

Preparing Teachers in Autism Spectrum Disorders: Reflections on Teacher Quality

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ABSTRACT

PREPARING SPECIAL EDUCATION TEACHERS IN AUTISM SPECTRUM DISORDERS: REFLECTIONS ON TEACHER QUALITY

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The number of students receiving educational services under the classification of autism is increasing (Sack-Min, 2008; Center for Disease Control Autism and Developmental Disabilities Monitoring Network, 2007; Dymond, Gilson, Myran, 2007; Fitzgerald & Ryan, 2006). There is a need to provide better educational opportunities for individuals with autism spectrum disorders (ASD) in schools. One of the clearest needs in the field is to increase the number of well-prepared professionals to work with children and their families. (Simpson, LaCava, Graner, 2004; Palmer, Blanchard, Jean & Mandell, 2005). Learners with ASD can be expected to acquire vital skills, knowledge, and behaviors only when educators are able and willing to adopt and properly use effective practice strategies and methods (Lerman, Vorndran, Addison & Contucci Kuhn, 2004).

A Two-Phase Sequential Exploratory Mixed-Method design was used in this study. In the first qualitative phase, seven experts in the field of ASD and teacher education were interviewed to explore the phenomenon quality special education teachers of students with ASD, particularly the areas of knowledge, skill and characteristics. The results of this phase were used to develop a battery of measurement instruments that were used in the second, quantitative phase of the study. During the second phase, 112 special education teachers of students with ASD were surveyed, using the instruments developed in phase one, to investigate correlations and predictive relationships between the dependent variables knowledge of ASD, skill, characteristics quality, self-efficacy and

the independent variables number of courses in ASD, highest degree reported, type of certification/endorsement, number of years of professional experiences working with individuals with ASD, number of years of professional experience working with individuals with disabilities, number of students with ASD worked with in professional career, number of current students with ASD, number of years since received highest degree, and self-reported effectiveness of preparation.

Correlations and hierarchical regressions for all dependent variables were conducted. Results indicated the best predictors of knowledge of ASD for special education teachers of students with ASD were: number of courses in ASD; highest degree reported; number of years of professional experience working with individuals with ASD; and number of students with ASD worked with in professional career. The best predictors of skill were: number of courses in ASD; number of years of professional experience working with individuals with ASD; and self-reported effectiveness of preparation. The best predictors of self-efficacy were: number of courses in ASD and number of years of professional experience working with individuals with ASD. Lastly, the best predictors of quality special education teachers of students with ASD were determined to be the number of courses in ASD and self-reported effectiveness of preparation

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CHAPTER I

INTRODUCTION

The definition of autism spectrum disorders found in the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) defines Autistic Disorder as a qualitative impairment in social interaction, a qualitative impairment in communication and a restricted, repetitive and stereotyped pattern of behavior, interests and activities (APA, 1994). A similar definition can be found in the Individuals with Disabilities Education Act (IDEA). This definition defines “autism” as a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, which adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences (IDEA, 2004). While the two definitions are similar, they differ in purpose. The DSM IV (1994) definition is used for diagnostic purposes and the definition found in IDEA (2004) is used for classification purposes. The terms “Autistic Disorder”, “ASD”, “autism spectrum disorders” and “autism” are used interchangeably in the literature to describe individuals who meet either set of criteria.

States have reported a rise in the number of students with autism spectrum disorders (ASD) demanding autism-specific services (National Research Council (NRC), 2001). The number of children diagnosed with autism served under the Individuals with Disabilities Education Act (IDEA, 2004) has increased by more than 500 percent in the last decade (U.S. Government Accountability Office, 2005). Education is currently

the primary intervention for individuals with ASD. The goals, methods and resources available to serve individuals with ASD vary considerably from state to state and school system to school system. Parents continually express concern regarding the availability of services and the qualifications of staff serving their children (Dymond, Gilson & Myran, 2007). With the increase in students receiving services under the classification of autism and the involvement of the court system, the quality of educational opportunities and educational methodologies has come into question (Simpson, LaCava & Graner, 2004).

There is a need to provide better educational opportunities for individuals with ASD in schools. One of the clearest needs in the field is to increase the number of well-prepared professionals to work with children and their families. The nature of ASD has significant implications for approaches to education and intervention (Simpson et al., 2004). A crucial factor affecting the delivery of services is the presence of adequately trained personnel (Fong, Wilgosh & Sobsey, 1993; Scheuermann, Webber, Boutot, & Goodwin, 2003; Simpson, 2004). Frequently, individuals who are responsible for providing services to children with ASD lack specialized training (Dymond, Gibson & Myran, 2007).

Statement of the Problem

There is a shortage of teachers who are qualified to serve the needs of students with ASD (Simpson, 2004; Sack-Min, 2008) and there is every reason to believe that this trend will continue. The number of students with ASD receiving education services has increased exponentially in the last decade (Center for Disease Control, ADDM, 2007) and teachers continue to struggle with teaching these students. There is research on special education teacher preparation, but few studies indicating what special education teachers need to know to effectively teach students with ASD.

There is little research supporting the effectiveness of programs providing the tools special education teachers need to be effective teachers for students with ASD. Currently, there are no studies that have identified the best predictors of special education teacher quality, using a broad-based teacher education framework. The research on teacher quality is not specific to teachers of students with ASD. There is a lack of research linking education and experience to positive outcomes for teachers and students diagnosed with ASD. The effective elements of special education preparation programs and special education teacher experiences must be identified to ensure the adequacy of preparation and subsequently the quality of the education of students with ASD.

Purpose of the Study

The core of an appropriate education for any student with a disability is the personnel providing the services. The quality of educational services for children and youth with exceptionalities resides in the abilities, qualifications, and competencies of the personnel who provide the services (Council for Exceptional Children, 1988). This study addresses special education teacher preparation and experience in the area of ASD. An exploratory mixed methods design is used. Phase One of this study describes the qualities deemed essential for special education teachers of students with ASD by experts in the field of teacher education and ASD. Data from Phase One was used to develop a battery of measurement tools used in Phase Two of the study. Phase Two of this study investigates predictors of knowledge, skill, quality and self-efficacy of special education teachers of students with ASD.

CHAPTER II

REVIEW OF LITERATURE

The literature review is divided into three main sections. The first section contains a brief history and theoretical framework of teacher education and special education teacher preparation. The first part of this section contains a historical background of special education teacher preparation and applicable special education laws. The following section focuses on methods of teacher preparation, differences in general education and special education teacher preparation, measurement and critiques of special education teacher preparation programs and special education teachers and the conceptual understanding of preparedness. Section two of the literature review concentrates on the education of students with ASD. The third section of this literature review focuses on teacher preparation and certification in relation to educating students with ASD. The topics discussed in part three are personnel knowledge of ASD and personnel preparation in the education of students with ASD. This chapter concludes with a summary and rationale for the study and the research questions.

History, Laws and Methods of Preparing

Special Education Teachers

The link from teacher education to educational laws is provided by an examination of the history of the topics. Reforms to teacher education often begin with a response to critiques and result in the federal government, private foundations and state governments spending millions of dollars and devising new laws and regulations to prepare a new generation of teachers (Fraser, 2007, p. 5).

History of Teacher Education

Although the concept of teaching as a profession is fairly new, most teachers in industrialized nations today are college or university educated (Labaree, 2004, p.20). The amount of preparatory training, however, varies greatly. In the United States, the first graduate program in education was established at New York University in 1887. In the following year a teacher-training school that is presently known as Teachers College, Columbia University was founded. Since the establishment of those two institutions, graduate study in education has expanded rapidly. Certification requirements for teaching have advanced with educational opportunity, although they vary widely from country to country. In the 1930s it was found that some three-quarters of the nation's teachers had at least two years of education beyond high school. It was not until the late 1950s that the standard moved to a college-degree requirement for all teachers (Fraser, 2007, p. 189).

A re-evaluation of teacher education began in the 1950s. The desperate need for educated teachers led to a chance to improve teacher preparation. The foundation of this movement was collaboration. Up until this point, teacher education was viewed as a separate entity from liberal studies and the arts and sciences. Teacher education needed to include four interrelated parts: liberal education; an extended knowledge of the subject or area taught; professional knowledge, as distinguished from professional skills; and skills to manage a classroom (Fraser, 2007, p.198). These standards of teacher education continue to guide preparation in most colleges and universities.

Special Education Laws

The most significant watershed in U.S. special education history was the advent of Pub. L. No. 94-142 in 1975. Pub. L. No. 94-142 codified categories of exceptionality and processes related to the service of children and youth with disabilities. The education

of children and youth with disabilities prior to Pub. L. No. 94–142 (Education for All Handicapped Children’s Act of 1975) was largely uncoordinated and devoid of a united national voice. Educational efforts were generally the purview of scattered professionals, parents, and advocates whose efforts were crucial in maintaining the visibility of children with disabilities. Public Law No. 94–142 radically transformed educational approaches and considerations for children and youth with disabilities and resulted in profound departures from previous educational configurations (Mostert & Crockett, 2000).

Special Education Teacher Education

With graduates from varied programs going on to teach in a multitude of placements and to teach students with differing disability classifications, of different ages and ability levels and within multiple service delivery models (Sindelar, Bishop, Brownell, Rosenberg & Connelly, 2005), it does seem logical that instruction be as universal as possible. But, by definition, students who receive special education services do not learn by a universally applicable model. Following a generalized teacher education approach, it can be questioned if programs are teaching teachers to teach a variety of learners or if learning a little about each subject is enough to demonstrate competence in any area.

Increased government involvement following initiatives such as No Child Left Behind (NCLB), placed pressure on teachers and teacher education programs to improve student outcomes. The primary focus of NCLB is to ensure that all students in every public school achieve important learning goals while being educated in safe classrooms by well-prepared teachers. This powerful law profoundly changed the ways that educators work with students in general and special education. It accomplished this by holding states, school districts, principals, and teachers accountable for making

meaningful improvements in students' academic performance (Yell, Drasgow & Lowery, 2005).

The goal of special education teacher education programs is to produce knowledgeable and capable instructors who are able to differentiate instruction to meet the needs of their students. It is the responsibility of the teacher education program to provide adequate, if not exceptional programs to meet the needs of the students they serve. Individualized teaching skills are at the heart of special education, and individualized learning needs of the students are at the center of their practice (McCormick, 2005). But, typical university-based special education teacher education programs are general in nature, providing the basic tools of classroom management, goal writing and educational laws (Brownell, Ross, Colon & McCallum, 2005). Special education programs tend to focus more on generic pedagogy e.g.: instructional methods, assessment and Individual Education Plans. Due to the enormous amount of information that must be incorporated into a generic special education program of study, individuals may not receive concentrated instruction in any specific disability area (Cooley-Nichols, 2004).

While curricula and philosophies differ widely among education programs, there are overall commonalities. In general, special education teacher education programs consist of the following: (1) general education courses, (2) special education courses, (3) method courses, (4) concurrent field experiences, and (5) student teaching with periodic seminars for reflection and learning (Goodlad & Field, 1993). Although special education teacher education programming supports developing the knowledge, skills and beliefs pertaining to children with a variety of disabilities, training is neither intensive nor extensive with regard to specific disorders (Cooley-Nichols, 2004).

There are a wider variety of program philosophies among special education programs than in general education programs. Exemplary programs in general education place a heavier emphasis on subject matter pedagogy than in special education counterparts which tend to focus more on generic pedagogy (Brownell et al., 2005). Colleges of education and colleges of arts and sciences in teacher education institutions are gradually becoming aware that they are judged in no small part by the quality of their graduates (American Association for Colleges of Teacher Education (AACTE), 2004). In many cases they are beginning to see that in order for the teachers that they produce to be successful, they must not only master both content and pedagogy, but must do so in a way that integrates the two. The traditional undergraduate model in which education students complete two years of content as preparation prior to beginning any pedagogical training is no longer producing successful teachers. Pre-service teachers need to see appropriate pedagogies modeled in their content area classes as well as in their education classes (Brantley-Dias, Calandra, Harmon, & Shoffner, 2006).

Evaluating special education teacher education programs. There are enormous burdens placed on beginning special education teachers. Many feel unprepared to teach academics to students with disabilities, to manage behaviors and to collaborate with other professionals and parents (Butcher Carter & Scruggs, 2001). Beginning teachers in special education are faced with challenges that demand highly developed professional skills including effective strategies for adapting and implementing assessment and instruction for learners with special needs and effective classroom management skills. Both areas are commonly discussed in traditional special education preparation programs. However, the actual skills a beginning special education teacher needs extend well beyond these basics. Beginning special education teachers need well-developed

interpersonal skills that can be effectively employed with parents and colleagues (Butcher Carter & Scruggs, 2001). They must be able to improvise when resources are scarce and find innovative solutions to unique problems. Additionally, special education teachers need to be taught how to advocate for their students.

First year teachers experience a wide variety of educational settings and disabilities, which often do not match knowledge obtained in their preparation programs. Some teachers do report completing teacher education programs that were relevant in experience and knowledge for their current placements, but most do not (Mastropieri, 2001). First year teachers report having the most difficulty providing a sound education for those with disabilities they did not receive experience with during university preparation programs. These situations illustrate issues concerning adequate preparation of special education teachers and a match between preparation programs and job selection and the uncontrollable factors of (a) school districts' assignment of students with varying disabilities to teachers without preparation and teaching credentials in these areas and (b) an individual's choice to accept a position for which he or she is unprepared (Mastropieri, 2001).

In a landmark study, researchers examined data from a 1998 survey of nearly 3000 beginning teachers in New York City regarding their views of their preparation for teaching, their beliefs and practice, and their plans to remain in teaching. The findings indicate that teachers who were prepared in teacher education programs felt significantly better prepared across most dimensions of teaching than those who entered teaching through alternative programs or without preparation (Darling-Hammond, Chung & Frelow, 2002). Many teachers report that their preparation programs did not enable them to develop all of the skills needed to work effectively with their students (Ashton, 1996).

Critiques of special education teacher education. Brownell et al. (2005) examined the current literature to determine common features of special education programs. To identify universal characteristics, the researchers examined program descriptors and compared the results from what the literature claims are best practices. In 54% of the reported programs, well-designed field experiences were evident. All program descriptions emphasized collaboration, but differed in the definition of collaboration. Eighty-one percent of the program descriptions described how personnel collected information for evaluating the quality of the students, the effectiveness of the program, or both. Evaluation methods, however, varied widely and focused on different outcomes, including direct assessment techniques, such as observation of teaching performance, and indirect assessment techniques, such as student satisfaction, faculty conceptual understanding of the program, and cooperating teachers' and administrators' conceptual understanding of the student-teacher and program. A majority of the programs emphasized a positivist or constructivist orientation to teacher acquisition of knowledge. Brownell et al. (2005) concluded carefully designed field experiences that allow prospective teachers to integrate information they are acquiring in coursework may enable better knowledge and skill development in beginning teachers than programs that do not have this integration. Additionally, it is reasonable to assume that programs that facilitate a high degree of faculty and student collaboration and focus on instructional methods and knowledge for addressing student diversity will result in better outcomes for beginning special educators (Brownell et al., 2005).

Mostert and Crockett (2000) contend that special education must shoulder some of the blame for why critics perceive the field as irrelevant or even meaningless. The detractors are not entirely wrong when they assert what Gallagher (1990) called "the

well- established flaws of the special education status-quo”, that the definitions and explanations of some disability categories are vague, that too few students in specialized settings ever return successfully to general education classrooms, or that many students are less than successful after they leave the confines of the classroom for the real world.

The federal government has played a significant role in the education of special education teachers for almost five decades. For the majority of that time, the focus in personnel preparation was almost exclusively placed on maintaining an adequate supply of new teachers (Smith, 2006). Annually, the U.S. Department of Education, Office of Special Education Programs (OSEP), spends approximately \$90 million to increase the number of special education teachers available to serve students with disabilities. These funds are in addition to any incentive programs that states have to increase the number of teachers in critical shortage areas (Brownell, Hirsch & Seo, 2004).

Now, the government’s involvement in the education of all students has increased. In an effort to improve educational outcomes, the US Congress passed the 1997 amendments to the Individuals with Disabilities Act (IDEA), and subsequently the 2004 reauthorization. An emphasis has been placed on the need to support quality and intensive professional development for personnel involved with special education and related services. Availability of qualified personnel has been a persistent challenge, especially in special education (Katsiyannis, Zhang & Conroy, 2003).

In addition to the issue of highly qualified teachers, the evolving political and media-centric environment in which special education instruction now occurs places emphasis on effective instruction. This evolution has caused significant waves in the field and resulted in marked changes. Those in the field of special education are now confronted with additional areas of change: changes in educator preparation; changes in

the political context; and changes in children, youth, and families (Bauer, Johnson & Sapona, 2004).

Special Education Teachers

Goodwin and Oyler (2008) defined learning to teach and teacher assessment as a series of inputs and outputs. These include academic credentials and professional knowledge, such as grade point average (GPA), content majors, subject matter knowledge, pedagogical knowledge, field experience and instructional methods. Performance on exams, student outcomes and work samples are considered outputs or measures of teacher quality (Goodwin and Oyler, 2008, p. 468). Variations in the preparation of special education teachers along with student outcomes differences necessitate additional research in the applicability of generic teacher quality measures to special education teacher quality.

Measuring special education teacher quality. In an attempt to identify characteristics of expert special education teachers, Stough and Palmer (2003) explored instructional techniques in an authentic environment. The researchers used a simulated recall procedure to examine the instructional decision making of 19 special education teachers. These educators were deemed experts by special education supervisors who (a) had at least five years of teaching experience; (b) were viewed as superior special education teachers; (c) were recognized by their peers, the parents, or the community as being effective teachers; and (d) instructed students who generally made excellent progress in achieving their Individualized Education Program objectives. Qualitative analysis of the data indicated that a highly detailed and extensive knowledge base about students enabled these teachers to (a) assess their students' academic and emotional states of mind and (b) effectively address the students' needs within the classroom. The authors

suggested that what is central to effective special education instruction is the knowledgeable, reflective, and concerned responsiveness of teachers to individual students. The study found expert teachers were fundamentally concerned about their students' performance in school, and this concern affected how teachers perceived and responded to their students. Teacher concern was specifically directed at students' academic, behavioral, and emotional progress, as well as at students' abilities to function independently in the classroom. Instructional decision making by these teachers relied heavily upon their prior knowledge about educational practice and upon their background knowledge of student characteristics. Their knowledge about students' characteristics included extensive data regarding learning styles, prior knowledge, behavioral patterns, preferences, emotionality, home environments, and diagnostic categories. Another important knowledge area was educational practice, which included information concerning the curriculum that they were using, and the overall school culture both within their own classroom and in other classrooms. Along with their knowledge about individual student characteristics, the teachers possessed more general school-related knowledge that contributed to their complex and rich knowledge base. Knowledge of curriculum and of the school culture strongly influenced how the teacher made decisions about what was the most appropriate course of action to support student learning. For example, teachers reflected upon their knowledge of the curriculum and applied pedagogical knowledge in order to modify student tasks. Teachers specifically commented upon what was taking place in the general education classroom, and they considered how the instruction presented in the general education classroom affected students' learning in the special education classroom. The findings suggest that teacher

education programs should focus on modifying how special education teachers think about instruction as well as what interventions they implement (Stough & Palmer, 2003).

Part of the problem with measuring teacher quality is the term lacks clear meaning (Kennedy, 2008). There is no concise, measurable definition of teacher quality. Therefore, no clear method to measure the effect of the various inputs into teacher education and training has been established. Kennedy (2008) suggests that recognizing all aspects of teacher quality involve looking at the various “qualities”. Understanding teacher qualities and their relation to each other can lead to improvement in teacher education. Kennedy (2008) suggests that the following qualities should be judged: beliefs, attitudes and values; personality traits; knowledge and expertise; credentials and certifications; practices outside the classroom; classroom lessons; student learning activities; effect of student learning; and effects on student motivation. This comprehensive list includes many performance qualities but does not propose that teacher education can have an effect on teacher quality.

Kennedy (1992) identified five dimensions of general education teacher quality: credentials; tested ability; demographic representation; professionalism; and classroom teaching practices. Carlson, Hyunshik and Schroll (2004) developed a model of teacher quality in special education based on the five dimensions (Kennedy, 1992). The study used confirmatory factor analysis to test data from a national data set and supported previous theoretical work on teacher quality in general education. The loading of the first factor, experience (years teaching and years teaching special education) was found to be very high. The second factor, credentials (none, emergency, certified out of field, fully certified) was found to be most valuable when the credentials matched the field in which the teacher worked. The third factor, self-efficacy was evaluated with a scale to measure

teacher conceptual understanding of their skill in completing a variety of tasks related to their work developed from a subset of the CEC Standards for Entry (2003). The second measure used was teachers' assessment of their own job performance and the third summarized several items designed to measure teacher beliefs. The factor loading for all three self-efficacy variables was reasonably high. The fourth factor, professional activities measured the number of professional journals the teacher read, the number of professional associations to which they belonged and the number of times per month colleagues asked them for professional advice. The three variables had moderate and equal factor loadings; their variances were largely unexplained by the professional activities factor. The factor, as a whole, did emerge as a strong predictor of teacher quality. The fifth factor, selected classroom practices involved measuring the use of best practices in teaching reading, managing behaviors, and promoting inclusion in addition to the extent to which teachers individualized reading instruction. The reading scale and inclusion scale had reasonable factor loadings, but the other variables were found to have small factor loadings (Carlson et al., 2004).

