in the Adapted Andersen Behavioral Model for Educational Service Use as it supports the assumption that one’s environment (i.e., geographic location as measured by degree of rurality) impacts service use.

When examining population characteristics, parents’ reported level of education was also significantly related to the total number of services a child received, such that parents with higher levels of education were more likely for their child to have a higher number of educational services. This finding is supported by previous research examining services for students with ASD that has suggested that parents with lower levels of education access fewer services (Thomas et al., 2007). Taken together, these two relationships suggest there are multiple factors that may be related to use of educational services and that service use is a product of both environmental and population characteristics.

**Frequency of Educational Services**

Another measure of education behaviors, frequency of services, was examined. Consistent with previous research (Bitterman et al., 2008), the most frequent educational services reported by parents were speech-language therapy, specialized academic instruction (i.e., the specially designed instruction they receive at school), and occupational therapy. Physical therapy was the least frequently reported service for children in this study. These findings indicate that speech-language therapy continues to be one of the most common services for students with ASD. The continued utilization of
this educational service is supported by the language needs of students with ASD as communication impairment is considered a core deficit for this population (APA, 2000; Goldstein, 2002).

Parents reported that on average, their child received a total of approximately 14 hours of direct educational services a week. This number ranged significantly between participants but was not significantly related to a student’s communication level (parameter of child functioning or evaluated need) or age (predisposing characteristic). No significant relationship emerged between the total frequency of educational services and degree of rurality, a finding inconsistent with previous research indicating general personnel shortages (and consequently fewer services) in rural areas (Cates & Smiley, 2000; Knapczyk et al., 2001; Ludlow et al., 2005; Pennington et al., 2009). This finding may be explained by the uneven distribution of participants in the most rural areas in the study (i.e., codes 8 and 9), and therefore limits the conclusions that may be drawn from them. Additionally, the methods utilized to measure rurality differed from the current study as previous methods employed the more traditional dichotomous or categorical approaches. Finally, those studies evaluated services available in the community, whereas this study examined only educational services which are legally required to be provided based on student need and independent of geographic location (IDEA, 2004).

Not surprisingly, parents reported that children received the most direct service hours from specially designed instruction services followed by speech-language therapy. Interestingly, when comparing hours of individual services, parents in more rural areas reported significantly more direct service hours for counseling than those in more urban areas, providing further support of the potential relationship between the external
environment (i.e., degree of rurality) and use of education services. Although there is no research at present that investigates frequency of specific educational services for children with ASD, it may be assumed from other studies of community services and availability of trained mental health providers that students in more rural areas would have less frequent counseling or mental health services than those in more urban areas (Baldwin et al., 2006; Hendryx, 2008; Johnson et al., 2006; Thomas & Holzer, 2006). Limitations to the sample size and representativeness of the current study, however, may account for the differences in findings. Additionally, the present study did not evaluate what services children received outside of their educational services. It is possible that students in more urban areas were receiving services from their community and therefore, did not require or meet eligibility requirements to receive those services in the school system.

**Additional Desired Services**

When asked about wanting additional services from their schools, 46% of parents reported that they would like their school to provide a service that their child was not currently receiving. Specifically, one of the most frequently cited additional service was behavior management. This finding is consistent with the information existing regarding the current state of behavioral services provided to students with ASD in the schools (Bitterman et al., 2008; Murphy & Ruble, 2012). Behavior management services are considered to be a vital part of service delivery for students with ASD (Eldevik et al., 2009) and these findings provide additional support of their need in an educational setting.
Parent Satisfaction

Outcomes based on the Adapted Andersen Behavioral Model of Educational Service Use in this study were assessed using two methods, the first discussed being parent satisfaction with educational services. An analysis of parent satisfaction indicated that overall level of satisfaction with educational services was moderate to high (Mean scores by service ranged from 2.6 to 3.7, with 4 indicating “Very Satisfied”), a finding consistent with previous research (Bitterman et al., 2008; Murphy & Ruble, 2012). Parents also reported that they were satisfied with their child’s educational placement \( M = 2.98 \) out of 4, indicating that they are, on average, satisfied with their school’s current least restrictive environment decision.

Contrary to a priori predictions and prior studies on parent satisfaction in rural areas (Bulgren, 2002), parents in more rural areas indicated greater satisfaction related to their child’s counseling services than those in more urban areas, providing further support for the impact of the environment (i.e., degree of rurality) on student outcomes (as measured by parent satisfaction). One explanation for the differences in findings is that Bulgren’s (2002) sample was not specific to special education services for students with autism.

Parents were also asked about their satisfaction with the frequency with which their child received a specific service. The majority of parents (i.e., greater than 50%) reported they would like their child to receive more of each of the services they responded to, with occupational therapy services having the highest amount of parents wanting more direct service hours (77%). This finding is not unexpected considering current research that suggests students with ASD are underserved (Liptak et al., 2008;
Ruble et al., 2005). Similarly, Bitterman and colleagues (2008) found that approximately 47% of parents of children with ASD wanted their child to receive more hours of educational services from their school. This finding suggests that although parents are, on average, satisfied with their child’s educational services, they would like them to receive more individual services to address their educational needs.

**Parent Report of Student Outcomes**

A second measure of outcomes was evaluated by asking parents to report their belief about to what extent educational service impacts student outcomes. Parents reported counseling and specially designed instruction services as having the highest outcomes. No significant relationships were observed between degree of rurality and parent report of outcome related to specific educational services. Although there is no previous research that has examined outcome as a result of educational services, previous studies have indicated that rural families in general have access to fewer services and resources (Applequist, 2009; Collins et al., 2005, Ludlow et al., 2005; Pennington et al., 2009).

**Age of Diagnosis**

Finally, inconsistent with predictions and previous research (Chen et al., 2008; Mandell et al., 2005), parents in more rural areas reported that their child was diagnosed at a significantly earlier age (predisposing characteristic) than parents in more urban areas, suggesting that children in rural areas are being diagnosed earlier than those in urban areas. This finding is surprising given that the informant is the child’s parent, likely the most reliable source for diagnostic information since health care providers may have missing information if there is lack of continuity of care. Previous studies
examining age of diagnosis for students with ASD utilized medical databases as opposed to report from parents (e.g., Chen et al., 2008) or large, nationally representative data sets (Mandell et al., 2005). These different approaches in data collection could account for the differences in findings. Additionally, differences in state or country diagnostic criteria may explain the inconsistent results.

**Limitations**

One limitation of the study design is one inherent to survey research, and that is the low response rate. The total sample included in analyses is not representative of the state as a whole for students with ASD and therefore limits the generalizability and external validity of the research findings. This low response rate also limited the overall spread of the RUCC codes, such that there were only two total participants in the most rural codes (i.e., 8 and 9) and allowed for an unrepresentative distribution of scores by code (e.g., average satisfaction, total hours) since each of those only represented one participant’s report. Future research should include alternative strategies for collecting information to allow the sample to better represent families in the most rural, low-income areas.