Certification of special education teachers. Once accountability was established as a cornerstone of current education policy, it was only a matter of time before teacher education programs would be held to the same standard as K-12 schools. Teacher education programs are required to demonstrate impact on important educational outcomes such as student learning. To the extent that public policy reflects the sentiment of the citizenry, it is clear that the public no longer accepts on faith the proposition that teacher education makes a difference (Sindelar et al., 2005).

For states to be able to assure the public that every licensed special educator is prepared to practice safely and effectively, states must require all special education

teachers to complete a thorough program of preparation, and demonstrate through rigorous performance measures, that they can apply the highly-specialized knowledge and skills that are needed to effectively meet the needs of students with disabilities (McCormick, 2005). Evidence of this practice is scarce. Special education teacher education programs are varied, and while most follow strict standards set forth by the National Council for Accreditation of Teacher Education (NCATE), there is no commonality among the qualifications for specific teaching techniques. Teacher education programs require multiple assessments of candidates as they progress through courses and clinical experiences, including passage of admission and exit exams, content area exams, demonstration of classroom teaching skills, and rigorous review of content suitability for teaching (AACTE, 2004).

In April 2000, the American Federation of Teachers listed one of the problems in teacher education as inadequate agreed-upon standards for entering and exiting teacher education programs (Stevens, 2001). Passing the state certification exams is the only consistent requirement of special education teachers, but with significant variations among states. State boards of education and state legislative bodies have passed laws mandating teacher competency testing (Conderman, Katsiyvannis & Franks, 2001). A pencil and paper test is the most determinate factor in becoming a certified special education teacher. There is nothing wrong with the concept of a certification exam. However, when the exam is held in such a high regard, surpassing that of a sound education, there is an issue. To assume that passing a paper and pencil test that special educators have the knowledge and skills to teach the broadly diverse students with disabilities is an error (McCormick, 2005).

Special education licensure varies from state to state. Some states offer, and require certification in discrete disability categories, where others require non-categorical, or cross- or multi-categorical certification (Scheuermann, Webber, Boutot, & Goodwin, 2003). Those that require non-categorical certification may or may not offer additional disability-specific licensure. Because of the nationwide teacher shortage and because special education teachers seldom teach “pure” disability categories (e.g. students with learning disabilities only), the trend appears to be toward non-categorical or multi-categorical licensure (Mainzer & Horvath, 2001; National Information Center for Children and Youth With Disabilities, 1997). With broad licensure categories, or lack of categories, the ability to teach specific disabilities is called into question.

Conceptual understanding of preparedness. Related to the concept of teacher knowledge affecting student outcome is teacher self-efficacy, particularly pertaining to their preparedness to teach. Teachers’ sense of efficacy is related to their beliefs and understanding about how well they were prepared. Those who enter teaching with little professional education have greater difficulties in the classroom and they tend to leave teaching at higher rates than those with professional preparation. Based on their graduates’ feelings of preparedness, teacher education programs do differ in the quality of preparation they provide, although programs adequately prepared them for certain teaching tasks, such as using technology and teaching English language learners (Darling-Hammond, 2003). The variability among teacher education programs in terms of graduates’ conceptual understanding of preparation suggests the importance of ensuring that programs be expected to evaluate and improve their work. Measures to improve teacher education programs will do little to improve teacher quality if states allow schools to hire teachers without appropriate, comprehensive preparation, as more

than 30 currently do. Investments in teacher education are necessary to decrease the significant number of students who are being taught by teachers who are inadequately prepared to help them learn. If our society expects all students to learn at high levels, as current rhetoric suggests, a more deliberate set of strategies for ensuring that their teachers gain access to relevant knowledge will be needed (Darling-Hammond, 2003).

Autism Spectrum Disorders (ASD)

The diagnosis of autism and related conditions (the PDDs or ASDs) has become increasingly standardized, and at the same time the conceptualization of these disorders has become broader. Identifying the defining deficits of ASD has become easier with agreement between DSM-IV (APA, 1994) and ICD-10 (WHO, 1992) for most of the autism-related categories, access to standardized instruments such as the Autism Diagnostic Interview-Revised (ADI-R: Le Couteur, Lord & Rutter, 2003) and the Autism Diagnostic Observation Schedule (ADOS: Lord, Risi, Lambrecht, Cook, Leventhal, DiLavore, Pickles & Rutter, 2000). Standardized diagnostic measures for ASD, when they are used and reported appropriately, mean that failures to replicate neurobiological or experimental results can less easily be attributed to obvious differences in how autism is defined. Fifteen years ago, participants in studies would have been classified as meeting or not meeting DSM III–R or ICD-9 criteria, without a standard method of clarifying the nature of differences between the groups. Now the ability to quantify diagnostic characteristics also allows comparison of non-standardized measures to measures that are widely understood and accepted, and allows inclusion in samples of individuals who just miss categorical cut-offs (Volkmar, Lord, Bailey, Schultz & Klin, 2004).

The number of individuals diagnosed with autism spectrum disorders (ASD) is increasing. The Center for Disease Control's most recent Autism and Developmental Disabilities Monitoring Network (ADDM) data show that between 1 in 80 and 1 in 240 children have ASD. These results reflect data collected in multiple communities throughout the U.S. from 2006 (CDC, 2007).

Education of Students with ASD

In a large-scale study, Yeargin-Allsopp, Rice, Karapurkar, Doernbery, Boyle and Murphy (2003) found that more than 75% of children with ASD were identified through the school system. Additionally, the researchers found that 18% of children who qualify for a diagnosis of an ASD, according to study criteria, were receiving special education services but had not been recognized as having the disorder by the school.

ASD has been the subject of continual and wide-ranging dispute since it was first described in detail by Leo Kanner in 1943 (Kanner, 1943). Improved understanding of this complex disorder has emerged over the past two decades, and, despite the recent intense focus on ASD, it continues to be an art and science in rapid evolution (Filipek, et al., 1999). For a child with an autism disorder, school can be very challenging. The elementary years bring challenging expectations that accompany increasing physical and behavioral maturity (Loveland & Tunali-Kotoski, 1997).

The confluence of a variety of factors, including not only vocal parental advocacy and rising identification rates but also the inclusion movement and limited funding for special programs, has put increased pressure on school districts to develop defensible procedures for determining legal eligibility and providing appropriate programs for children and youth with autism (Fogt, Miller & Zirkel, 2003).

Teachers work closely with a child at a time and under circumstances when typical features of ASD are most obvious (Helps, Newsome-Davis & Callias, 1999). Students with ASD, especially those who are low functioning, exhibit unique characteristics that pose challenges for teachers. They typically present with deficits in cognition, communication, and socialization and are unmotivated to interact with others or the environment in general (Scheuermann et al., 2003).

While there are no behaviors that all students with ASD present, there are broad categories of educational deficits that can be outlined by chronological age. By age 6, children with ASD have already begun to diverge away from one another according to characteristics, such as degree of language delay and intellectual deficit. It can be expected that students with ASD, but without an intellectual disability, will respond differently to the challenges of the school year. Often the behavior of a child with ASD in the school years is more obviously discrepant from that of nondisabled peers than it was earlier in life. A lack of normal peer relationships, the absence or paucity of pretend play, the presence of repetitive behaviors or focused interests and a marked impairment of social relatedness become clearly delineated in contrast to normative expectations for children in the age group. The inability to follow directions, to initiate interactions or to inhibit motor stereotypes, is more obvious in eight-year-olds than one-year-olds. There are specific developmental issues for the school age child with ASD. Deficits in social behavior and social understanding are particular characteristics of ASD. During the period from six years of age to 12 years of age, the child with autism spectrum disorder faces transitions to new learning environments, contact with new peers and adults and departures from familiar places and routines. These changes affect many domains of functioning, as the child is required to adapt to more complex and demanding social

environments, to learn more sophisticated skills, to communicate at a higher level, and to process more information (Loveland & Tunali-Kotoski, 1997).

Teacher Preparation and Certification in ASD

Several states have responded to IDEA and/or to the increase in numbers of students with autism by offering an autism endorsement. Project Forum at the National Association of State Directors of Special Education (NASDSE) conducted analyses as part of its Cooperative Agreement with the U.S. Department of Education's Office of Special Education Programs. Project Forum identified seven states that appeared to offer autism endorsements. Follow-up calls conducted by Project Forum to the seven states revealed that one of the states did not in fact offer an autism endorsement. A second state (Texas) reported that although it once offered an autism endorsement, the endorsement was no longer available. The remaining five states – Delaware, Florida, Michigan, Nevada and West Virginia – do currently offer endorsements in the area of autism (Muller, 2005).

States with ASD Certification/Endorsements

In the early 1980s, an autism endorsement was first authorized in Michigan and a combined endorsement for autism and severe disabilities was first authorized in Delaware. In the early 1990s, West Virginia offered a combined behavior disorders and autism endorsement and in 2003 autism became an independent endorsement within the state. Nevada first authorized an autism endorsement in 1996 and Florida first authorized an autism endorsement in 2002 (Muller, 2005).

Prior to introducing the autism endorsement, states reported that teachers working with students with autism were required to have a variety of endorsements. West Virginia required teachers of students with autism to have an endorsement for “emotionally

handicapped.” Florida, Michigan, Nevada and Delaware all permitted a range of endorsement options (Muller, 2005).

All five states reported that the autism endorsement was intended for special education teachers. In Michigan, West Virginia and Nevada, the endorsement can function as either a “stand alone” or “add-on” endorsement. If a student chooses to complete the autism endorsement as a stand alone endorsement, additional special education coursework is usually required. Delaware and Florida both reported that their autism endorsements function exclusively as an add-on to certification in special education and require additional coursework in autism. Three states reported that their autism endorsement was considered a requirement to be a “highly qualified” teacher, at least within certain contexts. For instance, Michigan requires all educators teaching in autism programs to have an endorsement; Nevada requires that when 51 percent or more of a teacher’s caseload consists of students with autism, then the teacher must be endorsed; and West Virginia requires that all teachers teaching students with autism, in either generic special education classrooms or special classrooms for students with autism, have an endorsement. Florida, which most recently introduced its autism endorsement, still has not determined in which contexts it will be considered a requirement to be highly qualified. Although Delaware does not currently require the autism endorsement at the state level, a number of local education agencies throughout the state have put requirements into place at the local educational agency level (Muller, 2005).

As with special education teacher education programs in general, there is variation in the requirements for autism endorsements. Michigan has created an Internet-based program for its autism endorsement. This program is a collaborative among four

universities throughout the state offering coursework for the autism endorsement via Internet-based programs with the exception of the practicum requirement. The state universities, Central Michigan University, Grand Valley State University, Northern Michigan University, and Oakland University have joined together to form the ACE (Autism Collaborative Endorsement). First offered in January 2002, ACE offers an Internet-based second endorsement program for teachers of students with autism. The ACE program requires the completion of 18 credit hours of coursework through the approved plan of study. This includes five courses covering the topics:

collaboration/consultation; instructional interventions; language/communication; behavioral issues/interventions; and a practicum. Candidates complete the application and register for courses online through the ACE web site. The Michigan Department of Education, Office of Special Education and Early Intervention Services (MDE, OSES-EIS) verifies that completion of the plan of study for the endorsement and works with the Office of Professional Preparation in awarding the endorsement (Autism Collaborative Endorsement, 2008).

Delaware offers an advanced certificate as Teacher of Students with Autism or Severe Disabilities. Applicants must possess a valid Delaware Teacher's License prior to applying for this advanced certificate. The State mandates specific coursework for the certificate: introduction and survey of autism and severe disabilities; methods of instruction and functional curriculum for students with autism or severe disabilities; functional communication training; advanced practicum in behaviorally based teaching techniques and one related elective. The State recommends all teachers educating students with ASD, hired after 2006, retain this certificate (Delaware Professional Standards, 2007).

West Virginia has one Institution of Higher Education that offers training to complete the state requirements to be an autism mentor. The Marshall University College of Education and Human Services Autism Training Center offers training, information and support for families and educators. The trainings offered cover a wide variety of subjects including: instructional strategies; functional assessment and plan development; teaching communication and social skills; developing and implementing visual strategies; curriculum modifications; and transition strategies (Marshall University College of Education and Human Services, 2008).

In 2001, Nebraska's Special Education Advisory Council, Ad Hoc Committee on Autism, published a report describing the state's plan to educate students with ASD. Included in this plan were guidelines for professionals working with the population. Professionals providing direct services to students with ASD must be "trained and skilled". The Nebraska Department of Education supports the establishment of statewide graduate level training in the area of ASD. The Department of Education currently collaborates with the University of Nebraska to provide the statewide delivery of coursework (Nebraska State Plan for Children with Autism Spectrum Disorders, 2001).

Nevada's requirements for professionals working with students with ASD are detailed. Before teaching pupils, ages 3 to 21, inclusive, who have autism, a person must hold an endorsement in autism. To receive the endorsement, the person must: complete a program of preparation for teaching pupils who have autism, which has been approved by the Board; hold a license or certificate, issued by another state, with an endorsement to teach pupils who have autism; hold a bachelor's or master's degree in the education of pupils who have autism and have completed eight semester hours of student teaching, equivalent field experience or one year of verifiable teaching experience in special

education; or meet the requirements of a related generalist endorsement and have at least one year of verifiable teaching experience with pupils who have autism. Coursework to receive the endorsement in autism or to be considered exempt by meeting the generalist requirements must include: behavior management; speech and language development; assistive technology or alternative/augmentative communication; characteristics of pupils who have autism; and curriculum development or methods and strategies for teaching pupils who have autism (Qualifications for Teaching Students with Autism in Nevada, 2008).

While Florida's endorsement is the newest, there are many requirements and a variety of colleges and universities offering coursework in autism and related disorders that will lead to certification. Similar to other state's requirements, Florida requires a minimum of a bachelor's degree. The State requires 12 credit hours in the following topics: the nature of autism; assistive and instructional technology including augmentative and alternative communication; behavior management and positive behavior supports; assessment and diagnosis of autism; and field-based experience with students with autism. Florida has more public colleges and universities offering courses to meet these requirements than any other state (Florida Department of Education, Specialization Requirements for Endorsement in Autism, 2007).

Delaware's coursework is less autism-specific, since the endorsement is for both autism and severe disabilities. Michigan differs from the other four states by requiring specific content knowledge, but no specific coursework. Unlike the other states, a test is administered as part of the endorsement process and institutions of higher education recommend candidates to the state for endorsement (Muller, 2006).

Due to the fact that in some states the autism endorsement has been around for almost 20 years and in other states the autism endorsement is very recent, the numbers of people who have received the autism endorsement varies significantly from state to state. Delaware reported that more than 450 teachers have received the endorsement since its inception in the early 1980s (though because the endorsement is a combined autism/severe disability endorsement, it is hard to know exactly how many teachers with the endorsement actually work with students with autism). Michigan reported that more than 250 teachers have received an autism endorsement and West Virginia reported that at least that number have received either the combined behavior disorders/autism endorsement or the stand-alone autism endorsement (available since 2003). Nevada reported that more than 150 teachers have received the endorsement since its inception in 1996. Florida, which only introduced the autism endorsement in 2002, reported that 10 teachers have received the autism endorsement (Muller, 2005).

Even with the autism endorsement and an increasing availability of IHE programs offering necessary coursework, states report that recruitment and retention of adequately prepared personnel remains a challenge, particularly in rural areas. Some feel that the autism endorsement may ultimately contribute to the teacher shortage in states where the endorsement is a requirement to be highly qualified. Some speculate that the endorsement has created more specialized programs because if a teacher has an autism endorsement, it is easier to cluster all students with autism on one teacher's caseload. A number of teachers complete the requirements for the autism endorsement but choose not to apply for the endorsement because they do not want to be assigned to autism programs associated with a disproportionately high number of due process hearings. There is a dearth of faculty with expertise in autism, and recruiting efforts have met with limited

success at several IHEs offering and/or planning to offer preparation programs leading to the autism endorsement (Muller, 2005).

States Offering Coursework in ASD

There are states that are currently researching how their educational system meets the needs of students with autism spectrum disorder. In 2006, Alaska's Governor's Council on Disabilities and Special Education published a report focusing on the needs and issues associated with students with ASD. This preliminary report addressed the need for more providers who are experts in the field (Fitzgerald & Ryan, 2006). This report mimics the earlier reports in Michigan and Nevada. Once the need was established a task force was formed to find a way to meet the need, such as qualified, trained and experienced professionals to work with students with ASD.

Similarly, in 2004, New Jersey published Autism Program Quality Indicators (APQI). This was a self-review and quality improvement guide for programs serving students with ASD. New Jersey has provided services for students with ASD since the 1970's and prides itself on the progressive nature of programming and services provided.

New Jersey's APQI, describes the current status of programming and includes recommendations for the future. One section was devoted to staff. Staff qualifications, experience, and expectations play a pivotal role in the education of students with autism and the success of the program. Similarly, the administration responsible for supporting teachers can set the stage for success. Given the many challenges of effectively educating students with ASD and the crucial role of personnel, the training and professional development of teachers, paraprofessionals, and administrators is of paramount importance. At a minimum, these personnel should be knowledgeable and skilled in the education of students with ASD (Autism Program Quality Indicators, 2007). The report

does not define what knowledge and skills these teachers should have or where they should acquire this information.

In 2001, The Office of Vocational and Educational Services for Individuals with Disabilities (VESID) of the New York State Education Department (NYSED) awarded grants to 17 New York State colleges and universities to develop and deliver courses in autism. Coursework was also available online through the Autism Distance Education Network Sites. The goal of this initiative was to ensure that teacher and paraprofessional preparation programs throughout New York State included courses specific to the education of students with autism. Additionally, the courses were available to currently certified teachers, related service providers and paraprofessionals who are working with students with ASD in New York (Vocational and Educational Services for Individuals with Disabilities, 2008).

The participating colleges and universities developed and delivered coursework in autism and related disabilities with funding from grants approved by the New York State Education Department. Currently, less than half of the schools that received the initial funding continue to offer coursework in autism (Vocational and Educational Services for Individuals with Disabilities (VESID), 2008).

The State University of New York at Albany has developed a certificate program focused on the Education of Children with Autism and Related Disorders to be offered across New York State through distance education. Possible participants in the coursework include special and regular education teachers, school psychologists, speech professionals, physical and occupational therapists, paraprofessionals, teacher assistants and aides and parents. The coursework consists of a series of three courses: foundations of autism; introduction to intervention; and practicum in intervention. (VESID, 2008).

Alaska, New Jersey and New York have made significant progress in their attempts to educate personnel on ASD. These states appear to be following a similar sequence to that of the states with established endorsement or certification programs. On June 24, 2008, the Board of Regents of New York State adopted, by emergency action, an amendment to Part 80 of the Commissioner's Regulations regarding requirements for certification. Chapter 143 of the Laws of 2006 requires that all persons applying for a teaching certificate or a license as a special education teacher, in addition to all the other certification or licensing requirements, complete course work or training in the area of children with autism. The legislation further requires that the course work or training be obtained from an institution or provider, which has been approved by the Department to provide such course work or training in the needs of children with autism. Section 80-3.7 was amended and section 80-1.12 was added, to require that candidates for certificates in certain titles, who apply on or after September 2, 2009, complete at least three clock hours of course work or training in the needs of students with autism from an approved provider (VESID, 2008).

Personnel Knowledge of ASD

The Autism Survey developed by Stone (1987) evaluates professionals' knowledge of autism and related disorders. This questionnaire has been used with a variety of populations. The goals of the survey are to assess views regarding etiology, diagnosis, and specific features of the disorder. The survey consists of 23 items within two parts. Part 1 consists of 21 statements related to common misconceptions about autism, based on the literature. The items were selected to represent broad categories: social and emotional features (8 items); cognitive characteristics (6 items); and general descriptive features including course and prognosis (7 items). Respondents indicate the

degree to which they agree with each statement on a Likert Scale from 1-6. Part II of the survey consists of two questions following diagnostic criteria, where the respondents check all the characteristics required for diagnosis and the second question asked the respondent to check all items that would be helpful in making the diagnosis (Stone, 1987).

Since the survey reflects opinions and attitudes rather than absolutes, it was necessary to obtain a standard for each discipline to be compared with. The survey was also distributed to a group of specialists in the field of autism. These were researchers and clinicians involved in the field of autism for a significant length of time and from highly respected universities (University of North Carolina, Yale University and University of California at Los Angeles) known for their research in autism.

Campbell, Reichle and Van Bourgondien (1996) evaluated the psychometric properties of the survey. The study participants consisted of 83 individuals working in the field of autism and attending a TEACCH (Treatment and Education of Autistic and related Communication Handicapped Children). All the participants were highly educated and had experience working with students with autism (Campbell et al., 1996).

Reliability was tested using Cronbach's alpha correlation analysis and obtained an alpha coefficient of .66 was obtained. The researchers completed the analysis again after deleting rogue items. The alpha coefficient reached .74 with the removal of the three items that did not load. To test validity, groupings for analysis based on demographic characteristics were created. Results revealed significant score differences for occupation. Support staff and Division TEACCH employees demonstrated more knowledge than administrators. Individuals with higher levels of experience also scored higher than individuals with less experience (Campbell, et al., 1996). Overall, the researchers

concluded the Autism Survey exhibits good test-retest reliability, which increased with the removal of the potentially rogue items. While Stone (1987) contributed valuable information to the field, there were many limitations to the study. Stone (1987) justified using only four professional groups; there is no educational representation. Interestingly, in the expert group, there were researchers and practitioners from the field of education.

Stone and Rosenbaum (1988) compared 47 parents' conceptual understanding of autism to that of 47 teachers' conceptual understanding of this disorder. The teachers' experiences with students with autism spanned all grade levels, and the students' ages ranged from one year to 19 years. Most of the teachers held multiple certifications, but none were certified in autism. The parent sample was obtained at organizational and support meetings for families of children with autism. The researchers also distributed the survey to 22 known specialists in order to obtain a standard of comparison. Stone's Autism Survey was used to evaluate parents' and teachers' views of autism (Stone & Rosenbaum, 1988).

The researchers found that both teachers and parents harbored misconceptions regarding cognitive, emotional and developmental characteristics of autism. Both groups viewed students with autism as less cognitively impaired than research findings and specialists' responses. The findings indicated potentially deleterious effects on relationships between adults and children with autism. Parents of children with autism were less likely than teachers to acknowledge the presence of intellectual disabilities. Responses to the survey indicated that parents viewed autism as a more transient condition than teachers and specialists. Parents and teachers displayed misconceptions regarding the role of emotional factors in autism. Both groups were more likely to consider autism to be an affective disorder with emotional etiology. Teachers in

particular had difficulty differentiating between autism and childhood schizophrenia (Stone & Rosenbaum, 1998).

Helps et al. (1999) evaluated teacher knowledge of autism using a modified version of The Autism Survey, adding nine additional questions pertaining to educational information. Respondents were asked to describe difficulties working with children with autism. A lack of practical advice and support regarding behavior management and teaching methods was reported. Certain behaviors, sometimes associated with children with autism, such as aggressive behaviors, caused problems in management, as well as the more commonly reported social and communication deficits (Helps et al., 1999).

When asked what further training would be useful, 37% of the responses suggested that 'anything at all' would be helpful; 21% requested practical help in the management of children with autism when in a group of children with mixed abilities; 15% requested to be able to work alongside trained specialists, learning by observation and 'hands-on' experience; 8% wrote that they would like to visit a school which catered specifically to children with autism; 6 percent requested specific training packages and 5% requested 'ongoing input and training' (Helps et al., 1999).

Mavropoulou and Padeliaou (2000) examined Greek general and special education teachers' knowledge of the causes of autism and the main behavioral features of the disorder, and teachers' views on goals and treatment for students with ASD. The researchers also compared general and special education teachers' conceptual understanding. The researchers developed a questionnaire based on previous research by Stone and Rosenbaum (1988) and Szatmari, Archer, Fisman and Streiner (1994). The questionnaire was distributed to participating classroom teachers prior to a teaching session at the beginning of their second year of in-service training. While the

participating teachers did demonstrate general awareness of ASD, there was a difference in the depth of knowledge between general and special education teachers. The researchers concluded that the results of the study indicate a need for further in-service training in ASD. Their suggestion was that training should focus on ASD-specific characteristics, revealing both the homogeneity and diversity among students within the autistic spectrum. Additionally, teachers should have the opportunity to understand the various factors contributing to the individual needs of each child. The study findings suggest that even a module of 20 hours with general but scientific information can promote a more realistic understanding of autism (Mavropoulou & Padeliadu, 2000).

Teachers' conceptual understanding of students with autism are reflected in the expectations of the students they teach. There is the suggestion of a relationship between teacher expectations and outcomes of students with ASD. In a study of fifteen teachers, in both public and private school settings, Ivey (2007) assessed their expectation about the importance and likelihood of specific outcomes for their students. The findings indicate if a teacher does not have confidence in the student, the student may feel like he or she cannot succeed on a given task. It would logically follow that teachers may not follow through with goals and objectives as presented on the IEP. The results of the study have implications for referral of services. Teachers that feel that adult responsibilities and community supports are not likely to make a difference in the lives of the students may not make efforts to obtain information from agencies (Ivey, 2007).

Personnel Preparation in ASD

One of the clearest needs in the field of ASD is to increase the number of well-prepared professionals to work with children and their families. The nature of ASD has significant implications for approaches to education and intervention. As might be

expected in a field of different philosophies and instructional strategies, there is also diversity in the approaches to personnel preparation (NRC, 2001).

A pervasive special education teacher shortage, subsequent watered-down licensure requirements, a lack of cohesive and comprehensive specialized training opportunities, controversy about which program is the most effective, and ownership of program components have hampered efforts to staff schools with personnel who are skilled in the best strategies for teaching students with ASD (Scheuermann et al., 2003).

A weakened economy along with tepid political support for education makes the prospect of a significant increase in the availability of well-trained teachers and related services professionals to educate students with ASD, at least in the near future, highly unlikely (Simpson et al., 2004). This shortage has serious and far-reaching implications for students with disabilities. The consequences of the shortage include inadequate educational experiences for students, reduced student achievement levels, and insufficient competence of graduates in the workplace (Darling-Hammond & Sclan, 1996). It is unlikely that most newly certified special education teachers will be adequately prepared to teach students with ASD unless they attend an ASD-specific program of study (Scheuermann et al., 2003). The scarcity of specialized preparation in ASD at colleges of education may be attributable to the low incidence of this disorder relative to other disabilities (Lerman, Vorndran, Addison & Contrucci Kuhn, 2004).

Jennett, Harris and Mesibov (2003) found that teachers of students with ASD who identify themselves as having a teaching orientation of applied behavior analysis or TEACCH have a high sense of teaching efficacy and low experienced burnout, despite the challenges inherent in teaching students with autism. Increasing professional self-efficacy and decreasing burnout are very important in the field of special education.

Doing so may prevent attrition and improve the jobs of the teachers who remain in the field. Although at this point it is difficult to unravel whether teachers with high efficacy seek an orientation or whether the orientation is responsible for the high efficacy, the implications of these results provide a method of accomplishing this task—adequate training may be the key (Jennett et al., 2003).

Personal efficacy, the equivalent to Bandura's (1977, 1986) efficacy expectation, is the teachers' belief in their ability to bring about change in students. Teaching efficacy, the equivalent to Bandura's outcome expectation, is the teachers' belief that students can be taught despite external factors, such as their family environment (Gibson & Dembo, 1984). Most teachers who work with students with ASD receive generic special education training or specialized training in one of two widely used treatment approaches for ASD: Applied Behavior Analysis (ABA) and TEACCH (Treatment and Education of Autistic and Related Communication Handicapped Children). Some teachers who use these approaches may be trained to use specific techniques of the approach without an understanding of, or commitment to, the underlying philosophy (Jennett et al., 2003).

Most teachers receive relatively little, if any, formal instruction in instructional practices for children with ASD. Little formal data exist about the state of personnel preparation in ASD. According to a recent report from the National Research Council (NRC, 2001), no data exist regarding the number of autism specialists who are trained annually, how many autism personnel preparation programs operate, or which professional disciplines are involved in autism training.

Parent Assessment of Teacher Knowledge of ASD

Dymond et al. (2007) analyzed 783 parent surveys consisting of questions examining methods to improve services to students with ASD. A majority of the

respondents (55.94%) indicated a need for individuals who work with children with ASD to be more qualified and experienced in the area of autism. Individuals who require training include school personnel, parents, service providers, the public, and students without disabilities. The underlying recommendation across all identified groups was the need for increased awareness of autism and acceptance of children with ASD. Lack of information about the disability was perceived to inhibit the child and family's inclusion in their schools and communities, the quality of services the child received, and the child's overall educational progress. Although a number of respondents generically advocated "more training," the vast majority focused on the need for (a) better-educated school personnel and service providers and (b) greater dissemination of information about services and treatments to parents (Dymond et al., 2007).

The most frequently mentioned group perceived as needing training was school personnel (50.22%). Respondents repeatedly noted the need for educators to be more qualified and knowledgeable about ASD. They stated that teachers need to understand how ASD affects children differently across the spectrum, possess skills in utilizing a variety of instructional methodologies shown to be effective with children with autism, increase their sensitivity and understanding of children with ASD, be knowledgeable about services available for individuals with ASD, and be familiar with how to effectively mainstream and include students with ASD with their nondisabled peers. Parents also recommended having more autism specialists in the schools to train staff, evaluate children, design instructional programs, and coordinate services (Dymond et al., 2007).

Educators need to receive more training about autism at both the pre-service and in-service levels. At the pre-service level, this training needs to include both coursework

specific to autism and fieldwork experiences with children with ASD. A small number of parents believed the state should add a separate teacher certification category for autism (Dymond et al., 2007). Others were more concerned that children with ASD receive their education from a certified special education teacher rather than an individual with provisional licensure. As one parent indicated, "Don't put teachers in a classroom just to have a warm body. These people may have good intentions but harm our children in the long run" (Dymond et al., 2007).

Some parents found teachers to be willing to work with their child and described them as "dedicated" or "a good person" but lacking the expertise needed to be effective. Some described teachers as scared or leery of assuming responsibility for the education of a child whom they were unprepared to teach. Still other parents lamented that teachers were inflexible and resistant to learning new techniques (Dymond et al., 2007).

Components of Teacher Education in ASD

Historically, and even today, few well-designed and specialty-focused pre-service programs to prepare teachers of students with autism are available. Further, in-service training programs designed to build knowledge and skills in individuals who work with students with ASD are often insufficient in number and limited in scope and content. These challenges, of course, come at a time of rapid growth in the prevalence of children who have been identified with ASD. Given the trend of preparing special education generalists and the limited availability of ASD training opportunities, it is unrealistic to expect that the majority of teachers who work with a student with ASD will have completed a comprehensive pre-service program specifically in the area of ASD. However, it is reasonable to expect that these professionals will be well-trained special educators, general educators, and related services professionals. Thus, even when ASD is

not an exclusive area of training, it nonetheless should be included as a significant part of the training process for professionals who have responsibility for students with an ASD-related disability (Simpson et al., 2004). Additional research is needed to identify the areas of preparation special education teachers of students with ASD need to participate in to be knowledgeable and possess the skills necessary to teach individuals with the disability.

Personnel preparation programs differ in location and methodology. The content of training programs reflects the diversity of approaches in the field of ASD. There is little research comparing the effectiveness of personnel preparation programs. This could be due to the variability of program components and coursework. The challenge for each program is how to provide differentiated curricula that are adapted to the social, cognitive and communication needs of children with ASD (NRC, 2001).

Further evaluation is needed to examine how to transfer research into practice. Continuing education programs may be useful and necessary for providing specialized instruction on ASD for educators. The limited time available for teachers to participate in continuing education and for qualified consultants to provide comprehensive instruction is a barrier in information dissemination. Successful distribution of information related to effective practices for students with ASD requires, among other things: performance-based measurement of teacher skills to ensure mastery; demonstrated improvement in child behavior as a result of teacher education; and ongoing performance feedback to ensure maintenance and generalization of the targeted skills (Lerman et al., 2004). There is controversy within the field of teacher education in the area of ASD. One issue is whether to train specialists for children with ASD as generalists across disciplines and

from a variety of backgrounds or to consider these disorders a unique topic within discipline-specific training, such as applied behavior analysis (NRC, 2001).

Teacher education programs that do focus on ASD vary widely in the content of training. These are based on general areas of delay present for most children with ASD and include basic functional and learning skills and behavior modification (Scheuermann et al., 2003). The issue became what to teach within these broad categories. For students who display such a wide array of learning problems, inadequate instruction has a significant negative impact. These are not students who will learn on their own or from watching others. They must have the best teachers, who know to be intrusive, persistent, and careful about what and how they teach (Scheuermann et al., 2003).

According to the National Research Council (2001), the large number of parent-initiated legal challenges regarding programming for students with ASD indicates that many parents are concerned about the knowledge and skills of school district personnel. Too often, ASD training is based exclusively on a single theory of teaching students with ASD. The problem with a single-theory approach to training, aside from the fact that no comparative studies have substantiated claims of superiority of one approach over another (NRC, 2001) is that it is detrimental to the education of children with ASD. Training teachers in only one approach to the treatment of children with autism spectrum disorder sends the false message that only one approach will work with all children with the disorder. Individuals with ASD are a heterogeneous group, with such a wide variation in severity and types of symptoms that it is virtually impossible to conclude that one method will work with each and every individual with the disorder. Subsequently, training teachers in only one method not only limits their ability to be successful with all children with ASD but also falsely implies that the one approach in which they are

trained will work with all children. This false belief that one has been trained in the one and only approach necessary to treat all children with ASD limits teachers' recognition of the individuality of each child. Teachers should base their teaching methods on what will best meet the needs of each individual child, not on whichever method of instruction they were trained to use (Scheuermann et al., 2003).

Rigidity in training may prevent students from receiving consistent services when moving from one district to another, or perhaps even from one school to another within the same district. This prevents continuity in programming, and ultimately the child with ASD is the one to suffer. One of the greatest concerns in training specialists in only one approach is related to parent and teacher interaction. Often, a teacher has been trained in one approach (e.g. applied behavior analysis, natural environment training, direct instruction), while a parent has been trained in another. This sets up the potential for conflict between the teacher and parents. Issues of whose method is best, when both may have been taught that "their" method was the "one and only," is a recipe for discord. A teacher who has been trained in a variety of approaches will have a greater knowledge base from which to make his or her decisions and will be able to provide greater resources to the family (Scheuermann et al., 2003).

The nature of ASD and related or co-existing disorders has significant implications for approaches to education and intervention at school, in the home and in the community. There are a variety of approaches to educating children with ASD that emphasize specific methodologies or packages of materials associated with comprehensive intervention programs, but these manufactured or singular programs often understate the multiple immediate and long term needs of the individual, both behaviorally and instructionally. The role of educators in providing support and

instruction for individuals with ASD and their families is vast, existing beyond theory and research. Personnel preparation remains one of the weakest elements of effective programming for children with ASD and their families (NRC, 2001). Methods of building on the knowledge of teachers and methods of keeping skilled personnel in the field are critical. Providing knowledge about ASD to teachers and administrators as well as specialized providers and related service personnel will be critical in initiating a positive change in the education of individuals with the disorder.

Summary and Rationale

The influence of special education preparation, in general, on the effectiveness of teaching students with disabilities has been well researched (i.e.: Blanton, Sindelar & Correa 2006; Brownell et al., 2004; Brownell et al., 2005; Butcher Carter & Scruggs, 2001; Carlson et al., 2004; Conderman & Katsiyannis, 2001; Darling-Hammond & Sclan, 1996). However, there is a scarcity of current research examining which components of preparation programs influence teacher effectiveness. Information regarding special education teacher preparation and individuals with ASD is available in the literature, but the availability of research examining the relationships between the two areas is still limited.

The review of literature began by examining the history and current trends within special education teacher preparation, including the prominence of the generalist model of preparation in institutions of higher education. While the research suggests this model continues to be commonplace among colleges and universities, there have been limited studies on the specific courses and philosophies presented in special education teacher preparation. Information about the effects of disability-specific coursework and experiences is insufficient in the literature.

The characteristics of individuals with ASD were presented next in the review of literature. The unique nature of the disability poses new challenges both within the classroom and in teacher education and training. Current literature indicates that the number of individuals with ASD receiving education in a school setting has increased necessitating an increased workforce of special education teachers qualified to teach these students. Researchers state that these teachers must be knowledgeable and qualified within the field of ASD. However, the research is lacking on what specific knowledge these teachers need to be effective in the classroom. More importantly, a clear measurable definition of a quality teacher of students with ASD is not available.

The literature suggests the need for increased training, which is assumed to have a positive impact on student learning, but further research is needed on what teachers need to know and do in training to increase their effectiveness in the classroom.

Conceptualizing teacher education and its effects on student outcomes, specifically students with ASD, is complex and requires further exploration. It is known that preparation methods and coursework influence teacher effectiveness, but there is no consensus on which components impact the performance of teachers working with students with ASD. There is a need for exploration in the area of special education teacher education and the effects of this process on the quality of teaching. The research does not separate the effects of a special education teacher's educational and classroom experiences. The separate and combined effects of education and experience variables have not been investigated in the current research. This exploration can best be accomplished by using a combination of qualitative and quantitative research methods.

This study follows a sequential mixed method design. Mixed method research focuses on collecting and analyzing both quantitative and qualitative data in a single

study. This design is usually employed to expand upon an understanding from one method to another (Creswell, 2003). In mixed method designs, researchers collect the quantitative and qualitative data either in phases (sequentially) or they gather it at the same time (concurrently) (Creswell, 2003). When the data are collected in phases, either quantitative or qualitative data can come first (Creswell, 2003). For the purpose of this study, a sequential mixed method design was used where the study began with a qualitative phase, where constructs were established and instruments were developed using the information from this first phase. This was followed by a quantitative phase.

Phase One of this study was designed to identify the qualities deemed essential for special education teachers of students with ASD as determined by experts in the field of teacher education and ASD. The experts in Phase One of the study were chosen for their extensive experience in both the education of students with ASD and the preparation of special education teachers in ASD. The data from Phase One were then utilized to develop a battery of measurement tools to be used in the qualitative Phase Two of the study. Phase Two of this study investigates predictors of knowledge, skill, characteristics of quality and self-efficacy of special education teachers of students with ASD.

Research Questions

Qualitative Research Questions: Phase One

- (1) What are the characteristics, knowledge and skills of quality special education teachers of students with ASD as identified by the experts in Phase One of the study?
- (2) What practices should special education programs teach teachers that will lead to successful outcomes for students with ASD according to the experts in Phase One of the study?

(3) How should special education teacher quality be measured according to the experts in Phase One of the study?

Quantitative Research Questions: Phase Two

(4) What are the relationships between education, experience and self-report predictors and the current knowledge, skill, characteristics of quality and self-efficacy of special education teachers of students with ASD?

A. Dependent Variables

1. Knowledge of ASD
2. Skill in ASD
3. Characteristics of Quality
4. Self-Efficacy

B. Predictor Variables

1. Education Variables

- a. Extent of Coursework in ASD
- b. Highest Degree Reported
- c. Type of Certification/Endorsement

2. Experience Variables

- a. Number of Years of Professional Experiences Working with Individuals with ASD
- b. Number of Years of Professional Experience Working with Individuals with Disabilities
- c. Number of Students with ASD Worked with in Professional Career
- d. Number of Current Students with ASD

e. Number of Years Since Received Highest Degree

3. Self-Report Variable

a. Effectiveness of Preparation

(5) What are the best predictors of Knowledge of ASD for special education teachers of students with ASD?

A. Education Variables

1. Extent of Coursework in ASD

2. Highest Degree Reported

3. Type of Certification/Endorsement

B. Experience Variables

1. Number of Years of Professional Experiences Working with
Individuals with ASD

2. Number of Years of Professional Experience Working with
Individuals with Disabilities

3. Number of Students with ASD Worked with in Professional Career

4. Number of Current Students with ASD

5. Number of Years Since Received Highest Degree

C. Self-Report Variable

1. Effectiveness of Preparation

(6) What are the best predictors of self-reported Skill proficiency for special education teachers of students with ASD?

A. Education Variables

1. Extent of Coursework in ASD

2. Highest Degree Reported

3. Type of Certification/Endorsement

- B. Experience Variables

1. Number of Years of Professional Experiences Working with Individuals with ASD
2. Number of Years of Professional Experience Working with Individuals with Disabilities
3. Number of Students with ASD Worked with in Professional Career
4. Number of Current Students with ASD
5. Number of Years Since Received Highest Degree

- C. Self-Report Variable

1. Effectiveness of Preparation

(7) What are the best predictors of Characteristics of Quality for special education teachers of students with ASD?

- A. Education Variables

1. Extent of Coursework in ASD
2. Highest Degree Reported
3. Type of Certification/Endorsement

- B. Experience Variables

1. Number of Years of Professional Experiences Working with Individuals with ASD
2. Number of Years of Professional Experience Working with Individuals with Disabilities
3. Number of Students with ASD Worked with in Professional Career
4. Number of Current Students with ASD

5. Number of Years Since Received Highest Degree

- C. Self-Report Variable

1. Effectiveness of Preparation

(8) What are the best predictors for high Self-Efficacy for special education teachers of students with ASD?