Finally, although the study checked for the validity of parent responses versus educational records, there is no way to determine if the information provided in the educational records was actually implemented in the school. Additionally, although we know the general type of services received, quality of those services was not evaluated. Future research should include a measure of implementation to determine the extent to which students receive these services as well as a measure of the amount of evidence-based practices that were employed with students.
Implications

Overall, parents in the study appear to be happy with their child’s educational services; however, they would like to receive additional services (i.e., behavior management services) and more of the services their child is currently receiving. Further, findings from this study suggest that despite the assumption that educational services in rural areas are lacking, parents in more rural areas are reporting greater satisfaction with educational counseling services and a higher amount of services in general. However, the sample size and underrepresentation of students in the most rural areas should be taken into consideration when discussing the implications of this study.

Although findings were limited due to sampling constraints, this study represents one of few specific measures of educational services (number, type, and frequency), parent satisfaction, student outcome, and age of diagnosis for students with ASD from a parent perspective and add important information to the literature base regarding the current environment of educational services for children ASD in rural areas. Previous research has highlighted the deficiencies in services for children with disabilities in rural areas (Applequist, 2009; Collins et al., 2005, Ludlow et al., 2005; Pennington et al., 2009); however, there are no current findings related to the type, frequency, and parent satisfaction with education services received by children with ASD in rural areas. Implications from this study suggest that, despite the differences between rural and urban students in the frequency, satisfaction, and outcome for services, the importance of providing students with a sufficient amount of educational services - regardless of geographical region - remains vital to student success. The majority of parents in both rural and urban areas reported they wished their child received more of each service.
Because of the difficulty for families of children with ASD to obtain services outside of the public school (Liptak et al., 2008; Murphy & Ruble, 2012; Ruble et al., 2005), this finding is all the more important as it suggests that even though they receive services, they may not meet the needs of the student as viewed from parent perspectives. Additionally, recent research suggests that many special education teachers of students with autism have limited knowledge of scientifically based interventions (Barnhill et al., 2011; Morrier et al., 2011), which indicates that the services they receive in the school may not align with federal recommendations to utilize evidence based strategies and interventions (U.S. Department of Education, 2003).

Results from this study provided preliminary support for the use of the Adapted Andersen Behavioral Model for Educational Service Use and its application in understanding educational services for students with ASD. Consistent with the theoretical framework proposed, it appeared that services for students with ASD are best understood within the dynamic context of their external environment and individual population characteristics. Specific to this study, student’s community or geographic location (i.e., rurality) and specific population characteristics were related to educational service use, parent satisfaction with services, and parent report of student outcome, suggesting the need to consider service use for this population from a dynamic and changing context.

**Conclusions**

Results from this study provide one of few parent-perspectives on educational services for students with ASD in Kentucky. Results from this study attempted to shed light on the multiple factors that might impact use of educational services while
concentrating specifically on the environmental context or rurality. Inconsistent with previous research (Baldwin et al., 2006; Hendryx, 2008; Johnson et al., 2006; Thomas & Holzer, 2006), parents of children with ASD in rural areas in this study reported a higher number of educational services overall, more frequent counseling educational services, greater satisfaction with counseling educational services, and an earlier average age of diagnosis than parents of children with ASD in urban areas. Despite this positive finding, a significant majority of parents reported they would like their child to receive more of the services they were receiving from the school system, indicating that the services being provided are not meeting the individual needs of those students. Additionally, it is unclear what types of interventions are provided and if they align with evidence based practices for this population. Future research is needed to determine the extent to which students receive these services as well as a measure of the amount of evidence-based practices that were employed with students.
Appendix A

Phone Survey Instrument
Special Education Services for Children with ASD

1. Initial Contact  Hello, may I speak with ______________.

1. SAY: Hello Mr./Ms.________, my name is Melissa Murphy and I received an email from you about participating in a survey concerning school services for your child with autism and you indicated this was a convenient time to contact you. Do you have some time to speak with me?
   ☑ Yes (1)
   ☑ No (2)

Answer If 1. SAY: Hello Mr./Ms.________, my name is Melissa Murphy... No Is Selected

2. No time

Answer If 1. SAY: Hello Mr./Ms.________, my name is Melissa Murphy... No Is Selected

1. Can you provide me with a better time or day to call you?
   ☑ Yes (1)
   ☑ No (2)

Answer If 1. Can you provide me with a better time or day to call you? No Is Selected

3. End of Survey - Did not Participate

Answer If 1. Can you provide me with a better time or day to call you? No Is Selected
Thank you Mr./Ms._______ for your time.

Answer If 1. Can you provide me with a better time or day to call you? Yes Is Selected

3. Alternate Date/Time

Answer If 1. Can you provide me with a better time or day to call you? Yes Is Selected
1. Enter alternate day/time to call here:

Answer If 1. Can you provide me with a better time or day to call you? Yes Is Selected
4. End of Survey - Rescheduled  Thank you Mr./Ms.______________ for your time. I will call you back on _______ at ________.

Answer If 1. Can you provide me with a better time or day to call you? Yes Is Selected

5. End of Survey  END OF SURVEY
2. Entry/Introduction Script

Read the following to the participant before asking if they would be willing to participate in the study. Great! First, I would like to briefly tell you more about the study we are doing. You are being invited to take part in a research study about the education services your child receives in the public school setting. You are being invited to take part in this research study because you are the parent or caregiver of an identified child with an Autism Spectrum Disorder. We hope to complete this phone survey with approximately 100 people, so your answers are very important to us. Of course, you have a choice about whether or not to complete the survey, but if you do participate, you are free to skip any questions or discontinue at any time. At this point, it is important for me to let you know that all information that you provide is confidential or anonymous, and will not be connected with you or your child in any way. Your responses will in no way influence the services your child receives at school, and will not be shared with any person at the school. The information is being collected for research purposes only. The person in charge of this study is Melissa Murphy, a doctoral student of the University of Kentucky Department of Educational, School, and Counseling Psychology. She is being guided in this research by Dr. Tom Prout and Dr. Lisa Ruble. You will be provided with contact information for the primary investigator so that you may contact her with questions at your convenience. The purpose of this research is to investigate the types of education services children with Autism Spectrum Disorders receive in the public school setting. Participants in this study will attend public schools in both rural and urban school districts. By doing this study, we hope to be able to describe the types and frequency of services utilized by the public school system for students with ASD. You are being asked to complete a survey about the types of education services your child with autism receives in school only. The telephone survey will ask you about specific services your child receives in school, how often they may receive it, and your satisfaction with that service. Additionally, you will be asked to share your child’s Individualized Education Program. Your participation in this study is completely voluntary and if at any point during the survey you do not wish to respond or share certain information, there will be no penalty for doing so. You will only be asked to complete this survey one time during the study and once we begin, the phone survey will take approximately 30-minutes. After completing the survey, you will have the opportunity to share your contact information to be entered in a raffle for one of five literary resources on autism spectrum disorders. Thank you in advance for your assistance with this important project.
1. Having been provided with this information, would you be willing to complete the phone survey?
  ☐ Yes (1)
  ☐ No (2)
  ☐ I don't know (3)