- A. Education Variables

1. Extent of Coursework in ASD

2. Highest Degree Reported

3. Type of Certification/Endorsement

- B. Experience Variables

1. Number of Years of Professional Experiences Working with
Individuals with ASD

2. Number of Years of Professional Experience Working with
Individuals with Disabilities

3. Number of Students with ASD Worked with in Professional Career

4. Number of Current Students with ASD

5. Number of Years Since Received Highest Degree

- C. Self-Report Variable

1. Effectiveness of Preparation

Blended Research Question

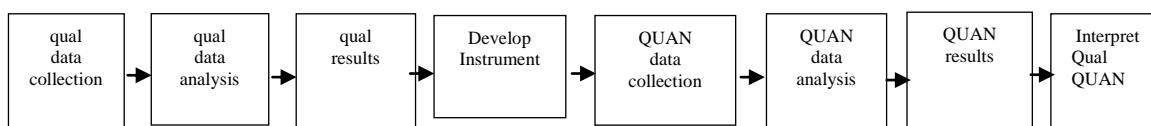
(9) In what ways are the results from Phase One corroborated by the results from Phase Two?

PHASE ONE
CHAPTER III
QUALITATIVE METHOD

This mixed method sequential exploratory design consisted of two distinct phases: qualitative (Phase One) followed by quantitative (Phase Two) (see Figure 1). The results of Phase One are reported and interpreted separately from the results of Phase Two. Data from Phase One were used to create measurement instruments used in Phase Two of the study. This design method was used because exploration is needed in the field of teacher education and ASD. Measures and instruments are not available; the key variables are unknown; and there is no guiding framework (Creswell & Plano Clark, 2007).

Figure 1

Mixed-Method Sequential Exploratory Design



The first methods chapter focuses on Phase One of the study. The first section provides information about the participants, including a summary table and detailed demographics. The second section contains information about the research design of this phase of study. The next part contains details relevant to the creation and implementation of the materials and instruments used in this phase of the study. The final section contains the procedures for each focus group and interview.

Participants

There were seven participants in this phase of the study. Potential participants were recruited for their knowledge and experience in teacher education and ASD. The

participants were recruited using a hierarchy of experience, where the first participant had the most experience in the classroom working with students with ASD and the last participants had the most experience in teacher education and ASD.

Recruitment of participants was conducted through personal email and phone calls to potential participants. A summary of the research study was provided along with the time commitment needed to participate. Nine potential participants were contacted, one participant did not respond to the initial email and one participant withdrew because of a family emergency after agreeing to participate. Seven professionals in the field of teacher education and ASD participated in the study. A summary of demographic characteristics is provided in Table 1.

Table 1

Demographic Characteristics of Phase One Participants (n=7)

	<i>f</i>	%
Years in Higher Education		
>35	2	28.6%
10-34	1	14.3%
5-9	4	57.1%
Years Working with Individuals w/ ASD		
>35	2	14.3%
10-34	5	85.7%
5-9	0	
Highest Degree		
MA	1	14.3%
Ed.S	1	14.3%
Ed.D	3	42.8%
Ph.D	2	28.6%
Published in the Field		
Yes	4	57.1%
No	3	42.8%
Current Position		
Instructor	2	28.6%
Assistant Professor	2	28.6%
Associate Professor	1	14.3%
Professor	2	28.6%
Gender		
Female	4	57.1%
Male	3	42.8%

Detailed participant demographics. Demographic information is based on participants' experience and credentials at the time of the interview. Participant One had nineteen years experience in public and private schools as a teacher and behavioral consultant and five years experience in teacher education, with a focus on ASD and applied behavior analysis. Participant One participated in over fifty due process hearings and mediation meetings regarding placement and staffing of students with ASD. Participant One is currently a behavioral consultant for a large, urban, school district and instructor in applied behavior analysis and student teaching. Participant One is a Board Certified Behavior Analyst (BCBA) and holds certification in special education and school administration/supervision.

Participant Two had eighteen years experience in public and private schools as a classroom teacher, administrator and program developer. Participant Two has also had experience developing outreach and family services for individuals with disabilities and their families. Participant Two had eight years experience in teacher education with a specific focus on ASD and severe disabilities. Participant Two is currently a pre-school administrator, instructor and coordinator of student teaching at a private college in the northeast. Participant Two holds certifications in early childhood special education, special education generalist and school administration/supervision.

Participant Three has ten years experience in schools, working with middle school students with ASD and four years experience in teacher preparation. Participant Three developed and is teaching a three-course sequence in ASD for graduate students. Participant Three has worked with paraprofessionals on training and implementing effective educational interventions for students with ASD. Participant Three is currently

an assistant professor at a small, private college in the northeast and is a certified special education teacher.

Participant Four has ten years experience in schools as a teaching assistant, lead teacher and educational supervisor and six years experience in higher education.

Participant Four is the Director of Autism Studies and director of a large, federal grant on autism at a private university in the northeast. Participant Four is certified in special education and school administration/supervision.

Participant Five has ten years public school teaching experience working with students with ASD and twenty years preparing teachers to work with students with ASD at a large, public university in the southeast. Participant Five is the former editor of a peer-reviewed journal on ASD. Participant Five is currently the Coordinator of Autism Programs and Coordinator of a State Improvement Grant in ABA (Applied Behavior Analysis) and Associate Professor in Autism Programs.

Participant Six has forty-two years preparing teachers, with an emphasis on applied behavior analysis and ASD. Participant Six has prepared over 2000 MA students and over 150 PhD students. Participant Six is a professor at a private college in the northeast, creator of curriculum in a school-wide approach to education, founder and director of educational programs world-wide and consultant to a variety of schools, districts and countries on applied behavior analysis.

Participant Seven has ten years experience as behavioral psychologist in public schools and over thirty-five years experience preparing teachers in ASD. Participant Seven is on the editorial board of three peer-reviewed journals related to ASD.

Participant Seven has published over 40 articles and eight books pertaining to effective educational methods and personnel preparation in ASD. Currently, the participant is a

Professor of Special Education at a large, public university in the mid-west and featured speaker on ASD and related topics.

Research Design

Phase One of the study followed a phenomenological research design. This phase of the study highlights significant statements in an effort to better understand the conceptualization of the characteristics of quality special education teachers of students with ASD. This phase of the study specifically examined the knowledge, skills, characteristics and preparation of quality special education teachers of students with ASD. Analysis was conducted using horizontalization (Moustakas, 1994).

Horizontalization is the process of laying out all the data for examination and treating the data as having equal weight (Moustakas, 1994). Experiences and ideas were linked together. These data were then organized into clusters (themes). Analysis used participant quotes, statements and sentences to gain a better understanding of how the participants experienced the phenomena relevant to the study. Clusters of meaning were developed from the significant statements into themes. Additional information on the process of theme development and coding of data can be found in Chapter 4 of this paper.

Materials/Instrumentation

The *Conversation Protocol* (Appendix A) was developed from concepts presented by the National Board for Professional Teaching Standards (National Board for Professional Teaching Standards, 2001), Council for Exceptional Children's Knowledge and Skill Base for Teachers of Individuals with Developmental Disabilities and Autism (CEC, 2010) and the Competency Areas for Teachers of Students with ASD (Scheuermann et al., 2003). The *Conversation Protocol* consisted of nineteen questions

divided into three sub-sections: questions related to knowledge and skill; questions related to special education teacher preparation in ASD; and questions related to quality.

In the first sub-section, questions related to knowledge and skill, there were eight questions. In the second sub-section, questions related to preparation, there were four questions and in the third sub-section, questions related to quality, there were seven questions.

In addition to the *Conversation Protocol*, all participants received a copy of the relevant research questions and The National Board for Professional Teaching Standards (2001) five core propositions for all teachers, the Competency Areas for Teachers of Students with ASD (Scheuermann et al., 2003), and the Council for Exceptional Children's Knowledge and Skill Base for Teachers of Individuals with Developmental Disabilities and Autism (CEC, 2010). Copies of these materials were distributed with the *Conversation Protocol* to assist in providing the framework for the questions and answers. The materials were also provided as a reference for participants and a starting point for the discussion. These materials can be found in Appendix A.

Procedure

The procedure for this phase of the study consisted of one focus group and six interviews. The intention was to conduct just focus groups, but due to participant schedules and the timing of the study, only one focus group could be arranged. The remaining participants were interviewed individually at a time and location convenient for each of them.

Focus Group One: Participants One and Two. Participant One and Participant Two were interviewed together. After obtaining informed consent using approved IRB procedures, the participants were asked to verbally consent to being audio and video

taped. The entire interview was both audio and video taped. The study was described to the participants prior to beginning the interview and they were given an additional copy of the *Conversation Protocol* and attachments. The interview was conducted in person and lasted 90 minutes. The *Conversation Protocol* was used as a guide for the interview. Additional clarifying questions were asked and questions that were not relevant to the conversation were omitted.

Interview Two: Participant Three Participant Three was interviewed in person. After obtaining informed consent through proper IRB procedures, the participant was asked to verbally consent to the interview being audio and video taped. The study was described to the participant. The participant retained the original emailed copy of the *Conversation Protocol*, which contained personal notes and answers to some of the questions. The interview lasted 120 minutes. Additional clarifying questions were asked and questions that were not relevant were omitted.

Interview Three: Participant Four. Participant Four was interviewed on the telephone. All materials were emailed to the participant. The informed consent form was signed by the participant and faxed to the researcher prior to the interview beginning. The participant was asked to verbally consent to participating in the study and to acknowledge the conversation would be audio taped. The participant answered all questions on the *Conversation Protocol*. The interview lasted 90 minutes.

Interview Four: Participant Five. Participant Five was interviewed over the telephone. All materials were emailed to the participant. The informed consent form was signed by the participant and faxed to the researcher prior to the interview beginning. The participant was asked to verbally consent to participating in the study and to acknowledge that the conversation would be audio taped. The participant answered all questions on the

Conversation Protocol, referencing notes taken prior to the start of the interview. The interview lasted 70 minutes.

Interview Five: Participant Six. Participant Six was interviewed in person. All materials were emailed to the participant and re-distributed prior to the start of the interview. Informed consent was obtained verbally and with proper IRB paperwork. The conversational protocol was used as a guide for the conversation. The general topics were discussed throughout the interview as well as additional topics related to the participant's opinion, experience and knowledge. The interview was audio taped. The interview lasted 60 minutes.

Interview Six: Participant Seven. Participant Seven was interviewed over the telephone. All materials were emailed to the participant prior to the start of the interview and informed consent was obtained and faxed to the researcher. The interview was audio taped. All questions on the *Conversation Protocol* were answered. The interview lasted sixty minutes.

PHASE ONE
CHAPTER IV
QUALITATIVE RESULTS

This chapter will begin with an overview of the analysis procedures used for the focus group and interview data. Next, procedures for coding the data will be presented. Descriptions of the process of the parsing of data into categories for analysis, open coding procedures and axial coding procedures that were used for theme development will be presented. Following coding procedures, the process of theme identification and assembly will be discussed. Themes and subthemes will be presented with supporting data from the transcribed focus group and interviews. Finally, information will be presented on the process of instrument development.

Data Analysis Procedures

First, after each semi-structured interview/focus group occurred, the audio recordings were sent to a third party transcription service through a secure portal. The data were transcribed and returned within five days of each interview/focus group. The audio recordings and the transcriptions were collected and stored for proper coding following data storage procedures. All transcriptions were reviewed for accuracy. Minor adjustments to discipline-specific language were made. Each transcription was coded by interview question. The transcriptions were entered into the analysis program, NVivo. The program assisted in the sorting of the data into nodes, which were general categories of information established by the researcher. The program assisted in the sorting of the data into nodes, which were general categories established by the researcher. The nodes were categorized by interview question, then further into major and subthemes.

Data analysis followed the eight steps described by Creswell (2003, p. 155). The first step in data analysis was to get a sense of the whole by reading through each transcript. The transcripts were ordered by date of focus group/interview and reviewed. The second step in the analysis was to choose one document to examine first and examine the underlying meaning. The focus group was examined first. Initial impressions were recorded. The focus group consisted of two individuals who had extensive experience in schools as teachers and administrators. It was noted that the underlying sense of their answers to the protocol questions was focused on their past experiences, relating specifically to what they were prepared to teach and what they had to learn “on-the-job”. The participants separated their own experiences as teachers from their experiences preparing teachers. The second transcript to be examined for initial, underlying meaning was the first individual interview. This participant also had extensive experience in the schools as a teacher. Similar undertones to the responses were recorded. While experiences differed among the three participants, their answers to the questions were analogous. This process was repeated with each transcript and notable information was recorded. The next step was to cluster similar meanings. This preliminary clustering was determined by the questions asked during the semi-structured interview. All transcripts were reviewed specifically for answers to the protocol questions. The list of protocol questions was then compared to the data to organize the text into clusters of information/meaning. The protocol questions (general ideas) were then each coded into themes. This required a combination of some of the repetitive protocol questions into more cohesive statements to reflect the contents of the general ideas. Within these general ideas, themes were developed using codes decided upon by abbreviated topic descriptions. The data were then re-analyzed to confirm the development of these

particular themes and confirm that the data contained within the theme supports the overall meaning of the theme, as represented by the abbreviated coding. Throughout the analysis, unusual or useful quotes were noted for later use in the analysis. The next section describes further analysis of the data and the processes to develop the themes and subthemes.

Data Coding

Each transcription was reviewed first for specific answers to the interview questions. A node was created for each of the eighteen research questions and data specifically answering the questions were clustered into the nodes. This was determined utilizing the specific statements made by the participants when asked a particular question as stated on the *Conversation Protocol*. Within each of the questionnaire nodes, further analysis was conducted.

Initial analysis was concerned with the identification and categorization of the phenomena (open coding). The individual comments, phrases and sentences were examined for clusters of information, both within subject and between subjects. Connections were made from the participants' statements relating to the general topics of knowledge, skill, quality and experience. This led to the development of more specific themes. Data were extracted and coded by the initial theme based on its relativity to the thematic term (knowledge, skill, quality, teacher education/experience).

Theme Identification and Assembly

The *Conversation Protocol* questions were clustered by general topic: knowledge; skill; characteristics; and teacher preparation/experience, as defined on the *Conversation Protocol*. These general topics provided the framework to establish the major themes of the analysis. The general topics were dictated by the conversation protocol questions and

the overall research questions for the study. Within each of the five general topics, themes were identified. The themes were developed after clustering of initial data. Data were parsed into the overall themes and examined for further commonality in theory, experiences, and examples. Support for the development of the themes was determined when there were links from one piece of data to another. This axial coding consisted of examining the theory and causal relationships among the data. The phenomena of interest (knowledge, skill, quality, teacher education/experience) comprised the underlying concept in which all the data for that topic were related. Further support of the theme development was found when multiple examples of the same topic were found in data from different subjects. The development of the theme experience (preparation) began with the question, *What practices should special education programs teach teachers that will lead to successful outcomes for students with ASD?* The data that directly answered questions related to this research question were placed into a node (folder in NVivo). Within this node, further analysis was conducted to examine commonalities within and between participant responses. The first theme to develop within this general category related to areas to teach. This theme contained the specific courses and topics that special education teacher preparation should contain to produce quality special education teachers of students with ASD. Answers to this question were repeated between subjects, which assisted in the verification of the development of this theme. The second theme contained information about specific experiences that should be provided during a special education teachers' preparation. Examples such as student teaching, classroom observation and direct supervision by a master teacher were repeated between subjects. This theme was considered complete based on the repetition of information between subjects. This process was repeated until all of the data (phrases) that could be coded

were parsed into a theme (knowledge, skill, quality or teacher education/experience). There were data that was coded into multiple themes. The remaining data were then re-analyzed for commonality. These data were placed into the overall category of general knowledge. Open coding was again conducted on this data to seek out new themes and links within the data. Further support of previously developed themes was found as well as links within data for the general knowledge theme. All data from the transcribed focus group and interviews were coded using the same processes.

Themes were then divided into subthemes. Subthemes were defined as the clustering of data into overarching ideas. Further thematic analysis was conducted on the themes and subthemes. This analysis examined the number of individual mentions of the subtheme; the number of participants who referenced the subtheme; and links from one subtheme to other subthemes. The data were organized by general topic, sorted by major theme, and supported by data for each subtheme. The accuracy of the information and its match to the literature are discussed in Chapter 5 of this paper. Integration was used, linking results from Phase One of the study and results from Phase Two of this study to establish internal validity.

The narrative conventions include varying the use of long and short quotes to support the themes. The themes and subthemes were established with support from participant quotes. The number of participants who reported information related to the theme and subthemes are reported.

Characteristic Themes

Within the general topic of characteristics, themes were identified. The first theme was the characteristics of quality special education teachers working with students with ASD. This theme was established using the conversation protocol questions.

Major theme: characteristics of quality special education teachers working with students with ASD. Within this theme, one subtheme was identified, characteristics that cannot be measured.

Subtheme: characteristics that cannot be measured. All participants (n=7) reported characteristics that cannot be measured. There were twenty-one characteristics that were reported by the participants. These characteristics are subjective and do not provide concrete examples that can be measured. When asked, “What is a good teacher, what are the characteristics of a quality teacher?” one participant replied:

What’s a good teacher is someone who is curious, someone who enjoys learning, loves to learn, loves to see other people learn, someone who actually values experience working with children.

Another participant replied:

I think a quality teacher is a teacher that can provide accessible instruction to each one of his or her students. If they are not providing the highest quality instruction that they have recourse to continue to try and eventually meet that need.

The lack of a clear definition was also reported:

That is such a great question. Boy I wish I knew the—one of the elements that is probably the easier part is to identify what it is that we think are important skills and knowledge that we want our personnel to possess. And to me, that’s the task we’re currently involved with among various states, universities, nationally and worldwide. People are trying to agree on what is it that teachers who work with kids with autism know, and we’re actually making some headway as you’re probably finding in your literature review and in your research. This is pretty unmarked territory. The dicey thing is all of those intangibles that they probably bode so well for a successful career that are so difficult to define and to operationally evaluate and to shape.

Major theme: method of measurement. The second theme indentified was methods of measurement. This subtheme provided the largest variety of answers, with participants (n=4) answering “I don’t know” or “I know it when I see it”. Within this theme, two subthemes were indentified: observation and permanent product.

Subtheme: observational methods. A large proportion of participants (n=6) reported observational methods to measure teacher quality. The observational methods primarily relied on utilizing ones own expertise to recognize the quality in another.

I can recognize it when I see it and I can recognize it when it's not there. I can recognize – I can walk into a classroom and think, hmm, this person needs to go get a job somewhere else. But I – that is intuition based on – heavens, 20-some-odd years in education, and being in classrooms on a weekly basis. I don't know.

Another participant replied:

When you see the person with kids, then there's sort of this little magic. They establish rapport, they motivate their kids, they communicate well with others. They just possess those kind of characteristics that when you see them operate with youngsters, there's really good things that happen. But I know when I see it if they have it. And if they don't have it, I don't think I can build it in. I don't know how to make a person's personality sparkle so that they bring a kid to a point of wanting to work and be motivated and all of those sorts of things. There is a lot of judgment. It would be sort of like an Olympic sort of judging a figure skating. You have to some somebody that lays eyes and ears on a situation and says, yeah, I've seen enough that I can infer, I can make a judgment about whether a person has acquired that skill.

Subtheme: permanent product. The second subtheme within the theme, methods of measurement, was permanent product. All participants (n=7) reported a method of measurement that involved a permanent product. Most participants reported a method of measurement that involved both observation and permanent product. Using portfolios as a cumulative measurement tool was reported:

It could be done through observation if you put it on a portfolio. And you know maybe student portfolios included and maybe some trainings with tests. Not basing everything on it if you could spit back information, but if you participate in a training and you participate in having someone come in your room and follow up with you on job-embedded training skills, you better be able to sit down and write out some things that you're using, or things that you learned. That's just a piece of it.

Using student outcomes as a permanent product measurement was also reported:

We defer to the pupils. The kids with autism, are they accomplishing the goals? Are they graduating? Are they able to have IEPs that are being shown to lead to successful outcomes, whatever it is.

Knowledge Themes

Within the general topic of knowledge of quality special education teachers of students with ASD, two themes were identified. These themes were: knowledge able to be taught in a higher education setting and internal knowledge. The first theme, knowledge able to be taught in a higher education setting, contained ten subthemes and internal knowledge contained one subtheme.

Major theme: knowledge able to be taught in a higher education setting. The first theme, knowledge able to be taught in a higher education setting contained: general autism knowledge; knowledge of characteristics; knowledge of behavior modification; knowledge of communication skills; knowledge of social skills; knowledge sensory skills; knowledge of methods to increase independence; and knowledge of general teaching skills.

Subtheme: general autism knowledge. A large proportion of participants (n=6) reported specific components of general autism knowledge. Examples in this subtheme are: basic knowledge of ASD; current statistics on ASD; current research; myths; etiology; and the heterogeneous nature of the disorder. When asked “What do teachers of students with ASD need to know”, one participant replied:

I think they need basic knowledge of autism. I think they need to know current statistics on autism – as far as prevalence, as far as current research – let’s say that – current statistics supported by research. I think they need to know myths behind it – myths vs. fact – because I think – I can’t tell you how many students come in, even teachers, who say, “He has autism but he talks.” It’s like weird myths – they need to know that they’re myths.