Answer If 1. Having been provided with this information, would you ... No Is Selected
3. Explanation for not wanting to participate

Answer If 1. Having been provided with this information, would you ... No Is Selected
1. If no ask: Would you be willing to share information about why you have declined to participate in this study? (Prompt for explanation)

Answer If 1. Having been provided with this information, would you ... No Is Selected
4. End of Survey - Did not Participate

Answer If 1. Having been provided with this information, would you ... No Is Selected
Thank you Mr./Ms._______ for your time.

Answer If 1. Having been provided with this information, would you ... No Is Selected
5. End of Survey  END OF SURVEY

Answer If 1. Having been provided with this information, would you ... I don't know Is Selected
3. I don’t know

Answer If 1. Having been provided with this information, would you ... I don't know Is Selected
SAY: This particular study that we are doing is very important, and let me reassure you that everything you say will be kept confidential. We are just looking for people's opinions and feelings about the services their children receive in the schools. All results will be released as group data, such as the percentage of children with autism who receive a certain service. There isn't any way an individual can be identified. And if I happen to ask you something that you don't want to talk about, just let me know and we'll move on to something else.
1. Would you be willing to participate in the study?
- Yes (1)
- No (2)

2. Are you willing to share your child's IEP as part of the research study?
- Yes (1)
- No (2)

3. Participant Assigned ID number:

4. Are you willing to share your child's IEP as part of the research study? Yes

5. There are several options to share the IEP. I can email you a release of records form, which you would sign and return to me or your school, or you can send me a copy of the IEP directly, either via email or mail. What would be easiest for you to do?
- Release of records sent through email (1)
- Release of records sent through mail (2)
- Release of records sent through fax (859-323-0067) (3)
- Copy of IEP sent through email (4)
- Copy of IEP sent through mail (5)
2. Since you would like to do the release of records form, I will need to contact your school or child's teacher directly to let them know that I will be requesting your child's information. Can you share their contact information? (Record response below)

4. Services portion - Speech/Language

1. Say: The following three questions refer to speech or language services at school. These services include (but are not limited to) speech or language therapy, speech or language collaboration with a teacher, augmentative communication devices, such as picture boards, picture schedules, etc. Then ask: Does your child currently receive speech/language services at school?
   - Yes (1)
   - No (2)
   - I don't know (3)

1. If asked a question, note the question and your response here:

2. If yes, ask: How many hours of direct service does he/she receive for this service a week?
3. Do you feel your child should receive more of this service?
- Yes (1)
- No (2)

4. If asked a question, note the question and your response here:

5. How satisfied are you with your child's speech/language services? Please choose from the following options:
- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)

6. If asked a question, note the question and your response here:

7. As a direct result of this service:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My child is doing better at home (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My child is doing better at school (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My child's speech/language skills are better (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

8. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected
6. Behavior Management
1. Say: The next three questions refer to behavior management services at school. These services may include (but are not limited to) behavior charts, personalized reward/punishment system, time/picture schedules, etc. This service may be provided by a general or special education teacher, school therapist, teacher's aid, principal or other school personnel. Then ask: Does your child currently receive behavior management services at school?
   - Yes (1)
   - No (2)
   - Don't know (3)

1. If asked a question, note the question and your response here:

1. If yes, ask: How many hours of direct service does he/she receive for this service a week?

1. If asked a question, note the question and your response here:

1. Do you feel your child should receive more of this service?
   - Yes (1)
   - No (2)

1. How satisfied are you with your child's behavior management services? Please choose from the following options:
   - Very Dissatisfied (1)
   - Dissatisfied (2)
   - Satisfied (3)
   - Very Satisfied (4)
Answer If 1. Say: The next three questions refer to behavior management... Yes Is Selected

6. As a direct result of this service:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My child is doing better at home (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My child is doing better at school (2)</td>
<td>○</td>
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<tr>
<td>My child's behavior is better (3)</td>
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Answer If 1. Say: The next three questions refer to behavior management... Yes Is Selected

7. If asked a question, note the question and your response here:

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

8. Occupational Therapy

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

1. Say: The following three questions refer to occupational therapy services in the school. These services may include (but are not limited to) fine or gross motor therapy, motor stimulating devices or augmentative devices, etc. Then ask: Does your child currently receive occupational therapy services at school?
 ○ Yes (1)
 ○ No (2)
 ○ Don't know (3)

Answer If 1. Say: The following three questions refer to occupational therapy... Yes Is Selected

8. Occupational Therapy

Answer If 1. Say: The following three questions refer to occupational therapy... Yes Is Selected

1. If asked a question, note the question and your response here:
Answer If 1. Say: The following three questions refer to occupation... Yes Is Selected
2. If yes, ask: How many hours of direct service does he/she receive for this service a week?

Answer If 1. Say: The following three questions refer to occupation... Yes Is Selected
3. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to occupation... Yes Is Selected
4. Do you feel your child should receive more of this service?
   ○ Yes (1)
   ○ No (2)

Answer If 1. Say: The following three questions refer to occupation... Yes Is Selected
5. How satisfied are you with your child's occupational therapy services? Please choose from the following options:
   ○ Very Dissatisfied (1)
   ○ Dissatisfied (2)
   ○ Satisfied (3)
   ○ Very Satisfied (4)

Answer If 1. Say: The following three questions refer to occupation... Yes Is Selected
6. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to occupation... Yes Is Selected
7. As a direct result of this service:

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<th>Strongly Disagree (1)</th>
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<th>Neutral (3)</th>
<th>Agree (4)</th>
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<tr>
<td>My child's fine and gross motor skills are better (3)</td>
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</table>
Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected
9. Physical Therapy

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

1. Say: The following three questions refer to physical therapy services provided in school. These services may include (but are not limited to) strengthening exercises, expanding gross motor skills, improving balance, etc. Then ask: Does your child currently receive physical therapy services at school?
   - Yes (1)
   - No (2)
   - Don't know (3)

Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected
10. Physical Therapy

Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected
1. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected
2. If yes, ask: How many hours of direct service does he/she receive for this service a week?

Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected
3. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected
4. Do you feel your child should receive more of this service?
   - Yes (1)
   - No (2)

Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected
5. How satisfied are you with your child's physical therapy services? Please choose from the following options:
   - Very Dissatisfied (1)
   - Dissatisfied (2)
   - Satisfied (3)
   - Very Satisfied (4)
Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected

6. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to physical ... Yes Is Selected

7. As a direct result of this service:

<table>
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<th></th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2) (2)</th>
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<th>Agree (4) (4)</th>
<th>Strongly Agree (5) (5)</th>
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<td>Yes (1)</td>
<td>Yes (2)</td>
<td>Yes (3)</td>
<td>Yes (4)</td>
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<tr>
<td>My child's physical skills are better (3)</td>
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</table>

Answer If 1. Having been provided with this information, would you ... Yes Is Selected

Or 1. Would you be willing to participate in the study? Yes Is Selected

11. Social Skills

Answer If 1. Having been provided with this information, would you ... Yes Is Selected

Or 1. Would you be willing to participate in the study? Yes Is Selected

1. Say: The following three questions refer to social skills training or services in the school. These may include (but are not limited to) social skills groups, explicit instruction in social skills through individual training, peer tutoring, etc. Then ask: Does your child currently receive social skills training or services at school?

☐ Yes (1)
☐ No (2)
☐ Don't know (3)

Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected

12. Social Skills

Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected

1. If asked a question, note the question and your response here:
Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected
2. If yes, ask: How many hours of direct service does he/she receive for this service a week?

Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected
3. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected
4. Do you feel your child should receive more of this service?
   ○ Yes (1)
   ○ No (2)

Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected
5. How satisfied are you with your child's social skills training or services? Please choose from the following options:
   ○ Very Dissatisfied (1)
   ○ Dissatisfied (2)
   ○ Satisfied (3)
   ○ Very Satisfied (4)

Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected
6. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to social sk... Yes Is Selected
7. As a direct result of this service:

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<th>Agree (4) (4)</th>
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<td>My child's social skills are better (3)</td>
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</table>
Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

13. Specialized Academic Instruction

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

1. Say: The following three questions refer to specialized academic instruction provided at school. This may include (but is not limited to) modified curriculum, pull out or resource room for certain classes, supplemental or technological aids, extended time on assignments, etc. Then ask: Does your child currently receive specialized academic instruction at school?
☐ Yes (1)
☐ No (2)
☐ Don't Know (3)

Answer If 1. Say: The following three questions refer to specialized... Yes Is Selected

14. Specialized Academic Instruction

Answer If 1. Say: The following three questions refer to specialized... Yes Is Selected

1. If asked a question, note the question and your response here:

Answer If 1. Say: The following three questions refer to specialized... Yes Is Selected

2. If yes, ask: How many hours of direct service does he/she receive for this service a week?

Answer If 1. Say: The following three questions refer to specialized... Yes Is Selected

3. Do you feel your child should receive more of this service?
☐ Yes (1)
☐ No (2)

Answer If 1. Say: The following three questions refer to specialized... Yes Is Selected

4. If asked a question, note the question and your response here:
5. How satisfied are you with your child's specialized academic instruction? Please choose from the following options:
- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)

6. If asked a question, note the question and your response here:

7. As a direct result of this service:

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<th>Strongly Disagree (1)</th>
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<td>My child's academic skills are better (3)</td>
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Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

15. Counseling
1. Say: The following three questions refer to counseling services at school. These services may include (but are not limited to) individual counseling sessions, group counseling, therapy, etc. Then ask: Does your child currently receive counseling services at school?
   - Yes (1)
   - No (2)
   - Don't know (3)

2. If yes, ask: How many hours of direct service does he/she receive for this service a week?

3. If asked a question, note the question and your response here:

4. Do you feel your child should receive more of this service?
   - Yes (1)
   - No (2)

5. How satisfied are you with your child's counseling services? Please choose from the following options:
   - Very Dissatisfied (1)
   - Dissatisfied (2)
   - Satisfied (3)
   - Very Satisfied (4)

6. If asked a question, note the question and your response here:
Answer If 1. Say: The following three questions refer to counseling... Yes Is Selected
7. As a direct result of this service:

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<tr>
<td>My child's coping skills are better (3)</td>
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Answer If 1. Having been provided with this information, would you ... Yes Is Selected
17. Other services

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

1. Does your child receive any other services at school?
   ○ Yes (1)
   ○ No (2)
   ○ Don't know (3)

Answer If 1. Does your child receive any other services at school? Yes Is Selected
18. Other services

Answer If 1. Does your child receive any other services at school? Yes Is Selected
1. If asked a question, note the question and your response here:

Answer If 1. Does your child receive any other services at school? Yes Is Selected
2. If yes, please tell me those additional services at school.

Answer If 1. Does your child receive any other services at school? Yes Is Selected
3. How many hours of direct service does he/she receive for this service a week?
1. Does your child receive any other services at school? Yes Is Selected

4. Do you feel your child should receive more of this service?
   - Yes (1)
   - No (2)

5. How satisfied are you with your child's (insert name of service here) services? Please choose from the following options:
   - Very Dissatisfied (1)
   - Dissatisfied (2)
   - Satisfied (3)
   - Very Satisfied (4)

6. If asked a question, note the question and your response here:

7. As a direct result of this service:

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<th>Strongly Disagree (1)</th>
<th>Disagree (2) (2)</th>
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<td>better at home (1)</td>
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<td>My child is doing</td>
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<td>better at school (2)</td>
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19. Additional Wanted Services

1. Having been provided with this information, would you ... Yes Is Selected

Or 1. Would you be willing to participate in the study? Yes Is Selected

1. Do you feel there are any services in the school your child is not receiving that you would like them to?
   - Yes (1)
   - No (2)
20. What additional services?

1. If yes: What services would you like your child to receive at school?

21. Demographic Information  Say: The remaining questions will ask you to provide us with some information about your child and family.