Subtheme: knowledge of characteristics. A smaller portion of participants (n=2) referred to specific characteristics of individuals with ASD. Interestingly, the two

participants named six individual characteristics. When asked, “What should teachers of students with ASD know” one participant replied:

They need to know what the characteristics are that are more unique to kids on the lower functioning end of the spectrum or who have more severe involvement with the autism, all the way up to kids who are not as – I mean, severely affected is not quite right, because autism. They need to know how the characteristics affect how the individual is perceiving the world, living in the world, interacting with the world, understanding the world, or not. So we have to have a good, solid understanding of those characteristics.

There was also a reference to having too much knowledge of the characteristics of ASD and using the information to influence practice, and not viewing the student as an individual.

I think that knowledge of the disorder is good in term of making predictions about what might happen. But once you start working with the kid closely, I think teachers should get away with saying, "This is what I'm doing for this child with autism." As opposed to, "This is what I'm doing for this child who needs me to do this."

Subtheme: knowledge of behavior modification. This subtheme contained references to behavior modification as specific methodology, applied behavior analysis (ABA) and a more general intervention strategy. All participants (n=7) mentioned that special education teachers of students with ASD should have knowledge of behavior modification. There was variation in the amount of focus there should be on this topic, where some participants referenced a “blended model” and others listed specific techniques such as discrete trial teaching.

Subtheme: knowledge of communication skills. There were two individual references to knowledge of communication skills: methods to increase conventional communication; and the facilitation of language. The same participant made both of the references.

Subtheme: knowledge of social skills. There was one reference to knowledge of social skills stating the knowledge should be on how to develop appropriate social skills.

Subtheme: knowledge of sensory skills. This subtheme contained one reference: how sensory challenges affect the individual.

Subtheme: knowledge of methods to increase independence. There were three references to this subtheme, cited by two (n=2) participants. These references included: knowledge of transition; knowledge of independent living skills; and knowledge of post-secondary opportunities.

Subtheme: knowledge of general teaching skills. This subtheme contained the most references. There were twenty-six independent references to general teaching knowledge by all (n=7) participants. These references include foundational educational knowledge such as: how to write goals and objectives; working with parents; co-teaching; typical child development; and the theoretical underpinnings of psychology, education and special education. A secondary cluster includes: environmental structure; scheduling; managing related personnel; and instruction in the classroom.

Major theme: internal knowledge. This theme is defined as knowledge about oneself as a human being and as a teacher. There were four independent references to internal knowledge by two (n=2) participants. These reference include: knowing about oneself as a teacher; knowing one's own teaching repertoire; and knowing what one is capable of. One participant replied:

If the teacher is not coming up with an intervention that effective, can that teacher go and seek help from somebody else without repercussions? Can they go see support and say, "I can't figure this out. Can you help me?" without feeling like they're going to be deemed an incompetent teacher. I think that's really important because I don't think they should be deemed incompetent. I think that's an honest struggle that every single one of us has. Any Special Ed teacher who says that they don't struggle coming up with interventions is lying, I think.

Skill Themes

There were no subthemes identified within the major theme, skill of quality teachers of students with ASD. There were five references to skills special education teachers of students with ASD should possess, but there was not an overarching idea in which to group the data together. These individual skills were behavioral and included: know how to operationally define skills; know how to reinforce; how to know when an intervention is working. Two (n=2) participants indentified these skills.

Teacher Preparation Themes

Within the general topic of teacher preparation, three themes were identified: courses and experiences; methodology; and dispositions.

Major theme: courses and experiences. This theme is defined as the courses and experiences special education teachers of students with ASD had/need to have to be quality teachers. All (n=7) participants are currently instructing graduate students in ASD and commented on what they currently include in programming and what an ideal program would include.

Subtheme: foundations. The foundational courses and information can be clustered into topics found in an introductory special education course. These include: historical foundations of education and special education; human growth and development; diversity; vocabulary; and ethical codes of conduct. This subtheme contained repetition among participant response. All (n=7) participants referenced foundations as coursework necessary for quality special education teachers of students with ASD.

Subtheme: experiences. The experiences referenced by the participants reflected student teaching and practicum requirements. One participant stated that every pre-

service teacher who wants to work with students with ASD should have a student teaching placement with the population. The participant also stated that there should be a minimum of 700 contact hours with the population. The participant's college does not currently offer placements for that many hours. Another participant referenced the importance of cooperating teachers:

I would say that one thing is to have really, really good cooperating teachers, really good role models. And if you see a teacher who's committed and passionate and committed to the children and have high expectations you're going to want to strive for that. So I think that's important too.

Another participant referenced the importance of participating in real processes prior to graduation:

And then I think as teachers or instructors of Master's level students, it's our responsibility as well to prepare – I mean like we're doing IEP now, writing IEP for three weeks. You will not leave that class this semester until you know how to write an effective IEP and hold your own in an IEP meeting. You should know how to take data. You should know how to setup your classroom.

This subtheme also contained references to actual classroom practices. One participant stated teachers should have all the experiences during student teaching, so they are prepared for the classroom. This conceptualization of experiences was referenced by all (n=7) participants and included: curriculum preparation and adaptation; environmental set-up; differentiated instruction; lesson planning; and collaboration.

Major theme: methodology. Methodological approach to teacher preparation is defined as teacher preparation in a specific intervention strategy. There were three specific intervention strategies mentioned: applied behavior analysis (ABA), TEACCH and RDI. All participants (n=7) referenced ABA or elements of ABA as essential components to quality teacher preparation in ASD. TEACCH and RDI (Relationship Development Intervention) were each mentioned once, by different participants.

Major theme: dispositions. This subtheme contained information about teacher behaviors. A small portion of participants (n=3) referenced dispositions as an area to be taught in teacher preparation. The references focused on areas that should be assessed prior to student's being accepted into a preparation program and areas that should be assessed prior to graduation including: inventiveness; being comfortable in front of the classroom; and accepting constructive criticism.

Phase One Research Questions

This section provides specific answers to the research questions for Phase One of this study. Each research question is followed by a summary of the answers by the participants.

Research Question (1): *What are characteristics, knowledge and skills of quality special education teachers of students with ASD as identified by experts in Phase One of the study?*

The experts identified the characteristics of quality special education teachers of students with ASD as a high number of positive interactions with students, enthusiasm for the job, the ability to motivate the students, the ability to establish rapport with the students and the ability to communicate well with others. Further characteristics of quality special education teachers of students with ASD were identified by the participants as with-it-ness and ASD-specific characteristics such as the ability to lead students with ASD to successful outcomes.

The participants in Phase One concluded that the characteristics of quality special education teachers are subjective in nature and rely more on the observers' experiences and perceptions than the attributes of the teacher being observed. All the participants stated that there is a lack of a clear definition in research and practice. Characteristics of

quality special education teachers of students with ASD were said to be value-based, such as the teacher loves to learn and see others learn. The values and beliefs of the observer were also said to influence the values of the teachers being observed. The participants stated the experiences of the observer assisted in defining the characteristics of the quality special education teachers of students with ASD. The participants stated that they could observe a teacher and identify when the teacher possesses the characteristics and quality and when the teacher does not possess these characteristics. Many characteristics of quality cannot be taught, they were more described as dispositions than observable behaviors.

The participants identified the knowledge of a quality special education teacher of students with ASD. The participants stated knowledge should be obtained at an institution of higher education. This knowledge should be in the areas of general ASD knowledge, knowledge of the characteristics of individuals with ASD, knowledge of behavior modification, knowledge of communication, knowledge of social skills, knowledge of sensory skills and knowledge of general teaching skills. Additional, more specific examples of the knowledge of a quality special education teacher of students with ASD were identified as knowledge of the characteristics of individuals with ASD on the high and low ends of the spectrum, knowledge of how the characteristics effect the individual's perception of the world, knowledge of co-morbid characteristics, knowledge of how to structure an educational environment, knowledge of systematic instruction, knowledge of methods for both young and older students and knowledge of academic accommodations. The participants stated quality special education teachers of students with ASD need to be knowledgeable about specific ASD statistics, current research in ASD and ASD myths. Quality special education teachers of students with ASD also need

to be knowledgeable about general teaching strategies, such as methods to involve parents, typical childhood development, transition planning, how to write an IEP, positive behavior support and assessment. The participants also stated quality special education teachers of students with ASD need to be knowledgeable about themselves as teachers and learners.

In addition to knowledge obtained from coursework and experiences within the field of special education and ASD, the participants stated that the teachers needed to know about themselves. Internal knowledge, or knowledge about one's own teaching abilities, was stated to be an essential skill for special education teachers of students with ASD. The teacher must be able to know when to ask for help, to know when their instruction is effective, when it is not and when and how to modify techniques and strategies.

The skills of a quality special education teacher of students with ASD should be the ability to reinforce, the ability to define skills of the students and the ability to know when an intervention is working. A quality special education teacher of students with ASD should know how to motivate and reinforce student learning.

Research Question (2): What practices should special education programs teach teachers that will lead to successful outcomes for students with ASD according to experts in Phase One of the study?

The experts identified both coursework and practices that special education programs should teach teachers that will lead to successful outcomes for students with ASD. The first group of responses, coursework, includes courses in general teaching skills, special education foundations and ASD. Within general teaching skills, the participants identified coursework on the laws, human development, content areas,

diversity, ethical codes of conduct, confidentiality, curriculum planning and working with families and communities as general teaching skills that should be taught to special education teachers of students with ASD. The participants identified the disability-specific coursework for special education teachers of students with ASD as coursework on IDEA, the history of disabilities, and curriculum preparation and modification. The identified ASD coursework focused on collaboration, behavior modification, behavior as communication, data collection and analysis and individual instructional modification. The experiences identified by the participants that need to be included in teacher preparation include working with good cooperating teachers, learning the “lingo”, learning how to write an IEP, learning how to turn an assessment into practical use, effective uses of different educational and behavioral techniques, ASD-specific methods of instruction, learning how to create a lesson plan and the advisement of a mentor.

Sub-themes identified within teacher preparation included courses, experiences, methods and dispositions. The participants stated that the courses taken by special education teachers of students with ASD must lead to the acquisition of new knowledge about psychology, human development, laws, ethics, practices and characteristics of not only individuals with ASD, but all students. The participants stated that the most important component of teacher preparation is a quality experience in the field with students with ASD. The participants’ statements about student teaching placements in classrooms further illustrated this concept. The most important aspects of quality preparation were stated to be cooperating teachers and supervisors. The participants stated dispositions were learned while participating in courses and experiences at the higher education level, but not directly taught. The participants stated that while

experiences and courses can teach concepts about how to “be a teacher”, it was not possible to make someone into a teacher.

Research Question (3): *How should special education teacher quality be measured according to experts in Phase One of the study?*

The experts stated that special education teacher quality should be measured by a combination of observation and student outcomes. The course instructors (pre-service) and the site supervisors (teachers) should be responsible for monitoring the teacher quality. This can be done using direct observation of the teacher teaching and permanent products of student learning. The observations should include watching a teacher interact with students, measuring the teacher try one way and adjust if it does not work. The participants also acknowledged a teacher can self-evaluate using a videotape of his or her own teaching.

Instrument Development

Results obtained from the analysis of Phase One data were used to develop four distinct measurement instruments that were combined for use in Phase Two of the study. The meta-framework for instrument development and validation (Onwuegbuzie, Bustamante & Nelson, 2010) was used as a guide.

Step 1: conceptualization of the construct of interest. This step involved the development of the construct of interest, quality special education teachers of students with ASD. Chapters 1 and 2 of this paper describe the void in research and measurement instruments related to special education teachers of students with ASD and their knowledge, skills and preparation. There has been little research on teachers’ conceptual understanding of ASD and how these may be associated with their beliefs on the effectiveness of special education and the instructional goals of their practice

(Mavropoulou & Padeliadu, 2000). The influence of special education preparation, in its entirety, on the effectiveness of teaching students with disabilities has been well researched (i.e.: Blanton et al., 2006; Brownell et al., 2004; Brownell et al., 2005; Butcher Carter & Scruggs, 2001; Carlson et al., 2004; Conderman & Katsiyannis, 2001; Darling-Hammond & Sclan, 1996).

Step 2: identification and description of behaviors that underlie the construct.

The data obtained from the first, qualitative phase of this study, describes definitions and examples of the identified construct, quality special education teachers of students with ASD. The underlying behaviors that support the construct, quality special education teachers of students with ASD, were developed in Phase One of this study. The data collected from Phase One of this study were sorted into four general topics (support for the construct): teacher preparation; knowledge; skills; and characteristics of quality special education teachers of students with ASD. These topics were defined by the *Conversation Protocol* (Appendix A) used in Phase One of the study. These general topics provided a framework to establish the major themes of Phase One of this study. Within each of the general topics, major themes and subthemes were developed. The general topics (teacher preparation, knowledge, skills and characteristics of quality) were each used to develop a separate measurement instrument. Data saturation was reached when no new ideas were added to the subthemes after the seventh participant completed the conversation protocol.

The first general topic, teacher preparation, was developed into two measurement instruments *Special Education Teachers of Students with ASD Components of Preparation* and *Self-Reported Effectiveness of Teacher Education*. These instruments measured two different themes within the general category of teacher preparation. The

second general topic, knowledge, was developed into the *Special Education Teachers of Students with ASD Knowledge Assessment*. The third general topic, skill, was developed into the instrument, *Special Education Teachers of Students with ASD Skill Assessment*. The final general topic, characteristic of quality, was developed into *Special Education Teachers of Students with ASD Characteristics of Quality*.

Step 3: initial instrument development. The first measurement tool, *Special Education Teachers of Students with ASD Components of Preparation* was developed from the themes and subthemes identified related to special education teachers of students with ASD and their preparation. The first major theme was courses and experiences. Within this theme, two subthemes were identified, foundations and experiences. The specific foundations courses that were repeated by the participants in Phase One of the study were developed into potential survey questions for the *Special Education Teachers of Students with ASD Components of Preparation* measurement tool. Data saturation was reached within this major theme when the participants all referred to foundation courses (history of special education, laws, ethics, diversity and vocabulary/terminology) as necessary coursework for special education teachers of students with ASD. The second subtheme that emerged was experiences. This subtheme was conceptualized as classroom experiences with individuals with students with ASD and curriculum preparation, lesson planning and collaborative experiences. The specific examples provided within this subtheme were developed into potential questions for the measurement tool, *Self-Reported Effectiveness of Teacher Education*. Questions were developed to determine if the special education teachers concluded their preparation program effectively prepared them to teach students with ASD, using specific examples of identified classroom experiences. The questions were worded with the statement “I

feel my teacher education program prepared me to”. The second major theme within teacher education was methodology. The specific examples, applied behavior analysis, TEACCH and specific intervention strategies were developed into potential questions for *Special Education Teachers of Students with ASD Components of Preparation*.

Special Education Teachers of Students with ASD Knowledge Assessment was developed from major and subthemes within the general topic of knowledge. There were two major themes to emerge from this topic, knowledge able to be taught in a higher education setting and internal knowledge. The subthemes and specific examples from the first major theme, knowledge able to be taught in a higher education setting, were used to develop the measurement instrument. The first subtheme was general autism knowledge. Examples within this subtheme were: current statistics on ASD; current research; myths and etiology. These specific examples were developed into potential questions on the *Special Education Teachers of Students with ASD Knowledge Assessment*. Additional subthemes that were developed into potential questions included: knowledge of characteristics; knowledge of behavior modification; knowledge of communication; knowledge of social skills; knowledge of sensory skills; knowledge of methods to increase independence and knowledge of general teaching skills.

The third general topic, skill, was developed into the measurement instrument *Special Education Teachers of Students with ASD Skill Assessment*. There were no subthemes within this category. The specific examples of the skills of a quality special education teacher of students with ASD were developed into potential questions.

The final general topic was characteristics of quality. This topic was developed into two major themes, characteristics of quality special education teacher working with students with ASD and method of measurement. The subtheme and specific examples

that emerged from the first major theme were used to develop the measurement tool *Special Education Teachers of Students with ASD Characteristics of Quality*.

The format for all the measurement tools was a Likert scale, utilizing a 4-point range. For consistency among the instruments, a score of 1-point on any of the scales was the lowest score and a score of 4-points was the highest. A 4-point scale was chosen for all instruments for consistency with the already established measures to be used in the study. Using Stone (1987) as a guide, the 4-point Likert scale was used for all instruments. The items for each of the measurement tools were evaluated by a panel of special education teachers in the field of special education teacher education and ASD. Two participants from the first, qualitative phase, of this study assisted with this stage. Each item was assessed for clarity, esthetics, cultural competency, tone, and relevance. Items from each of the measurement tools were eliminated based on the responses of the panel (Onwuegbuzie et al., 2010).

Step 4: pilot test initial instrument. The first version of the entire survey was pilot tested with a panel of fifteen doctoral students in an autism program. Some of the participants who piloted the instrument were also involved in the initial instrument development. It was determined that the measurement tools were too long. The answer options were also changed to better reflect the questions being asked for each instrument. The panel assessed the measurement tools for face validity. In addition to completing the battery, the panel commented on individual items or ideas that were ambiguous, wordy, repetitive, or irrelevant to the overall construct (Onwuegbuzie et al., 2010) The *Special Education Teachers of Students with ASD Knowledge Assessment* was also assessed for construct validity using The Autism Rating Scale (Stone, 1987). This was the only researcher-developed tool that had an existing scale with which to compare it. The panel

determined the construct, knowledge, was the same for both instruments. It was also determined that The Autism Rating Scale (Stone, 1987) was outdated and contained vague information that did not assist in answering the research questions of this study.

Step 5: design instrument. A new format was employed for this phase of instrument development. The new format was determined to be easier for participants to read and complete. The same panel of special education doctoral students approved the new format, which easier for online completion. Alternating white and gray item differentiation was used to assist in visual discrimination and the areas available to answer were increased. The number of items on each page was decreased.

PHASE TWO
CHAPTER III
QUANTITATIVE METHOD

This section contains information on Phase Two of the study. The first part contains details pertaining to the recruitment of participants followed by detailed demographic information in both paragraph and table formats. The second part of this section contains information about the research design of this phase of the study. The next part contains detailed information about the materials used in this phase of the study, including a brief description of the instrument development. Next, there is information pertaining to the dependent and predictor variables. The procedure and scoring sections are next. The final part of this section is a summary of the measures and variables.

Participants

Twenty-eight special education teachers and administrators from New York, New Jersey, Florida and Georgia were sent an email explaining the study. One special education administrator from Connecticut and one from Wisconsin were sent the same email. The special education teachers and administrators were identified by the researcher for their experience working with individuals with ASD. The email contained a link to the survey entitled “Special Education Teachers and Autism Spectrum Disorders.” The potential participants were asked to complete the survey on [surveymonkey.com](https://www.surveymonkey.com) and forward the email to colleagues who also met the criteria to complete the survey. The criteria to complete the survey were for each participant to be a certified teacher who is currently or who has worked with individuals with ASD within the past five years. Additional participants were obtained through snowballing. The original email asked potential participants to forward the link or the email to additional potential participant.

Eighty-six participants completed all parts of the online survey from April 2010-September 2010. Thirty-four additional participants were obtained at a conference for professionals working with individuals with ASD. The conference organizer was a participant in the first phase of this study and consented to distributing a hard copy of the IRB approved consent and survey in August 2010. Two surveys were dropped due to incomplete information and six were dropped due to not meeting the recruitment criteria. The total number of surveys completed was one hundred and twelve.

Demographic Characteristics

Degree. Degree data for participants in Phase Two is summarized in Table 2. Of the 112 participants, sixty-three (56.2%) reported their highest degree at the master's level (MA, MS, MEd, MEd, MDiv, EdM), forty-two (37.5%) reported a degree at the bachelor's level (BA, BS), four (3.6%) participants reported a doctoral degree (EdD, PhD), three (2.7%) and participants reported an advanced degree above a master's (EdS, Advanced Studies). Forty-seven (42%) participants reported receiving their highest degree between 2008 and 2010 (1-2 years). Twenty-one (18.8%) reported receiving their highest degree from 2005 and 2007 (3-5 years), eleven (9.8%) reported receiving their degree between 2002 and 2004 (6-8 years). Five (4.5%) participants reported having received their highest degree between 1998 and 2001 (9-12 years). Four (3.6%) participants reported receiving their highest degree between 1995 and 1997 (13-15 years). Six (5.4%) participants reported receiving their highest degree between 1992 and 1994 (16-18 years). Seven (6.3%) reported receiving their highest degree between 1989 and 1991 (19-21 years). Four (3.6%) participants received their degree between 1985 and 1988 (22-25 years). Seven (6.3%) participants reported having received their highest degree from 1969 and 1984 (26 + years).