1. What is your child's age (in years and months)?

2. What is your child's biological sex?
   - Male (1)
   - Female (2)

3. What school district does your child currently attend school in?

4. What is the name of the school your child is currently attending?

5. If asked a question, note the question and your response here:
Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

6. What type of classroom does your child attend MOST of the day? (i.e., what setting are they in for more than 50% of their school day?)
   - General Education Classroom (1)
   - Resource Room (2)
   - Self-contained (3)

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

7. If you had to describe your child's current level of communication, would you describe it as:
   - 1 - No spoken language or some single words (1)
   - 2 - Mostly single words or some 2-3 word phrases (2)
   - 3 - Mostly 2 or 3 word phrases with some grammatical mistakes (3)
   - 4 - Mostly 3 or more word phrases with few grammatical mistakes (4)

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

8. How satisfied are you with your child's current educational placement? Please choose from the following options:
   - Very Dissatisfied (1)
   - Dissatisfied (2)
   - Satisfied (3)
   - Very Satisfied (4)

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
And 1. Would you be willing to participate in the study? Yes Is Selected

9. If asked a question, note the question and your response here:

Answer If 1. Having been provided with this information, would you ... Yes Is Selected
Or 1. Would you be willing to participate in the study? Yes Is Selected

10. Please indicate your estimated annual household income (For example, $40,000 per year):
11. Please indicate your highest level of education:
- Less than High School Degree (1)
- High School Degree/GED (2)
- Some College (3)
- Associates Degree (4)
- Bachelor's Degree (5)
- Master's Degree (6)
- Doctorate/Professional Degree (7)

12. Please estimate your total number of education in years (For example, if you completed two years of college, your total number of education in years would be 14 years):

13. What is your child's specific diagnosis?
- Autism (1)
- Asperger's Syndrome (2)
- Pervasive Developmental Disorder - Not Otherwise Specified (3)
- Rett's Syndrome (4)
- Childhood Disintegrative Disorder (5)

14. At what age was your child diagnosed with _______?(as indicated above in number 11)?

The next question refers to where your child was diagnosed. This could be the local school district, your family doctor, a specialist, etc. Where was your child diagnosed with _________ (fill in with diagnosis indicated above)?

16. Is your child currently taking any medications?
16. Is your child currently taking any medications?
   - Yes - how many? (1) ________________
   - No (2)

22. End of Survey - Did Participate

SAY: Thank you Mr./Ms. ______ for your time to complete this survey. Your information is greatly appreciated and will be used to inform researchers about services for children with autism in Kentucky.

Would you like to be entered in the drawing to win one of five literary resources?
   - Yes - need address/phone # (1)
   - No (2)

1. Do you have any questions at this time? (PROMPT FOR EXPLANATION AND RECORD RESPONSE HERE)

If you have questions at a later date, you may direct them to the primary investigator, Melissa Murphy, at (606) 545-2372, or through her email address of maridd2@uky.edu. Additionally, if you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428.

END OF SURVEY
Appendix B

Email Inviting Participants to Complete Online Survey

What Educational Services Does Your Child Receive in the Public School System?

Researchers at the University of Kentucky are conducting a research study on the types of education services that a child with autism receives in school and are still in need of participants! Your participation in this study is very important as it will help inform researchers about the types of services children with autism receive in the public school system and parental satisfaction with these services in Kentucky.

This approximately 15-minute electronic survey will ask you about specific services that your child receives in school, how often they may receive it and your satisfaction with that service. Additionally, you can voluntarily share your child’s Individualized Education Program (IEP).

You may be eligible to participate in this study if you:

- have a child between the ages of 3-21;
- have a child that has been identified with Autism Spectrum Disorder; and
- have a child that attends public school in Kentucky

*If you have previously participated in this study (May 2011 or before) you are still eligible to complete the online survey as some questions have changed.*

After completing the survey, you will have the opportunity to share your contact information to be entered in a raffle for one of five literary resources on autism spectrum disorders.

To participate in this study, please click on the link below and follow the directions indicated in the survey.

SURVEY LINK

For more information contact:
Melissa Murphy, Doctoral Student
Department of Educational, School and Counseling Psychology
Phone: 606-545-2372
Email: maridd2@uky.edu
Appendix C

Survey Instrument for Online Data Collection
Online Special Education Services for Children with ASD

You are being invited to take part in a research study about the education services your child receives in the public school setting. You are being invited to take part in this research study because you are the parent or caregiver of an identified child with an Autism Spectrum Disorder. We hope to complete this survey with approximately 100 people, so your answers are very important to us. Of course, you have a choice about whether or not to complete the survey, but if you do participate, you are free to skip any questions or discontinue at any time. At this point, it is important for me to let you know that all information that you provide is confidential, and will not be connected with you or your child in any way. Your responses will in no way influence the services your child receives at school, and will not be shared with any person at the school. The information is being collected for research purposes only. We will keep private all research records that identify you to the extent allowed by the law. However, there are some circumstances in which we may have to show information which identifies you to other people. For example, we may be required to show information which identifies you to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Kentucky. Please be aware, while we make every effort to safeguard your data once received from the online survey/data gathering company, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while still on the survey/data gathering company’s servers, or while en route to either them or us. It is also possible the raw data collected for research purposes may be used for marketing or reporting purposes by the survey/data gathering company after the research is concluded, depending on the company’s Terms of Service and Privacy policies. The person in charge of this study is Melissa Murphy, a doctoral student of the University of Kentucky Department of Educational, School, and Counseling Psychology. She is being guided in this research by Dr. Tom Prout and Dr. Lisa Ruble. You will be provided with contact information for the primary investigator so that you may contact her with questions at your convenience. The purpose of this research is to investigate the types of education services children with Autism Spectrum Disorders receive in the public school setting. Participants in this study will attend public schools in both rural and urban school districts. By doing this study, we hope to be able to describe the types and frequency of services utilized by the public school system for students with ASD. You are being asked to complete a survey about the types of education services your child with autism receives in school only. The survey will ask you about specific services your child receives in school, how often they may receive it, and your satisfaction with that service. Additionally, you will be asked to share your child’s Individualized Education Program. Your participation in this study is completely voluntary and if at any point during the survey you do not wish to respond or share certain information, there will be no penalty for doing so. You will only be asked
to complete this survey one time during the study and the survey will take approximately 15-minutes. After completing the survey, you will have the opportunity to share your contact information to be entered in a raffle for one of five literary resources on autism spectrum disorders. Thank you in advance for your assistance with this important project.

Are you willing to complete the survey?
- Yes (1)
- No (2)

Answer If Are you willing to complete the survey? No Is Selected
Thank you for your time. If you would like, please indicate below why you chose not to complete the survey:

Are you willing to share your child's IEP as part of the research study?
- Yes (1)
- No (2)

Answer If Are you willing to share your child's IEP as part of the ... Yes Is Selected
IEP Yes

Answer If 2. Are you willing to share your child's IEP as part of t... Yes Is Selected
1. There are several options to share the IEP. I can email you a release of records form, which you would sign and return to me or your school, or you can send me a copy of the IEP directly, either via email or mail. What would be easiest for you to do?
- Release of records sent through email (1)
- Release of records sent through mail (2)
- Release of records sent through fax (859-323-0067) (3)
- Copy of IEP sent through email (4)
- Copy of IEP sent through mail (5)

Answer If Are you willing to share your child's IEP as part of the ... Yes Is Selected
2. Since you are willing to share a copy of your child's IEP, I will need to contact you to follow-up about the method you chose above. Please share your email address or phone number below:
The first questions I will ask relate to the services your child currently receives at school.

The following three questions refer to speech or language services at school. These services include (but are not limited to) speech or language therapy, speech or language collaboration with a teacher, augmentative communication devices, such as picture boards, picture schedules, etc. Does your child currently receive speech/language services at school?

- Yes (1)
- No (2)
- I don't know (3)

How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr)

Do you feel your child should receive more of this service?

- Yes (1)
- No (2)

How satisfied are you with your child's speech/language services? Please choose from the following options:

- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)
As a direct result of this service, how would you agree with the following statements:

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<tr>
<th></th>
<th>Strongly Disagree (1) (1)</th>
<th>Disagree (2) (2)</th>
<th>Neutral (3) (3)</th>
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<td>speech/language</td>
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<td>skills are better</td>
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<td>(3)</td>
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Behavior Management

The next three questions refer to behavior management services at school. These services may include (but are not limited to) behavior charts, personalized reward/punishment system, time/picture schedules, etc. This service may be provided by a general or special education teacher, school therapist, teacher's aid, principal or other school personnel.

Does your child currently receive behavior management services at school?

- Yes (1)
- No (2)
- Don't know (3)

Behavior Management

How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr)
Answer If The next three questions refer to behavior management ser... Yes Is Selected
Do you feel your child should receive more of this service?
✔ Yes (1)
✔ No (2)

Answer If The next three questions refer to behavior management ser... Yes Is Selected
How satisfied are you with your child's behavior management services? Please choose from the following options:
✔ Very Dissatisfied (1)
✔ Dissatisfied (2)
✔ Satisfied (3)
✔ Very Satisfied (4)

Answer If The next three questions refer to behavior management ser... Yes Is Selected
As a direct result of this service, how would you agree with the following statements:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My child is doing better at home (1)</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<tr>
<td>My child is doing better at school (2)</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>My child's behavior is better (3)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Answer If Are you willing to complete the survey? Yes Is Selected
Occupational Therapy

Answer If Are you willing to complete the survey? Yes Is Selected
The following three questions refer to occupational therapy services in the school. These services may include (but are not limited to) fine or gross motor therapy, motor stimulating devices or augmentative devices, etc. Does your child currently receive occupational therapy services at school?
✔ Yes (1)
✔ No (2)
✔ Don't know (3)
Answer If The following three questions refer to occupational therapy... Yes Is Selected

Occupational Therapy

Answer If The following three questions refer to occupational therapy... Yes Is Selected
How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr)

Answer If The following three questions refer to occupational therapy... Yes Is Selected
If asked a question, note the question and your response here:

Answer If The following three questions refer to occupational therapy... Yes Is Selected
Do you feel your child should receive more of this service?
- Yes (1)
- No (2)

Answer If The following three questions refer to occupational therapy... Yes Is Selected
How satisfied are you with your child's occupational therapy services? Please choose from the following options:
- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)

Answer If The following three questions refer to occupational therapy... Yes Is Selected
As a direct result of this service, how would you agree with the following statements:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
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</thead>
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<td>My child is doing better at home (1)</td>
<td>○</td>
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<tr>
<td>My child is doing better at school (2)</td>
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<tr>
<td>My child's fine and gross motor skills are better (3)</td>
<td>○</td>
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<td>○</td>
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</tbody>
</table>
The following three questions refer to physical therapy services provided in school. These services may include (but are not limited to) strengthening exercises, expanding gross motor skills, improving balance, etc. Does your child currently receive physical therapy services at school?

- Yes (1)
- No (2)
- Don't know (3)

How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr)

Do you feel your child should receive more of this service?

- Yes (1)
- No (2)

How satisfied are you with your child's physical therapy services? Please choose from the following options:

- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)
Answer If The following three questions refer to physical therapy s... Yes Is Selected
As a direct result of this service, how would you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2) (2)</th>
<th>Neutral (3) (3)</th>
<th>Agree (4) (4)</th>
<th>Strongly Agree (5) (5)</th>
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<td>My child is doing better at home (1)</td>
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<td>My child is doing better at school (2)</td>
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<td>○</td>
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<tr>
<td>My child's physical skills are better (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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</tbody>
</table>

Answer If Are you willing to complete the survey? Yes Is Selected
Social Skills

Answer If Are you willing to complete the survey? Yes Is Selected
The following three questions refer to social skills training or services in the school. These may include (but are not limited to) social skills groups, explicit instruction in social skills through individual training, peer tutoring, etc. Does your child currently receive social skills training or services at school?
○ Yes (1)
○ No (2)
○ Don't know (3)

Answer If The following three questions refer to social skills tra... Yes Is Selected
Social Skills

Answer If The following three questions refer to social skills tra... Yes Is Selected
How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr)

Answer If The following three questions refer to social skills tra... Yes Is Selected
Do you feel your child should receive more of this service?
○ Yes (1)
○ No (2)
Answer If The following three questions refer to social skills training or services? Yes Is Selected

How satisfied are you with your child's social skills training or services? Please choose from the following options:
- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)

As a direct result of this service, how would you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>My child is doing better at home (1)</td>
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<tr>
<td>My child is doing better at school (2)</td>
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<tr>
<td>My child's social skills are better (3)</td>
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</tbody>
</table>

Answer If Are you willing to complete the survey? Yes Is Selected

Specialized Academic Instruction

The following three questions refer to specialized academic instruction provided at school. This may include (but is not limited to) modified curriculum, pull out or resource room for certain classes, supplemental or technological aids, extended time on assignments, etc. Does your child currently receive specialized academic instruction at school?
- Yes (1)
- No (2)
- Don't Know (3)
How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr)

Do you feel your child should receive more of this service?
- Yes (1)
- No (2)

How satisfied are you with your child's specialized academic instruction? Please choose from the following options:
- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)

As a direct result of this service, how would you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
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<tbody>
<tr>
<td>My child is doing better at home</td>
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<td>My child is doing better at school</td>
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<tr>
<td>My child's academic skills are better</td>
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</tbody>
</table>

Are you willing to complete the survey? Yes
Answer If Are you willing to complete the survey? Yes Is Selected
The following three questions refer to counseling services at school. These services may include (but are not limited to) individual counseling sessions, group counseling, therapy, etc. Does your child currently receive counseling services at school?
- Yes (1)
- No (2)
- Don't know (3)

Answer If The following three questions refer to counseling service... Yes Is Selected
Counseling

Answer If The following three questions refer to counseling service... Yes Is Selected
How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr)

Answer If The following three questions refer to counseling service... Yes Is Selected
Do you feel your child should receive more of this service?
- Yes (1)
- No (2)

Answer If The following three questions refer to counseling service... Yes Is Selected
How satisfied are you with your child's counseling services? Please choose from the following options:
- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)
Answer If The following three questions refer to counseling service... Yes Is Selected

As a direct result of this service, how would you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2) (2)</th>
<th>Neutral (3) (3)</th>
<th>Agree (4) (4)</th>
<th>Strongly Agree (5) (5)</th>
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<tbody>
<tr>
<td>My child is doing better at home (1)</td>
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<td>My child is doing better at school (2)</td>
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<td>My child's coping skills are better (3)</td>
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</tbody>
</table>

Answer If Are you willing to complete the survey? Yes Is Selected

Other services

Answer If Are you willing to complete the survey? Yes Is Selected

Does your child receive any other services at school?