Table 2

Highest Degree Information for Phase Two Participants (n=112)

	<i>f</i>	%
Highest Degree		
Bachelors Degree	42	37.5%
Masters Degree	63	56.2%
Advanced Degree	3	2.7%
Doctoral Degree	4	3.6%
Number of Years Since Received Highest Degree		
1-2 years	47	42%
3-5 years	21	18.8%
6-8 years	11	9.8%
9-12 years	5	4.5%
13-15 years	4	3.6%
16-18 years	6	5.4%
19-21 years	7	6.3%
22-25 years	4	3.6%
26+ years	7	6.3%

Current Professional Role. Current professional role, number of years of professional experience working with individuals with disabilities and number of years of professional experience working with individuals with ASD are summarized in Table 3. Eighty-seven (77.7%) participants reported their current professional role as a teacher (classroom teacher, teacher/parent trainer, direct service provider, PE teacher, ESE teacher, ABA teacher, special education itinerant teacher, science teacher, substitute teacher, early intervention teacher, one-to-one teacher). Ten (8.9%) reported their current position as support staff/administration (consultant, autism coach, ESE specialist, guidance counselor, student teaching supervisor). Twelve (10.7%) reported their current

position as classroom support (one-to-one monitor, paraprofessional). Two (1.8%) reported their current position as a college instructor/professor. One (.9%) participant reported current position as a full-time student.

Number of Years of Professional Experience Working with Individuals with Disabilities. Twenty-eight (25%) of participants reported 1 to 3 years of experience working with individuals with disabilities. Twenty-six (23.2%) participants reported 4 to 6 years of experience working with individuals with disabilities. Fifteen (13.5%) reported 7 to 9 years of experience working with individuals with disabilities. Fourteen (12.5%) reported 10 to 12 years of experience working with individuals with disabilities. Five (4.5%) reported 13 to 15 years of experience. Six (5.4%) reported 16 to 18 years. Four (3.6%) reported 19 to 21 years of experience and three (2.7%) reported 22 to 24 years of experience. Eleven (9.8%) reported 25 or more years of experience.

Number of Years of Professional Experience Working with Individuals with ASD. Twenty-two (19.8%) reported one year of professional experience working with individuals with ASD. Twenty-four (21.4%) reported 2 to 3 years of professional experience. Twenty (17.9%) reported 4 to 5 years of professional experience. Eleven (9.8%) reported 6 to 7 years of professional experience. Six (5.4%) reported 8 to 9 years of professional experience. Eleven (9.8%) participants reported 10 to 11 years of professional experience. Three (2.7%) reported 12 to 13 years, 14 to 15 years, 16 to 17 years, and 18 to 19 years of professional experience working with individuals with ASD. Six (5.4%) reported 20 or more years of professional experience.

Table 3

Job Specific Characteristics of Phase Two Participants (n=112)

	<i>f</i>	%
Current Professional Role		
Teacher	87	77.7%
Support/Administrative Staff	10	8.9%
Classroom Support	12	10.7%
College Instructor/Professor	2	1.8%
Full-Time Student	1	.9%
Number of Years Worked with Individuals w/Disabilities		
1-3 years	26	25%
4-6 years	28	23.2%
7-9 years	15	13.4%
10-12 years	14	12.5%
13-15 years	5	4.5%
16-18 years	6	5.4%
19-21 years	4	3.6%
22-24 years	3	2.7%
25+ years	11	9.8%
Number of Years Worked with Individuals w/ASD		
1 year	22	19.8%
2-3 years	24	21.4%
4-5 years	20	17.9%
6-7 years	11	9.8%
8-9 years	6	5.4%
10-11 years	11	9.8%
12-13 years	3	2.7%
14-15 years	3	2.7%
16-17 years	3	2.7%
18-19 years	3	2.7%
20+ years	6	5.4%

Grade Levels Worked. Grade level(s), number of students with ASD currently working with and number of students with ASD worked with in career are summarized in Table 4.

Nine (8%) reported having worked with students at only the pre-school level. Twenty (17.9%) participants reported having worked only with students at the elementary level. Four (3.6%) participants reported having worked with students only at the middle school level. Twenty (17.9%) participants reported having worked with students at the pre-school and elementary school level. Five (4.5%) participants reported having worked with students at the elementary and middle school levels. Two (1.8%) participants reported having worked with students at the middle and high school levels. Sixteen (14.3%) participants reported having worked with students at the pre-school, elementary, middle and high school levels. Fifteen (13.4%) participants reported having worked with students at the elementary, middle and high school levels. Four (3.6%) participants reported having worked with students at the pre-school, elementary and high school levels. Ten (8.9%) participants reported having worked with students at the pre-school, elementary and middle school levels. One (.9%) participant reported working with individuals at the pre-school, elementary school and vocational levels. Three (2.7%) participants reported working with individuals at the pre-school, elementary school, middle school, high school and adult level. One (.9%) participant reported working with students at the early intervention level, pre-school and elementary levels.

Students with ASD. Fourteen (12.5%) reported not currently working with students with ASD. Sixty-eight (60.7%) participants reported currently working with 1 to 6 students with ASD. Sixteen (14.3%) reported currently working with 7 to 13 students

with ASD. Fourteen (12.5%) participants reported currently working with 14 or more students with ASD.

Thirty-six (32.1%) participants reported working with 1 to 10 students with ASD during their professional career. Nineteen (17%) reported 11 to 20 students. Twenty-three (20.5%) reported 21 to 20 students. Thirty-four (30.4%) reported having worked with 31 or more students with ASD in their professional career.

Table 4

*Grade Levels and Number of Students with ASD Taught by Phase Two Participants
(n=112)*

	<i>f</i>	%
Grade Levels Worked		
Pre-School	9	8%
Elementary School	20	17.9%
Middle School	4	3.6%
Preschool/Elementary School	20	17.9%
Elementary/Middle School	5	4.5%
Middle School/High School	2	1.8%
Preschool/Elementary/Middle/High	16	14.3%
Elementary/Middle/High	15	13.4%
Preschool/Elementary/High	4	3.6%
Elementary/High	2	1.8%
Preschool/Elementary/Middle	10	8.9%
Preschool/Elementary/Vocational	1	.9%
Preschool/Elem/Middle/High/Adults	3	2.7%
Early Intervention/Preschool/Elem	1	.9%
Number of Students w/ASD Current		
0	14	12.5%
1-6	68	60.7%
7-13	16	14.3%
14+	14	12.5%
Number of Students w/ASD Career		
1-10	36	32.1%
11-20	19	17%
21-30	23	20.5%
31+	34	30.4%

Certification. Certification data is summarized in Table 5. Four participants (3.6%) reported being a BCBA (Board Certified Behavior Analyst). Two (1.8%) reported having National Board Certification. Thirty-seven (33%) participants reported certification in New York. Twenty-three (20.5%) reported certification in New Jersey. Fifteen (13.4%) participants reported certification in Florida. One (.9%) reported certification in Connecticut. Six (5.4%) participants reported certification in both New York and New Jersey. Two (1.8%) reported certification in Pennsylvania, New York and Connecticut. One (.9%) reported certification in New Jersey and Florida. Two (1.7%) reported certification in Wisconsin and one (.9%) reported certification in both Wisconsin and Arizona. One (.9%) participant reported certification in New York and Connecticut and one (.9%) reported certification in Massachusetts and New York. Two (1.8%) participants reported certification in New York and Florida. One (.9%) participant reported certification in both California and New York. One (.9%) participant reported certification in Georgia. Two (1.8%) participants reported certification in New York and Pennsylvania and two (1.8%) reported certification in New York and Georgia. One (.9%) participant reported certification in the District of Columbia, New York and Virginia. One (.9%) participant reported certification in both Texas and Florida and one (.9%) participant reported certification in New York, Maryland and California. One (.9%) participant reported certification in Rhode Island and Massachusetts. Two (1.8%) participants reported certification in New Jersey and California. One (.9%) participant reported certification in both New Jersey and Texas and one (.9%) participant reported certification in Connecticut, New York and Hawaii. One (.9%) participant reported certification in New York, New Jersey and Rhode Island. One (.9%) reported certification in all states and four (3.6%) not report the state certified.

Table 5

Certification by State for Phase Two Participants (n=112)

	<i>f</i>	%
BCBA	4	3.6%
National Board Certification	2	1.8%
States Certified		
New York	37	33%
New Jersey	23	20.5%
Connecticut	1	.9%
New York/New Jersey	6	5.4%
Pennsylvania/New York/Connecticut	2	1.8%
Florida	15	13.4%
New Jersey/Florida	1	.9%
Wisconsin	2	1.8%
Arizona/Wisconsin	1	.9%
New York/Connecticut	1	.9%
New York/Florida	2	1.8%
Massachusetts /New York	1	.9%
California/New York	1	.9%
Georgia	1	.9%
New York/Pennsylvania	2	1.8%
Georgia/New York	2	1.8%
District of Columbia/New York/Virginia	1	.9%
Texas/Florida	1	.9%
New York/Maryland/California	1	.9%
Rhode Island/Massachusetts	1	.9%
New Jersey/California	2	1.8%
New Jersey/Texas	1	.9%
Connecticut, New York, Hawaii	1	.9%
New York, New Jersey, Rhode Island	1	.9%
All States	1	.9%
No State Reported	4	3.6%

Area of Certification. Area of certification is summarized in Table 6.

Participants reported a variety of certifications and certification combinations. The most participants, twenty-nine (25.9%), reported certification in both General and Special Education. Sixteen (14.3%) reported certification in just General Education and nine (8%) reported certification in just Special Education. Only one (.9%) participant reported certification in just Autism. Eleven (9.8%) reported certification in General Education, Special Education and Early Childhood Education. Four (3.6%) participants reported certification in Special Education and Severe/Multiple Disabilities. Six (5.4%) participants reported certification in General Education and Early Childhood Education and five (4.5%) participants reported certification in General Education, Special Education and Autism. Four (3.6%) participants reported certification in General Education, Special Education and Severe/Multiple Disabilities. Three (2.7%) participants reported certification in Special Education and School Administration and Supervision. Two (1.8%) participants reported certification in the following areas: Teacher of the Speech and Hearing Handicapped (TSHH); General Education, Special Education, Early Childhood Education, Severe/Multiple Disabilities, Autism and TSHH; General Education, Special Education, Early Childhood Education, Severe/Multiple Disabilities and Autism; and School Psychology. Most of the certification combinations were represented by one (.9%) participant, this is summarized in Table 6.

Table 6

Areas of Certification for Phase Two Participants (n=112)

	<i>f</i>	%
General Education	16	14.3
Special Education	9	8
Autism	1	.9
Special Education/Severe Multiple Disabilities	4	3.6
General Education/Special Education	29	25.9
General Education/Early Childhood	6	5.4
General Ed/Special Ed/Autism	5	4.5
General Ed/Special Ed/Early Childhood	11	9.8
Teacher of the Speech and Hearing Handicapped	2	1.8
Severe Multiple Disabilities/TSHH	1	.9
Elementary Ed/Special Ed/Severe Multiple Disabilities	4	3.6
Special Ed/Severe Mult/ESOL	1	.9
Special Ed/Early Childhood	1	.9
General Ed/Special Ed/Early Childhood/Severe Mult/Autism/ TSHH	2	1.8
General Ed/Special Ed/Early Childhood/Severe Mult	1	.9
Special Ed/Severe Mult/Autism	1	.9
General Ed/Special Ed/Early Childhood/Autism	1	.9
Special Ed/School Admin & Supervision	3	2.7
General Ed/Special Ed/ESOL/Autism	1	.9
Special Ed/Autism	1	.9
General Ed/Special Ed/Sever Mult/ESOL	1	.9
Special Ed/Severe Mult/ESOL	1	.9
General Ed/Special Ed/Early Childhood/Severe Mult/Autism	2	1.8
General Ed/Special Ed/ESOL/Gifted/ Ed Leadership	1	.9
Special Ed/Health/PE	1	.9
Early Childhood/ESOL	1	.9
General Ed/Special Ed/Early Childhood/TSHH	1	.9
Special Ed/Art	1	.9
Special Ed/Early Childhood/Autism	1	.9
Special Ed/School Admin & Supervision/ LDT-C	1	.9
Early Childhood/Art	1	.9

Research Design

The second, quantitative phase of this study was designed to investigate relationships, as well as to identify predictors of quality of special education teachers of students with ASD through hierarchical multiple regression analysis. The data were collected using the following researcher developed materials: *Special Education Teachers of Students with ASD Knowledge Assessment*; *Special Education Teachers of Students with ASD Skill Assessment*; *Special Education Teachers of Students with ASD Characteristics of Quality*; *Special Education Teachers of Students with ASD Components of Preparation*; and *Self-Reported Effectiveness of Teacher Education* in combination with an adapted demographic questionnaire, *The Autism Survey* (Schwartz & Drager, 2008) and a valid and reliable survey of self-efficacy, *Teachers Sense of Self-Efficacy* (Tschannen-Moran & Woolfolk-Hoy, 2001). The overall title of the survey that incorporated all of these measures, when presented to participants, was called “Special Education Teachers and Autism Spectrum Disorders”. The survey can be found in Appendix B. For reporting, the measures will be referred to by their individual names.

The dependent variables included Knowledge of ASD, Skill in ASD, Characteristics of Quality and Self-Efficacy of special education teachers of students with ASD. *The Special Education Teachers of Students with ASD Knowledge Assessment* measured knowledge of ASD. Skill in ASD was measured by *Special Education Teachers of Students with ASD Skill Assessment*. Characteristics of Quality was measured by *Special Education Teachers of Students with ASD Characteristics of Quality*. The Self-Efficacy variable was measured using a modified version of the short form of the *Teacher’s Sense of Efficacy Scale (TSES)* (Tschannen-Moran & Woolfolk-Hoy, 2001).

The potential predictors were clustered into three distinct categories. The first cluster, Education Predictors, consisted of: Extent of Coursework in ASD; Highest Degree Reported; and Type of Certification/Endorsement. The second cluster, Experience Predictors, consisted of: Number of Years Working with Individuals with ASD; Number of Years Working with Individuals with Disabilities; Number of Students with ASD Worked with in Career; Number of Current Students with ASD; and Number of Years Since Received Highest Degree. Effectiveness of Preparation is in its own category of variable, Self-Reported Predictor.

The Education Predictors Highest Degree Reported and Type of Certification/Endorsement were measured by the demographic section of *The Autism Survey* (Schwartz & Drager, 2008). *The Autism Survey* is a version of the Stone (1987) Autism Survey. The questions in the Schwartz and Drager (2008) version were updated to better reflect current practices. The Experience Predictors: Number of Years of Professional Experience Working with Individuals with Disabilities; Number of Years of Professional Experience Working with Individuals with ASD; Number of Current Students with ASD; Number of Students with ASD Worked with in Professional Career; and Number of Years Since Received Highest Degree were also measured using *The Autism Survey* (Schwartz & Drager, 2008).

The Education Predictor, Extent of Coursework in ASD was measured by the researcher-developed scale, *Special Education Teachers of Students with ASD Components of Preparation*. The Self-Report Predictor, Effectiveness of Preparation, was measured by the researcher-developed scale, *Self-Reported Effectiveness of Teacher Education*.

Materials and Instruments

The demographic questions were answered using an adapted version of *The Autism Survey* (Schwartz & Drager, 2008). This was used to gain relevant information about the participants' education and experience. The demographic questionnaire consisted of questions about highest degree, current professional role, years of experience, number of students with ASD the participant is currently working with, number of students the participant has worked with during his or her career, certification/endorsement, certification, number of courses pertaining to ASD, and student teaching. State certified and college/university received highest degree were also included in the demographic questionnaire, but not in the analysis.

Data collected from Phase One of this study were used to develop some of the instruments used in Phase Two of this study. Transcriptions of data collected during the first, qualitative phase, of this study were coded for analysis. The results of the analysis can be found in the next chapter. The results were used to develop a battery of instruments used in data collection of Phase Two of this study. Detailed information of the processes used in instrument development can be found in the next chapter.

Dependent Variables

The *Special Education Teachers of Students with ASD Knowledge Assessment* measured the dependent variable of Knowledge of ASD. This scale was researcher developed and contained eighteen items. The measurement scale was in a Likert format ranging from 1 to 4 points. A four-point Likert scale was used to better reflect the model presented in Stone (1988). A score of 1 reflected zero knowledge; a score of 2 reflected very little knowledge; a score of 3 reflected limited knowledge; and a score of 4 reflected extensive knowledge. The highest score possible for this measure was 72. Reliability for

this scale was calculated using Cronbach's alpha at .91. The format of this instrument was based on the Stone (1984) Autism Survey. This tool used a Likert format to measure knowledge of ASD.

This scale was developed using subthemes relating to the knowledge of ASD of special education teachers of students with ASD established during Phase One. Questions on the *Conversation Protocol* (Appendix A) that referred to the knowledge a special education teacher of students with ASD should have to be considered a quality teacher were evaluated for consistency and number of references. The number of references to each area of knowledge (specific and general) were counted and developed into subthemes. The subthemes were then used to generate potential instrument questions. Additional information about the specific instrument development can be found in the next chapter.

Special Education Teachers of Students with ASD Skill Assessment measured the variable of Skill. This scale was researcher developed and contained eight items. This measurement scale for each item ranged from 1 to 4 points. A score of 1 reflected strongly disagree, a score of 2 reflected disagree, a score of 3 reflected agree and a score of 4 reflected strongly agree. The highest score possible for this measure was 32. Reliability was calculated at .85 using Cronbach's alpha.

This scale was developed using subthemes relating to the skills of special education teachers of students with ASD established in Phase One. Questions on the *Conversation Protocol* (Appendix A) relating to the skills of a quality special education teacher of students with ASD were evaluated for consistency and number of references. The number of references to each area of skill were counted and developed into subthemes. The references to skills that were able to be measured were separated from

those skills not able to be measured. The subthemes (able to be measured) were then used as potential instrument questions. Additional information about the specific instrument development can be found in the next chapter.

Quality was measured by *Special Education Teachers of Students with ASD Characteristics of Quality*. This Likert scale was researcher developed. It contained sixteen items. Scores for each item ranged from 1 to 4 points. A score of 1 reflected strongly disagree, a score of 2 reflected disagree, a score of 3 reflected agree and a score of 4 reflected strongly agree. The highest score possible was a 64. Cronbach alpha reliability was calculated at .85.

This scale was developed using subthemes relating to the characteristics of quality special education teachers of students with ASD established in Phase One. Questions on the *Conversation Protocol* (Appendix A) that referred to the characteristics of quality special education teachers of students with ASD were evaluated for consistency and number of references. The major theme was divided into two minor themes, able to be measured and not able to be measured. The subtheme, able to be measured, was used to develop this instrument. The subthemes were then used as potential instrument questions.

Self-efficacy was measured by an adapted version of the *Teacher's Sense of Efficacy Scale* (TSES-short form) (Tschannen-Moran & Woolfolk-Hoy, 2001). This scale was adapted to better reflect the self-efficacy of teachers of students with ASD. The phrase "students with ASD" replaced "student" on the survey. Questions relating to class-wide behavioral supports were changed to better reflect individualized behavior modification. The shorter version of this questionnaire consists of twelve items measuring three aspects of teacher efficacy including student engagement, instructional strategies and classroom management. The TSES is an extension of the Teacher Efficacy

Scale (Gibson & Dembo, 1984). Tschannen-Moran and Woolfolk-Hoy (2001) found the short form of the TSES to be reliable at .90. Additionally, construct validity was found between the TSES and other measures of efficacy. For this study, reliability (Cronbach's alpha) for the twelve-item scale was found to be .89.

Predictor Variables

The potential predictor variables were divided into three categories: Education Variables; Experience Variables; and Self-Report Variable. The Education Variables were: Extent of Coursework in ASD; Highest Degree; and Type of Certification/Endorsement. The Experience Variables were: Number of Years of Professional Experiences Working with Individuals with ASD; Number of Years of Professional Experience Working with Individuals with Disabilities; Number of Students with ASD Worked with in Professional Career; Number of Current Students with ASD; Number of Years Since Received Highest Degree. The Self-Report Variable was Effectiveness of Preparation

The researcher created scale, *Special Education Teachers of Students with ASD Components of Preparation*, measured the variable Extent of Coursework in ASD. The scale contains fifteen items. The Likert scale ranges from 1 to 4 points, 1=zero coursework, 2=very little coursework, 3= limited coursework, and 4=extensive coursework. Reliability (Cronbach alpha) was calculated at .95.

This scale was developed using subthemes relating to the specific coursework and experiences special education teacher education programs should contain, as established in Phase One. Questions on the *Conversation Protocol* (Appendix A) that referred to the specific courses and experiences special education teacher of students with ASD should have during their pre-service experience were evaluated for consistency and number of

references. The number of references to type of course were counted and developed into subthemes. The subthemes were then used as potential instrument questions. Additional information about the specific instrument development can be found in the next chapter.

The Education Variables, Highest Degree and Type of Certification/Endorsement were measured using *The Autism Scale* (Schwartz & Drager, 2008). Participants were asked to complete fill-in-the-blank questions about their degree.

The Experience Variables were measured using *The Autism Scale* (Schwartz & Drager, 2008). Participants answered a series of questions relating to their current and past experiences working with individuals with disabilities, specifically individuals with ASD.

The self-report predictor variable, Effectiveness of Preparation, was measured by the *Self-Reported Effectiveness of Teacher Education*. This is a researcher developed Likert scale. The scale consists of eleven items with a four point response scale: 1=strongly disagree; 2=disagree; 3=agree; and 4=strongly agree. Reliability was calculated at .87, using Cronbach's alpha.

This scale was developed using subthemes relating to special education teachers of students with ASD and their perception of the effectiveness of their preparation to teach students with ASD, as established in Phase One. The major themes that emerged in Phase One consisted of references to components of special education teacher education that would lead to higher quality teaching of students with ASD. The number of references to each area of preparation were counted and developed into subthemes. The subthemes were then used as potential instrument questions. The questions reflected the special education teacher's perception of the effectiveness of preparation on his or her

ability to teach students with ASD. Additional information about the specific instrument development can be found in the next chapter.

Procedure

The online version of the survey was available on [surveymonkey.com](https://www.surveymonkey.com). Participants were able to access the survey using a unique web address that was provided in an initial email.

Informed consent was included as part of the survey. Prior to accessing the survey questions, participants were required to agree to participate by checking the appropriate box. There were no follow-up emails sent to potential participants. The researcher was able to track the number of surveys completed, but was not able to identify who was completing the survey. A hard copy of the IRB approved consent form was provided for individuals completing the written version of the survey. This was the same version available online. The completed surveys were printed and stored in a locked filing cabinet in the researcher's home. Data entry was ongoing.

The first questions on the survey were the demographic questions. The format for these questions included multiple choice and short answer. Following the demographic questions, each individual instrument was one page on the online version of the survey. The participants were prompted to complete all questions on each page prior to moving to the next page of the survey. The ordering of the individual instruments was decided using a feedback from individuals who piloted earlier versions. The first instrument was the *Self-Reported Effectiveness of Preparation*. This was first in the sequence due to the length of the instrument (long). The next instrument was the *Special Education Teachers of Students with ASD Skill Assessment*, which was chosen to be next for its short length. The third instrument was the *Special Education Teachers of Students with ASD*

Characteristics of Quality, which was chosen to be next because of its length. The next instrument was the *Special Education Teachers of Students with ASD Components of Preparation*. The adapted version of the *Teacher's Sense of Efficacy Scale* (Tschannen-Muran & Woolfolk-Hoy, 2001) was next because it was a short survey. The final survey was the *Special Education Teachers of Students with ASD Knowledge Assessment*. This was the final page in the battery of instruments and contained the most questions. The suggested time for completion of all questions was 15 to 20 minutes, as determined by individuals who piloted the instruments.

Participants who chose to be entered for the chance to win a \$20 Barnes and Noble e-card were asked to submit their email address at the end of the survey. This information was kept separate from the completed surveys.

At the completion of data collection, a selection of participants received a \$20 Barnes and Nobel e-card. Using a random number table, the number 8 was chosen. Every eighth participant (out of each ten) received the gift card. The eighth, eighteenth, twenty-eighth, thirty-eighth, forty-eighth, fifty-eighth, sixty-eighth, seventy-eighth, eighty-eighth, ninety-eighth, and one hundred and eighth participant received the gift card.

Scoring and Data Analysis

Total scores were calculated for each of the measurement instruments. The *Special Education Teachers of Students with ASD Knowledge Assessment* measured the dependent variable of Knowledge of ASD. The scale contains eighteen items with a score range of 18 to 72. Each item used had a possible minimum score of 1 and a possible maximum score of 4.

The *Special Education Teachers of Students with ASD Skill Assessment* measured the dependent variable of Skill. This scale contained eight items with a score range from

8-32. The dependent variable Characteristics of Quality was measured by the *Special Education Teachers of Students with ASD Characteristics of Quality*. The scale contains sixteen items. The score range is 16 to 64.

The dependent variable Self-efficacy was measured by the adapted *Teacher's Sense of Efficacy Scale* (TSES-short form). This scale was adapted to better reflect teachers of students with ASD. The modifications include changing the possible answers from a 9-point scale to a 4-point scale for better consistency with the other measures. There were twelve items in this scale. The score range was from 12 to 48.

The *Special Education Teachers of Students with ASD Components of Preparation* measured the predictor variable Extent of Coursework in ASD. This scale contained fifteen items with a score range from 15 to 60. The predictor variable Self-Reported Effectiveness of Preparation was measured by the *Self-Reported Effectiveness of Preparation*. This scale contained eleven items with a score range from 11 to 44.

Total scores were calculated for each measurement instrument. These scores were determined by adding the scores for each question. Total scores were used for used for analysis.

Pearson Product-Moment Correlations were calculated for all dependent and independent variables and a correlation matrix was generated. Hierarchical multiple regression analysis was used to determine which set of variables are the best predictors of knowledge, skill, quality and self-efficacy of special education teachers of students with ASD. A summary of the dependent variables and potential predictors is found in Table 7.

Table 7

Summary of measures, score ranges, variables and predictors for Phase Two instruments

<i>Measure</i>	<i>Score Range</i>	<i># Of Items</i>	<i>Variable</i>
Special Education Teachers of Students with ASD Knowledge Assessment	18-72	18	Knowledge of ASD (DV)
Special Education Teachers of Students with ASD Skill Assessment	8-32	8	Skill in ASD (DV)
Special Education Teachers of Students with ASD Characteristics of Quality	16-64	16	Characteristics of Quality (DV)
Teacher's Sense of Efficacy	12-48	12	Self-Efficacy (DV)
Special Education Teachers of Students with ASD Components of Preparation	15-60	15	<i>Education Variable</i> Extent of Coursework in ASD (PV)
Self-Reported Effectiveness of Preparation	11-44	11	<i>Self-Report Variable</i> Effectiveness of Preparation (PV)
Autism Survey		16	<i>Education Variables</i> Highest Degree Reported (PV) Type of Certification/ Endorsement (PV) <i>Experience Variables</i> Number of Years of Professional Experience w/Students w/Disabilities (PV) Number of Years of Professional Experiences w/Students w/ASD (PV) Number Students w/ASD Current (PV) Number Students w/ASD Career (PV) Number of Years Since Received Highest Degree (PV)

*** PV-Predictor Variable; DV-Dependent Variable

PHASE TWO
CHAPTER IV
QUANTITATIVE RESULTS

This phase of the study surveyed one hundred and twelve certified special education teachers who have worked with students with ASD within the past five years to determine their *Knowledge of ASD*, *Skill*, *Characteristics of Quality* and *Self-Efficacy* in relation to the three categories of independent variables, Education Variables, Experience Variables and Self-Report Variable. First, preliminary analyses are reported. These analyses include means, ranges, and standard deviations for all independent and dependent variables. Next, the main analyses are reported in relation to the research questions, including correlations and hierarchical multiple regression for all dependent variables.

Preliminary Analyses

Dependent Variables. A summary of the dependent variables is found in Table 8. For the first dependent variable, Knowledge of ASD, the mean was 63.78 and the standards deviation (SD) was 6.88. The second dependent variable, Skill in ASD, resulted in a mean score of 28.67 with a standard deviation (SD) 2.98. In regard to the third dependent variable, Characteristics of Quality, the mean score was 54.56 with a standard deviation (SD) 4.95. The final dependent variable, Self-Efficacy, resulted in a mean score was 44.67 with a standards deviation (SD) 4.29.

Table 8

Descriptive Statistics for the Dependent Variables: Knowledge, Skill, Characteristics of Quality and Self-Efficacy

<i>Variable</i>	<i>Range</i>	<i>Mean</i>	<i>SD</i>
Knowledge of ASD	42-72	63.78	6.88
Skill in ASD	21-32	28.67	2.98
Characteristics of Quality	42-64	54.56	4.95
Self-Efficacy	27-48	44.67	4.29

Predictor Variables. A summary of the Extent of Coursework in ASD and Effectiveness of Preparation is provided in Table 9. In regard to the first predictor variable, Extent of Coursework in ASD, the mean score was 43.83 and the standard deviation was 11. For the second predictor variable, Effectiveness of Preparation, the mean score was 33.47 and the standard deviation (SD) was 5.43.

The remaining potential predictors: Highest Degree Reported; Number of Years of Professional Experience Working with Individuals with Disabilities; Number of Years of Professional Experience Working with Individuals with ASD; Number of Current Students with ASD; Number of Students with ASD Worked with in Professional Career; Type of Certification/Endorsement; and Number of Years Since Received Highest Degree did not require preliminary analysis.

Table 9

Descriptive Statistics for Predictor Variables: Extent of Coursework in ASD and Effectiveness of Preparation

<i>Variable</i>	<i>Range</i>	<i>Mean</i>	<i>SD</i>
Effectiveness of Preparation	18-44	33.47	5.43
Extent of Coursework in ASD	17-60	43.83	11

Main Analysis

Research Question (4): *What are the relationships between education, experience and self-report predictor variables and the current knowledge, skill, characteristics of quality and self-efficacy of special education teachers of students with ASD?*

A. Dependent Variables

1. Knowledge of ASD
2. Skill in ASD
3. Characteristics of Quality
4. Self-Efficacy

B. Predictor Variables

1. Education Variables

- a. Extent of Coursework in ASD
- b. Highest Degree Reported
- c. Type of Certification/Endorsement

2. Experience Variables

- a. Number of Years of Professional Experiences Working with Individuals with ASD

- b. Number of Years of Professional Experience Working with Individuals with Disabilities
 - c. Number of Students with ASD Worked with in Professional Career
 - d. Number of Current Students with ASD
 - e. Number of Years Since Received Highest Degree
3. Self-Report Variable
- a. Effectiveness of Preparation

The correlation matrix for all dependent and independent variables can be found in Table 10. The results of the correlation analyses indicate significant correlations between the dependent variable, *Knowledge of ASD*, and several predictor variables. The Education Variables were Extent of Coursework in ASD ($r=.411$; $p<.01$) and Highest Degree Reported ($r=.200$; $p<.05$). The Experience Variables were Number of Years of Professional Experience Working with Individuals with ASD ($r=.276$; $p<.01$) and Number of Students with ASD Worked with in Professional Career ($r=.344$; $p<.01$). The Self-Report Variable, Effectiveness of Preparation ($r=.302$; $p<.01$), was also significantly correlated with Knowledge of ASD.

The Education Variable that was significantly correlated with the dependent variable, *Skill in ASD*, was Extent of Coursework in ASD ($r=.282$; $p<.01$). The Experience Variable that was significantly correlated with *Skill in ASD* was Number of Years of Professional Experience Working with Individuals with ASD ($r=.267$; $p<.01$) and the Self-Report Variable was Effectiveness of Preparation ($r=.481$; $p<.01$). The Educational Variable that was significantly correlated with *Characteristics of Quality* was Extent of Coursework in ASD ($r=.257$; $p<.01$) and the Self-Report variable was

Effectiveness of Preparation ($r=.439$; $p<.01$). The Education Variable that was significantly correlated with the dependent variable, *Self-Efficacy*, was Extent of Coursework in ASD ($r=.274$; $p<.01$). The Experience Variable that was significantly correlated with *Self-Efficacy* was Number of Years of Professional Experience Working with Individuals with ASD ($r=.209$; $p<.05$) and the Self-Report Variable was Effectiveness of Preparation ($r=.238$; $p<.01$).

Table 10

Correlation Matrix for Dependent and Predictor Variables

	KA	AS	CQ	SE	EC	HD	CE	YA	YI	NCa	NCu	YD	EE
KA	1	.331**	.250**	.291**	.411**	.200*	.170	.276*	.154	.344**	.093	.037	.302**
AS		1	.651**	.439**	.282**	.056	.184	.267**	.144	.162	.129	.055	.481**
CQ			1	.451**	.257**	-.092	.023	.176	.126	-.046	-.058	.028	.439**
SE				1	.274**	.015	.172	.209*	.105	.101	.052	.019	.238**
EC					1	.121	.044	-.038	-.216*	.151	-.076	-.256**	.680**
HD						1	.244	.289*	.244*	.301**	-.089	-.105	.057
CE							1	.408**	.400**	.242**	.141*	.193*	.153
YA								1	.756**	.505**	.242*	.285**	.063
YI									1	.279**	.003	.527**	-.105
NCa										1	.474**	.115	.120
NCu											1	.012	.010
YD												1	-.180*
EE													1

*= $p < .05$; **= $p < .01$

Note: Dependent Variables are bolded

Key:*Dependent Variables***KA=Knowledge Assessment****AS=ASD Skill****CQ=Characteristics of Quality****SE=Self-Efficacy***Education Variables*

EC=Extent of Coursework in ASD

HD=Highest Degree Reported

CE=Type of Certification/Endorsement

Experience Variables

YA= Years of Professional Experiences with Individuals with ASD

YI=Years of Professional Experiences with Individuals with Disabilities

NCa=Number of Students in Career with ASD

NCu=Number of Current Students with ASD

YD=Number of Years Since Received Highest Degree

Self-Report Variable

EE=Effectiveness of Preparation

The results of the correlation analysis were used to determine which variables to enter into each hierarchical multiple regression analysis. The predictor variables that were significantly correlated with each dependent variable were entered into the hierarchical multiple regressions. The order of the variable groups was chosen based on the typical progression from a teacher candidate (education) to a classroom teacher (experience). This assumption of progression is supported by research (Darling-Hammond et al, 2002; Cochran-Smith, 2002; CEC, 2003). Darling-Hammond (2003) found that teachers who pursued a traditional teacher preparation program were better prepared to teach than teachers who followed an alternative or non-traditional method of preparation. Within the categories of predictor variables, the order of the variables is based on the advancement of a special education teacher and theoretical predictions. The variables were entered into SPSS blocked in sets. The sets were the categories of variables.

The first category of predictor variables, Education Variables, contains the variable Extent of Coursework in ASD. It was hypothesized that this variable would be the best predictor for each of the dependent variables. Research on the effects of coursework and experiences on the knowledge, skills and characteristics of quality special education teachers of students with ASD is sparse, but there is research on other disability populations (Butcher Carter & Scruggs, 2001; Boe et al, 2007; Blanton et al, 2006) that support this hypothesis. The prediction was made that coursework and experiences in ASD would have a similar effect on the knowledge, skills and characteristics of quality special education teacher as for other populations of disabilities. Most states require a potential teacher to possess a degree prior to receiving certification. This is particularly true for states that have a certification/endorsement in ASD (e.g.: Delaware Professional Standards Education Regulations, 2007; Florida Department of

Education Special Regulations for Endorsement in Autism, 2007; Marshall University College of Education and Human Services, 2008). Thus, the next potential predictor variable is Highest Degree Reported followed by Type of Certification/Endorsement.

The second group of predictor variables is Experience Variables. The first predictor variable, Number of Years of Professional Experience Working with Individuals with ASD, was chosen based on the hypothesis that increased experience with the individuals with a disability would lead to increased knowledge, skills, and characteristics of quality. The next predictor variable, Number of Years of Professional Experience Working with Individuals with Disabilities follows the same hypothesis, within the broader category of experiences. The next two predictor variables in this category relate to the number of students with ASD the special education teacher has worked with presently and in their career. The last predictor variable in this category was the Number of Years Since Received Highest Degree, which follows the theory that increased experience would result in increased knowledge, skills and characteristics of quality. While there is not research specifically linking increased experience to quality special education teachers of students with ASD, there is some research on the effects of experience on teaching skills in general (e.g.: Bauer et al, 2004; Butcher Carter & Scruggs, 2001).

The final predictor variable is the Self-Report Variable. This variable was entered last in the hierarchical multiple regression because it refers to the special education teacher's perception of their educational experiences. It was theorized that this variable should be entered alone because it was reflective of the effectiveness of preparation based on one's experiences.

Research Question (5): *What are the best predictors of Knowledge of ASD for special education teachers of students with ASD?*

A. Education Variables

- a. Extent of Coursework in ASD
- b. Highest Degree Reported
- c. Type of Certification/Endorsement

B. Experience Variables

1. Number of Years of Professional Experiences Working with Individuals with ASD
2. Number of Years of Professional Experience Working with Individuals with Disabilities
3. Number of Students with ASD Worked with in Professional Career
4. Number of Current Students with ASD
5. Number of Years Since Received Highest Degree

C. Self-Report Variable

1. Effectiveness of Preparation

The predictor variables that were significantly correlated with the dependent variables were entered into the hierarchical multiple regression analysis in the following order: Education Variables; Experience Variables; Self-Report Variable. Only variables with significant correlations were used in the analysis.

The Education Variables that were significantly correlated with the dependent variable, *Knowledge of ASD*, were Extent of Coursework in ASD ($r=.411$; $p<.01$) and Highest Degree Reported ($r=.200$; $p<.05$). The Experience Variables that were significantly correlated with the dependent variable, *Knowledge of ASD* were Number of

Years of Professional Experience Working with Individuals with ASD ($r=.276$; $p<.01$) and Number of Students with ASD Worked with in Professional Career ($r=.344$; $p<.01$). The Self-Report variable, Effectiveness of Preparation ($r=.302$; $p<.01$), was also significantly correlated with *Knowledge of ASD*.

The predictor variables found to have significant correlations with the dependent variable, *Knowledge of ASD*, were entered into a hierarchical multiple regression analysis. Results indicated that 28% ($r^2=.280$; $p<.01$) of the variance was accounted for, with the Education Variables accounting for 19.2% ($r^2=.192$; $p<.01$). The Experience Variables accounted for 8.9% ($r^2\Delta=.089$; $p<.01$). The Self-Report Variable did not significantly change the model and did not account for a significant amount of variance. The best set of predictors of Knowledge of ASD includes the Education Variables (Extent of Coursework in ASD and Highest Degree Reported) and the Experience Variables (Number of Years of Professional Experience Working with Individuals with ASD and Number of Students with ASD Worked with in Professional Career). The models are summarized in Table 11.

Table 11

Hierarchical Multiple Regression for Knowledge of ASD

Source	r^2	$r^2\Delta$	df	MS	F
Education Variables Extent of Coursework in ASD, Highest Degree Reported	.192		2	1.56	12.94**
Education Variables Extent of Coursework in ASD, Highest Degree Reported Experience Variables Number of Years of Professional Experience Working with Individuals with ASD, Number of Students with ASD Worked with in Professional Career	.280	.089	2	1.14	10.45**
Education Variables Extent of Coursework in ASD, Highest Degree Reported Experience Variables Number of Years of Professional Experience Working with Individuals with ASD, Number of Students with ASD Worked with in Professional Career Self-Report Variable Effectiveness of Preparation	.280	.000	1	.911	8.26

**=p<.01

Research Question (6): *What are the best predictors of self-reported Skill proficiency in ASD for special education teachers of students with ASD?*

A. Education Variables

1. Extent of Coursework in ASD
2. Highest Degree Reported
3. Type of Certification/Endorsement

B. Experience Variables

1. Number of Years of Professional Experiences Working with Individuals with ASD
2. Number of Years of Professional Experience Working with Individuals with Disabilities
3. Number of Students with ASD Worked with in Professional Career
4. Number of Current Students with ASD
5. Number of Years Since Received Highest Degree

C. Self-Report Variable

1. Effectiveness of Preparation

The predictor variables that were significantly correlated with the dependent variables were entered into the hierarchical multiple regression analysis in the following order: Education Variables; Experience Variables; Self-Report Variable. Only variables with significant correlations were used in the analysis.

The Education Variable that was significantly correlated with the dependent variable, *Skill in ASD*, was Extent of Coursework in ASD ($r=.282$; $p<.01$). The Experience Variable that was significantly correlated with *Skill in ASD* was Number of

Years of Professional Experience Working with Individuals with ASD ($r=.267$; $p<.01$) and the Self-Report Variable was Effectiveness of Preparation ($r=.481$; $p<.01$).

Hierarchical multiple regression indicated that 28.9% ($r^2=.289$; $p<.01$) of the variance was accounted for with the Education Variables accounting for 8% ($r^2=.080$; $p<.01$) alone. The Experience Variables accounted for 7.7% ($r^2\Delta=.077$; $p<.01$) of the variance and the Self-Report Variable accounted for an additional 13.2% ($r^2\Delta=.132$; $p<.01$) of the variance. Results of the hierarchical multiple regression indicate that the best predictors of *Skill in ASD* for special education teachers of students with ASD are Education Variable (Extent of Coursework in ASD), Experience Variable (Number of Years of Professional Experience Working with Individuals with ASD) and Self-Reported Effectiveness of Preparation. The models are summarized in Table 12.

Table 12

Hierarchical Multiple Regression for Skill in ASD

Source	r²	r²Δ	df	MS	F
Education Variable Extent of Coursework in ASD	.080		1	1.23	9.54**
Education Variable Extent of Coursework in ASD Experience Variable Number of Years of Professional Experience Working with Individuals with ASD	.157	.077	1	1.21	10.14**
Education Variable Extent of Coursework in ASD Experience Variable Number of Years of Professional Experience Working with Individuals with ASD Self-Report Variable Effectiveness of Preparation	.289	.132	1	1.49	14.61**

**=p<.01

Research Question (7): *What are the best predictors of Characteristics of Quality for special education teachers of students with ASD?*

A. Education Variables

1. Extent of Coursework in ASD
2. Highest Degree Reported
3. Type of Certification/Endorsement

B. Experience Variables

1. Number of Years of Professional Experiences Working with Individuals with ASD
2. Number of Years of Professional Experience Working with Individuals with Disabilities
3. Number of Students with ASD Worked with in Professional Career
4. Number of Current Students with ASD
5. Number of Years Since Received Highest Degree

C. Self-Report Variable

1. Effectiveness of Preparation

The predictor variables that were significantly correlated with the dependent variables were entered into a hierarchical multiple regression analysis in the following order: Education Variables; Experience Variables; Self-Report Variables. Only variables with significant correlations were used in the analysis.