○ Yes (1)
○ No (2)
○ Don't know (3)

Answer If Does your child receive any other services at school? Yes Is Selected

Other services

Answer If Does your child receive any other services at school? Yes Is Selected

Please list those additional services at school:

Answer If 1. Does your child receive any other services at school? Yes Is Selected

How many hours of direct service does he/she receive for this service a week? (For example, 30 minutes a week would be .5hr; 60 minutes a month would be .25hr) If more than one additional services, please list each one with their respective amount of hours.

Answer If Does your child receive any other services at school? Yes Is Selected

If more than one service, please choose one to answer the questions below. Please indicate which service you are answering these questions about:
Do you feel your child should receive more of this service?

- Yes (1)
- No (2)

How satisfied are you with your child's services? Please choose from the following options:

- Very Dissatisfied (1)
- Dissatisfied (2)
- Satisfied (3)
- Very Satisfied (4)

As a direct result of this service:

<table>
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<th></th>
<th>Strongly Disagree (1)</th>
<th>Disagree (2)</th>
<th>Neutral (3)</th>
<th>Agree (4)</th>
<th>Strongly Agree (5)</th>
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<td>My child is doing better at home (1)</td>
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<td>My child is doing better at school (2)</td>
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</table>

Do you feel there are any services in the school your child is not receiving that you would like them to?

- Yes (1)
- No (2)

What additional services?

What services would you like your child to receive at school that they are not currently receiving?
Demographic Information  The remaining questions will ask you to provide us with some information about your child and family.

1. What is your child's age (in years and months)?

2. What is your child's biological sex?
   - Male (1)
   - Female (2)

3. What school district does your child currently attend school in?

4. What is the name of the school your child is currently attending?

5. What type of classroom does your child attend MOST of the day? (i.e., what setting are they in for more than 50% of their school day?)
   - General Education Classroom (1)
   - Resource Room (2)
   - Self-contained (3)

6. How satisfied are you with your child's current educational placement? Please choose from the following options:
   - Very Dissatisfied (1)
   - Dissatisfied (2)
   - Satisfied (3)
   - Very Satisfied (4)
Answer If Are you willing to complete the survey? Yes Is Selected

7. If you had to describe your child's current level of communication, would you describe it as:
   ☑ 1 - No spoken language or some single words (1)
   ☑ 2 - Mostly single words or some 2-3 word phrases (2)
   ☑ 3 - Mostly 2 or 3 word phrases with some grammatical mistakes (3)
   ☑ 4 - Mostly 3 or more word phrases with few grammatical mistakes (or mostly verbal) (4)

Answer If Are you willing to complete the survey? Yes Is Selected

8. Please indicate your estimated annual household income (For example, $40,000 per year):

Answer If Are you willing to complete the survey? Yes Is Selected

9. Please indicate your highest level of education:
   ☑ Less than High School Degree (1)
   ☑ High School Degree/GED (2)
   ☑ Some College (3)
   ☑ Associates Degree (4)
   ☑ Bachelor's Degree (5)
   ☑ Master's Degree (6)
   ☑ Doctorate/Professional Degree (7)

Answer If Are you willing to complete the survey? Yes Is Selected

10. Please estimate your total number of education in years (For example, if you completed two years of college, your total number of education in years would be 14 years):

Answer If Are you willing to complete the survey? Yes Is Selected

11. What is your child's specific diagnosis?
   ☑ Autism (1)
   ☑ Asperger's Syndrome (2)
   ☑ Pervasive Developmental Disorder - Not Otherwise Specified (3)
   ☑ Rett's Syndrome (4)
   ☑ Childhood Disintegrative Disorder (5)

Answer If Are you willing to complete the survey? Yes Is Selected

12. At what age was your child diagnosed with the above diagnosis?
13. The next question refers to where your child was diagnosed. This could be the local school district, your family doctor, a specialist, etc. Where was your child diagnosed with the above diagnosis?

14. Is your child currently taking any medications?
   ♦ Yes - how many? (1) _________________
   ♦ No (2)

End of Survey

Thank you for your time to complete this survey. Your information is greatly appreciated and will be used to inform researchers about services for children with autism in Kentucky.

Would you like to be entered in the drawing to win one of five literary resources?
   ♦ Yes (1)
   ♦ No (2)

Please provide your name, phone number and address to be entered into the drawing as this is how we will contact you if you won the raffle:

If you have questions about this study, you may direct them to the primary investigator, Melissa Murphy, at (606) 545-2372, or through her email address of maridd2@uky.edu. Additionally, if you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428.
Appendix D

Cover Letter Email for Listserv Participants

Melissa Murphy  
Department of Educational, School, and Counseling Psychology  
University of Kentucky  
PHONE: 606-545-2372  
E-MAIL: maridd2@uky.edu

You are being invited to take part in a research study about the education services your child receives in the public school setting. You are being invited to take part in this research study because you are the parent or caregiver of an identified child with an Autism Spectrum Disorder. We hope to complete telephone surveys with approximately 100 people, so your answers are important to us. Of course, you have a choice about whether or not to complete the survey, but if you do participate, you are free to skip any questions or discontinue at any time.

The person in charge of this study is Melissa Murphy of the University of Kentucky Department of Educational, School, and Counseling Psychology. She is being guided in this research by Dr. Lisa Ruble and Dr. H. Tom Prout.

The purpose of this research is to investigate the types of education services children with Autism Spectrum Disorders receive in the public school setting. Participants in this study will attend public schools in both rural and urban school districts. By doing this study, we hope to learn about the types of services children with autism receive in the public school system and parental satisfaction with these services.

You are being asked to complete a survey about the types of education services your child with autism receives in school only. The telephone survey will ask you about specific services your child receives in school, how often they may receive it, and your satisfaction with that service. Additionally, you will be asked to share your child’s Individualized Education Program. If you wish to share this information with the principal investigator, you may sign and return a release of records form, or share the document electronically. If you do not wish to share this document, you may still participate in the phone survey. Your participation in this study is completely voluntary and if at any point during the survey you do not wish to respond or share certain information, there will be no penalty for doing so.

If you agree to participate in this study, please respond to this email at the email address provided above and include a phone number and two alternate dates and time to contact you. Please provide a date and time between November XX to March XX, 2011. If the two dates and times are not available to the researcher, you will be contacted with an
alternative date and time. The phone survey will last approximately 30-minutes. If you have any questions concerning this project, the primary investigator’s information is provided above. Additionally, if you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428.

Thank you in advance for your assistance with this important project.
Cover Letter for Parent Group Participants

Melissa Murphy  
Department of Educational, School, and Counseling Psychology  
University of Kentucky  
PHONE: 606-545-2372  
E-MAIL: maridd2@uky.edu

You are being invited to take part in a research study about the education services your child receives in the public school setting. You are being invited to take part in this research study because you are the parent or caregiver of an identified child with an Autism Spectrum Disorder. We hope to complete telephone surveys with approximately 100 people, so your answers are important to us. Of course, you have a choice about whether or not to complete the survey, but if you do participate, you are free to skip any questions or discontinue at any time.

The person in charge of this study is Melissa Murphy of the University of Kentucky Department of Educational, School, and Counseling Psychology. She is being guided in this research by Dr. Lisa Ruble and Dr. H. Tom Prout.

The purpose of this research is to investigate the types of education services children with Autism Spectrum Disorders receive in the public school setting. Participants in this study will attend public schools in both rural and urban school districts. By doing this study, we hope to learn about the types of services children with autism receive in the public school system and parental satisfaction with these services.

You are being asked to complete a survey about the types of education services your child with autism receives in school only. The telephone survey will ask you about specific services your child receives in school, how often they may receive it, and your satisfaction with that service. Additionally, you will be asked to share your child’s Individualized Education Program. If you wish to share this information with the principal investigator, you may sign and return a release of records form, or share the document electronically. If you do not wish to share this document, you may still participate in the phone survey. Your participation in this study is completely voluntary and if at any point during the survey you do not wish to respond or share certain information, there will be no penalty for doing so.

If you agree to participate in this study, please contact the investigator at the above phone number or email address. You may also contact your parent support group leader, as he/she can contact the investigator. When contacting the investigator or your parent support group leader, please have in mind a phone number and two alternate dates and time to contact you. Please provide a date and time between November XX, to March XX, 2011. If the two dates and times are not available to the researcher, you will be contacted with an alternative date and time. The phone survey will last approximately 30-
minutes. If you have any questions concerning this project, the primary investigator’s information is provided above.

Thank you in advance for your assistance with this important project.
What Educational Services Does Your Child Receive in the Public School System?

Researchers at the University of Kentucky are conducting a research study on the types of education services that a child with autism receives in school only. This approximately thirty-minute phone survey between January and June will ask you about specific services that your child receives in school, how often they may receive it and your satisfaction with that service. Additionally, you can voluntarily share your child’s Individualized Education Program (IEP).

You may be eligible to participate in this study if you:
• have a child between the ages of 3-21;
• have a child that has been identified with Autism Spectrum Disorder; and
• have a child that attends public school in Kentucky.

After completing the survey, you will have the opportunity to share your contact information to be entered in a raffle for one of five literary resources on autism spectrum disorders.

For more information or to participate please contact:
Melissa Murphy, Doctoral Student
Department of Educational, School and Counseling Psychology
Phone: 606-545-2372
Email: maridd2@uky.edu

www.ukclinicalresearch.com
Appendix F

Email Correspondence sent to Directors of Special Education Listserv

I am conducting a study on the types of education services that a child with autism receives in Kentucky schools and am seeking your assistance in recruiting parent participants. Parents of children with autism will be asked to complete an approximately 30-minute phone survey related to the services their child receives in school.

Attached to this email is a study flyer that may be posted at schools, offices, etc. We would greatly appreciate any help you may be able to provide in disseminating information about the opportunity to participate in this study to the parents of children in your schools.

By completing this study, we hope to be better be able to serve the needs of students with autism in Kentucky.

If you have any questions about the study, or would like to be mailed copies of the study flyer, please contact:

Melissa Murphy, M.S.
maridd2@uky.edu
(606)545-2372

Thank you for your time and help with this important project.

Melissa Murphy, M.S.

___________________________________
Doctoral Candidate, School Psychology Program
Research Assistant
Collaborative Center for Literacy Development
References


Boyd, B. A., Odom, S. L., Humphreys, B. P., & Sam, A. M. (2010). Infants and toddlers


Journal of Clinical Child and Adolescent Psychology, 38, 439-450. doi:10.1080/15374410902851739


health care provider disparities in Alaska and New Mexico. Administration and Policy in Mental Health Services Research, 33, 504-507. doi:10.1007/s10488-005-0001-7


Liss, M., Harel, B., Fein, D., Allen, D., Dunn, M., Feinstein, C., Morris, R., Waterhouse,


U.S. Department of Education, Office of Special Education Programs (2004). *Individuals with Disabilities Education Improvement Act of 2004*. 20,


Vita

Melissa Ann Murphy
Place of Birth: Corbin, Kentucky

Education


Professional Positions Held

Mercer County Public Schools, Harrodsburg, Kentucky (Dr. Stacia Angell, Licensed Certified School Psychologist and Intern Supervisor). Pre-Doctoral Internship. 2012-2013.

Collaborative Center for Literacy Development, Lexington Kentucky (Dr. Susan Cantrell, Research Director). Research Assistantship. 2010-2013.


University of Kentucky Developmental and Behavioral Pediatrics, Lexington, Kentucky (Dr. Neelkamel Soares, Developmental and Behavioral Pediatrician and Supervisor). Advanced Practicum Student, 2010-2011.


University of Kentucky Graduate and Teaching Assistant, Lexington, Kentucky (Dr. H. Tom Prout and Dr. James Bhatt, Supervisors). Graduate and Teaching Assistant, 2009-2010.


Honors and Awards
Arlve and Ellen Turner Thacker Research Support Award, University of Kentucky, $450.00, 2012.
Phi Beta Kappa, University of Kentucky, April 2008.
Diachun Award, University of Kentucky, $1,000, April 2008
Mary Agnes Psychology Award, University of Kentucky, $1,000, May 2008
Arts and Sciences Development Award, University of Kentucky, August 2007.
Psi Chi Psychology Honor Society, University of Kentucky, August 2006 to May 2008.
Provost Governor’s Scholars Scholarship, University of Kentucky, August 2004-May 2008.
Dean’s List, University of Kentucky, December 2004-May 2008

Publications


Peer-Reviewed Presentations