The Educational Variable that was significantly correlated with *Characteristics of Quality* was Extent of Coursework in ASD ($r=.257$; $p<.01$) and the Self-Report variable was Effectiveness of Preparation ($r=.439$; $p<.01$).

The predictor variables found to have significant correlations with the dependent variable, *Characteristics of Quality*, were entered into a hierarchical regression model.

Results of the hierarchical multiple regression indicated 19.6% ($r^2=.196$; $p<.01$) of the variance was accounted for, with the Education Variable, Extent of Coursework in ASD, accounting for 6.6% ($r^2=.066$; $p<.01$) and Self-Reported Effectiveness of Preparation accounted for 13% ($r^2\Delta=.130$; $p<.01$) of the variance. The best predictors of *Characteristics of Quality* for special education teachers of students with ASD are the Extent of Coursework in ASD and Effectiveness of Preparation. The models are summarized in Table 13.

Table 13

Hierarchical Multiple Regression for Characteristics of Quality

Source	r^2	$r^2\Delta$	df	MS	F
Education Variable Extent of Coursework in ASD	.066		1	.70	7.75**
Education Variable Extent of Coursework in ASD Self-Report Variable Effectiveness of Preparation	.196	.130	2	1.04	13.28**

**= $p < .01$

Research Question (8): *What are the best predictors of high Self-Efficacy for special education teachers of students with ASD?*

A. Education Variables

1. Extent of Coursework in ASD
2. Highest Degree Reported
3. Type of Certification/Endorsement

B. Experience Variables

1. Number of Years of Professional Experiences Working with Individuals with ASD
2. Number of Years of Professional Experience Working with Individuals with Disabilities
3. Number of Students with ASD Worked with in Professional Career
4. Number of Current Students with ASD
5. Number of Years Since Received Highest Degree

C. Self-Report Variable

1. Effectiveness of Preparation

The predictor variables that were significantly correlated with the dependent variables were entered into a hierarchical multiple regression analysis in the following order: Education Variables; Experience Variables; Self-Report Variable. Only variables with significant correlations were used in the analysis.

The Education Variable that was significantly correlated with the dependent variable, *Self-Efficacy*, was Extent of Coursework in ASD ($r=.274$; $p<.01$). The Experience Variable that was significantly correlated with *Self-Efficacy* was Number of

Years of Professional Experience Working with Individuals with ASD ($r=.209$; $p<.05$) and the Self-Report Variable was Effectiveness of Preparation ($r=.238$; $p<.01$).

The predictor variables found to have significant correlations with the dependent variable, *Self-Efficacy*, were entered into the hierarchical regression model. Results of the analysis indicated 12.5% ($r^2=.125$; $p<.01$) of the variance was accounted for, with the Education Variable, Extent of Coursework in ASD, accounting for 7.5% ($r^2=.075$; $p<.01$) of the variance. The Experience Variable, Number of Years of Professional Experience Working with Individuals with ASD accounted for 4.8% ($r^2\Delta=.048$; $p<.01$) of the variance. Effectiveness of Preparation did not significantly change the model. The best predictors of high *Self-Efficacy* for Special Education Teachers of Students with ASD are Extent of Coursework in ASD and Number of Years of Professional Experience Working with Individuals with ASD. The models are summarized in Table 14.

Table 14

Hierarchical Multiple Regression for Self-Efficacy

Source	r^2	$r^2\Delta$	df	MS	F
Education Variable Extent of Coursework in ASD	.075		1	1.065	8.91**
Education Variable Extent of Coursework in ASD Experience Variable Number of Years of Professional Experience Working with Individuals with ASD	.123	.048	1	.876	7.67**
Education Variable Extent of Coursework in ASD Experience Variable Number of Years of Professional Experience Working with Individuals with ASD Self-Report Variable Effectiveness of Preparation	.125	.002	1	.593	5.15

**=p<.01

Summary of Phase Two

This phase of the study examined the potential predictors of *Knowledge of ASD*, *Skill in ASD*, *Characteristics of Quality*, and *Self-Efficacy* of special education teachers of students with ASD. The predictor variables were clustered into three areas, Education Variables, Experience Variables and the Self-Report Variable. Initial analysis determined the significant correlations between the dependent variables and the predictor variables.

Significant correlations were found between the dependent variable, *Knowledge of ASD* and the Education Variables Extent of Coursework in ASD and Highest Degree Reported. *Knowledge of ASD* was significantly correlated with the Experience Variables Number of Students with ASD Worked with in Professional Career and Number of Years of Professional Experience Working with Individuals with ASD and the Self-Report Variable, Effectiveness of Preparation. The results of the hierarchical multiple regression analysis indicated the best predictors for *Knowledge of ASD* were: Extent of Coursework in ASD (Education Variable), Highest Degree Reported (Education Variable), Number of Students Worked with in Professional Career (Experience Variable) and Number of Years Working with Individuals with ASD (Experience Variable). While the full model containing all five potential predictors was significant, there was no change in the model with the addition of the potential predictor, Effectiveness of Preparation (Self-Report Variable).

The second dependent variable, *Skill in ASD*, was significantly correlated with the Education Variable Extent of Coursework in ASD, the Experience Variable, Number of Years of Professional Experience Working with Students with ASD, and the Self-Report Variable, Effectiveness of Preparation. The second hierarchical multiple regression analysis found the best predictors of *Skill in ASD* to be Extent of Coursework in ASD

(Education Variable), Number of Years Working with Individuals with ASD (Experience Variable), and Effectiveness of Preparation (Self-Report Variable).

The third dependent variable, *Characteristics of Quality*, was significantly correlated with the independent variables Extent of Coursework in ASD (Education Variable) and (Self-Report Variable) Effectiveness of Preparation. These results determined which independent variables were entered into the hierarchical multiple regression analysis. The fourth hierarchical multiple regression analysis found the best predictors of *Characteristics of Quality* to be Extent of Coursework in ASD (Education Variable) and Effectiveness of Preparation (Self-Report Variable).

The final dependent variable, *Self-Efficacy*, was significantly correlated with the Education Variable Extent of Coursework in ASD and the Experience Variable Number of Years of Professional Experience Working with Students with ASD and the Self-Report Variable, Effectiveness of Preparation. The third hierarchical multiple regression analysis found the best predictors of high *Self-Efficacy* to be the Extent of Coursework in ASD (Education Variable), Number of Years Worked with Individuals with ASD (Experience Variable), and Effectiveness of Preparation (Self-Report Variable).

Integration of Results from Phase One and Results from Phase Two

Research Question (9): *In what ways are the results from Phase One corroborated by the results from Phase Two?*

The process of integration was used to link the results from Phase One of this study to the results of Phase Two of this study. This section is organized by the general concepts found in both phases of this study. The first concept to be integrated is the knowledge of special education teachers of students with ASD. The second concept will be the skill of special education teachers of students with ASD. The third will be the

characteristics of quality special education teachers of students with ASD. The final concept to be presented will be the self-efficacy of special education teachers of students with ASD. This section will conclude with a table (Table 15) highlighting the summaries of the qualitative and quantitative phases.

Knowledge of Special Education Teachers of Students with ASD

The results of Phase One found two major themes of knowledge of special education teachers of students with ASD. The first theme was knowledge able to be taught in institutions of higher education. The findings indicate that in addition to a general teacher education course load, special education teachers of students with ASD need coursework and experiences in ASD-specific areas. The requirement of adding ASD-specific coursework can be linked to the findings of the second, quantitative phase of this study. This phase of the study found coursework in ASD (Extent of Coursework in ASD) to be the best predictor of knowledge in ASD.

The second theme to emerge in Phase One was internal knowledge. The ability of a special education teacher of students with ASD to know his or her own ability and when to ask for help was found to be essential knowledge. The ability to know oneself as a teacher comes with classroom experience, especially with specific populations. Results of Phase Two indicate the number of years working with individuals with ASD (Number of Years Working with Individuals with ASD) and the number of students with ASD a teacher has worked with in his or her career (Number of Students with ASD Worked with in Career) are predictors of knowledge of ASD.

There is repetition in the results of the two phases. The knowledge necessary to be a quality special education teacher of students with ASD is divided into two themes, knowledge able to be taught in higher education and internal knowledge. When a teacher

obtains the necessary knowledge from coursework at an institution of higher education, their knowledge in the classroom is increased. Further, a special education teacher gains knowledge about his or her own abilities from experience in the classroom and working with students with ASD.

Skill of Special Education Teachers of Students with ASD

The results from Phase One of the study identified a limited number of specific skills special education teachers of students with ASD need to demonstrate to be considered quality teachers. Responses to a specific question from the *Conversation Protocol* identified the specific skills. Additional skills were mentioned throughout the interview and used in the development of the Phase Two instruments.

The skills identified in Phase One can be linked to the findings of Phase Two. The skills identified included the ability to reinforce student behavior, the ability to define student skill (and skill acquisition) and the ability to motivate students. Special education teachers of students with ASD need to learn these skills. The results of Phase Two indicate one of the best predictors of skill in ASD is the Extent of Coursework in ASD. Additional coursework specific to ASD leads to more skill in teaching students with ASD. It is during this coursework that teacher candidates (future special education teachers of students with ASD) learn to define skills, learn to reinforce behaviors, learn how to motivate students. The next identified predictor, Effectiveness of Preparation, can be linked to skills recognized in Phase One of the study. A special education teacher of students with ASD who perceives his or her education as effective, will use the skills learned.

While the skills are learned from coursework, the teachers need experience working with students with students with ASD to become proficient. Phase Two found

one of the best predictors of skill in ASD to be the Number of Years of Professional Experience Working with Individuals with ASD. Increased experience leads to increased skill.

Characteristics of Quality Special Education Teachers of Students with ASD

The participants in Phase One also provided specific examples of the larger constructs of quality special education teachers of students with ASD. These included behaviors such as attending workshops and staff development opportunities (love to learn), maintaining a portfolio (method of measurement), assist students in mastering goals and objective (like to see others learn). These specific examples, along with the broad conceptual definitions of quality provided by the participants in Phase One were developed into the measurement instrument, *Special Education Teachers of Students with ASD Characteristics of Quality*. The instrument attempted to measure some of the value-driven constructs of quality by asking the participants to what degree they agreed with the statements. The statements on the instrument were consistent with the concepts determined, by participants on Phase One, to be part of the definition of quality. Each of the statements began with “I” and provided more of self-reflection of experiences and values than a clear method of measurement.

Results from Phase Two of the study indicated that the best predictors of a quality special education teacher of students with ASD were the Extent of Coursework in ASD and the self-reported effectiveness of preparation. These results are consistent with the literature, which finds that teacher education and preparation affect the characteristics of a quality teacher. The results from this phase of the study found that the more courses in ASD a special education teacher completes at an IHE and the more effective the education is perceived to be, the more characteristics of quality the teacher will possess.

Self-Efficacy of Special Education Teachers of Students with ASD

Self-Efficacy was not explored in the first phase of the study. Unlike special education teacher quality and the other concepts evaluated in Phase One, self-efficacy is clearly defined. A new measure was not needed, as there are a variety of validated measures to use to evaluate the construct. A summary of the variables found to be the best predictors of the dependent variable, *Self-Efficacy*, can be found in Table 15. Further exploration of self-efficacy as it relates to current research and practice can be found in Chapter 4 of this paper.

Table 15

Integration Summary

	Knowledge of ASD	Skill	Characteristics of Quality	Self-Efficacy
Qualitative	<p>Summary: Knowledge should be taught at IHE “above and beyond” Knowledge of educational foundations Knowledge of ASD (characteristics) Knowledge of Current Research Knowledge of Current Practices Knowledge of Behavior Modification Knowledge of One’s Own Abilities</p>	<p>Summary: <i>Phase One</i> High number of positive interactions with students Operationally define skills Link research to practice Know when to reinforce behavior Set-up a classroom for learning</p> <p>Instrument Development Enthusiasm for job Establish rapport Monitor everything that is going on in a classroom</p>	<p>Summary: Subjective Lack of a clear definition Values-based Influenced by observer’s values Influenced by observer background/attitudes Many constructs cannot be measured Can use student outcomes Different than general education</p>	Not explored in this phase of the study
Quantitative	<p>Best Predictors: Extent of Coursework in ASD Highest Degree Number Years of Professional Experience Working with Individuals with ASD Number of Students with ASD Worked with in Professional Career</p>	<p>Best Predictors: Extent of Coursework in ASD Number of Years of Professional Experience Working with Individuals with ASD Self-Reported Effectiveness of Preparation</p>	<p>Best Predictors: Extent of Coursework in ASD Self-reported Effectiveness of Preparation</p>	<p>Best Predictors: Extent of Coursework in ASD Number of Years of Professional Experience Working with Individuals with ASD</p>

CHAPTER V

DISCUSSION

Research has found that special education teachers of students with ASD lack knowledge of the characteristics of ASD, the heterogeneity of ASD and specific teaching methodologies for students with ASD (Mavropoulou & Padeliaadu, 2000; Helps et al., 1999; Szatmari et al., 1994; Schwartz & Drager, 2008).

The first, qualitative, phase of this study found that special education teachers of students with ASD need to have the same foundational knowledge as their peers in general and cross-categorical special education along with additional knowledge. The participants in Phase One of this study stated this knowledge should be obtained through coursework at institutions of higher education. Further, the participants from Phase One claim these additional courses need to contain content on the characteristics of individuals with ASD, the individualization and implementation of instructional strategies. This information is supported by the research (Mavropoulou & Padeliaadu, 2000; Helps et al., 1999; Szatmari et al., 1994; Schwartz & Drager, 2008). These findings are also linked to the results of the second, quantitative, phase of the study. The findings indicate that special education teachers of students with ASD with a higher degree (more education) report having more knowledge of ASD.

The best set of predictors of special education teachers' knowledge of ASD, as established by the second phase of the study, were the Education Predictors (Extent of Coursework in ASD and the Highest Degree Reported) and the Experience Predictors (Number of Years of Professional Experience Working with Individuals with ASD and the Number of Students with ASD worked with in Professional Career). Research has shown that special education teachers of students with ASD who rate their knowledge of

ASD as low requested additional training, experience and time with individuals with ASD to gain additional knowledge (Mavropoulou & Padelidu, 2000; Helps et al., 1999). The predictor variable, Extent of Coursework in ASD was measured using a researcher-developed scale. This scale included questions related to both the foundational coursework and the ASD-specific coursework identified in Phase One. The findings of both phases of the study indicate that special education teachers of students with ASD should acquire knowledge in foundations, ASD and reflective teaching practices prior to beginning their careers as special education teachers of students with ASD.

There is a lack of research on the specific skills special education teachers of students with ASD need to possess in order to be effective in the classroom. Some research suggests special education teachers who subscribe to a specific method are more effective than teachers who use a variety of interventions (Jennett et al., 2003; Lerman et al., 2004; Schuermann et al., 2003). Other research suggests that special education teachers need to possess a variety of skills and know when to use different methods with different students, regardless of the student's disability (Brownell et al., 2005; Cooley-Nichols, 2004; Dymond et al., 2007; Fitzgerald & Ryan, 2006).

The results from Phase One are aligned with the current lack of research on the skills of special education teachers of students with ASD. There were only five specific skills identified. These skills were identified as behavioral. The skills are related to the literature (methodology-specific), but do not contribute to the development of a better definition of the characteristics of a skilled special education teacher of students with ASD, nor do they assist in measuring the skills of a teacher.

The researcher developed measurement instrument, *Special Education Teachers of Students with ASD Skill Assessment*, contained the specific skills stated by Phase One

participants to be necessary. The instrument also contained specific skills (operationally define skills, know when to reinforce behaviors, high number of positive interactions, set-up a classroom for learning, link research to practice) and three additional, broader skills (enthusiasm for job, establish rapport with colleagues and students, monitor everything in the classroom) that were determined in Phase One of this study to be necessary categories of skills. This determination was made by research review in conjunction with the comments from peers in the instrument development phase of the study.

Results from the second, quantitative phase, found the best predictors of the level of skill of special education teachers of students with ASD to be the Education Predictors (Extent of Coursework in ASD, the Number of Years of Professional Experience Working with Individuals with ASD) and the Self-Report Predictor (Effectiveness of Preparation). Linking these results to the literature and the results of Phase One would indicate the coursework should be both discipline-specific and contain broader categories teaching skills that can be generalized to a variety of students different educational and behavioral needs.

Researchers have attempted to define and measure teacher quality, but no consistent tool has been developed, nor has a distinct definition for special education teacher quality been established (Berliner, 2005; Kennedy, 1992). Literature has attempted to define quality teacher using series of inputs and outputs (Goodwin & Oyler, 2008). The degree to which a special education teacher can demonstrate the same outputs as his or her general education peers is unknown (Ryndak et al., 2001; Kennedy, 2008; Carlson et al., 2004). The differences in preparation and student outcomes make using the same measurements or lists of qualifications challenging for special education teachers. By nature, special education is individualized, with students producing different measures

of skill acquisition, but the teachers are being held to the same standards as the more homogeneous general education population. What is known is teacher education plays an essential role in the quality of both general and special education teachers (AACTE, 2004; Ashton, 1996; Berliner, 2005; Brownell et al., 2004; Brownell et al., 2005; Carlson et al., 2004; Cochran-Smith, 2000; Cooley-Nichols, 2004).

The first phase of this study attempted to define a quality special education teacher of students with ASD, compare the definition to both general education teachers and cross-categorical special education teachers, and determine a method of measurement for the construct. The results indicated that quality is value-driven. This means the values, experiences, attitudes and background of both the teacher and the observer influence the degree to which the teacher demonstrates characteristics of quality. The construct can be measured by observation of the special education teacher in the classroom and a review of permanent products (teacher and student).

The definitions established from the results from Phase One contain broad and subjective terms. The participants established that some characteristics of quality cannot be measured, as participants in the field, one should be able to “know it when they see it”. The expertise and experiences of the observer (perceived expert) determine the quality of the special education teacher. One participant replied, “My 20-some-odd years in education is the tool I use”.

Additional examples of the characteristics of a quality special education teacher of students with ASD include curiosity, a love for learning, magic with the kids and someone who enjoys teaching. These are not measurable behaviors and rely on the observer’s opinion of the special education teacher’s ability to demonstrate these vague

concepts. The results indicate this is an area of need within the field, but it is challenging to define and measure because of the “intangible nature” of quality.

The participants in Phase One of the study were determined to be knowledgeable and experienced in the field of ASD and teacher education. Using participants who are at this level of expertise in the field, follows the expert-based decision process often found in education. Continuing to use an expert-based observational method of measuring quality, given the influence of the observer’s value system, may not be an equitable method of measurement. The definition of “expert” in the field of education, particularly special education and ASD is amorphous. The vagueness of the definition of expert only compounds the difficulty in defining and measuring the characteristic of quality. Reflective processes along with measurement of permanent product are more concrete methods of establishing the characteristics of a quality special education teacher, without clouding the definition with an observer’s values and beliefs.

The construct of self-efficacy has been well researched (Bandura, 1977; Gibson & Dembo, 1984; Woolfolk & Hoy, 1990). It was not explored in the first phase of this study. The use of a valid and reliable measurement instrument, grounded in the established theories of self-efficacy was used in Phase Two of this study. The results of the hierarchical multiple regression indicate the best predictors of high self-efficacy for special education teachers of students with ASD are the Educational Predictors (Extent of Coursework in ASD and the Number of Years of Professional Experience Working with Individuals with ASD). These findings are consistent with Jennett et al. (2003), which found that special education teachers of students with ASD who have additional training in a specific philosophy of instruction related to educating students with ASD have greater self-efficacy.

The literature has established that education influences quality (AACTE, 2004; Ashton, 1996; Berliner, 2005; Brownell et al., 2004; Brownell et al., 2005; Carlson et al., 2004; Cochran-Smith, 2000; Cooley-Nichols, 2004; Boe et al., 2007; Darling-Hammond, 2003). The specific components of education/preparation that lead to quality special education teachers of students with ASD have not been established. There have been studies that examined methodology-specific education and training (Helps et al., 1999; Jennett et al., 2003; McCuller, 2002; NRC, 2001; Schuermann et al., 2003; Lerman et al., 2004). While this does provide some foundational knowledge that methodology-specific education and training is important, other research claims that special education teachers need know a variety of methods (Dymond et al., 2007; Simpson, 2004).

Phase One of this study sought to establish themes of teacher preparation. The first theme was the courses and experiences special education teachers of students with ASD had/need to have to be quality teachers. The essential courses were foundations (history, human development, diversity, ethics) that can be found in most cross-categorical special education teacher education programs (Brownell et al., 2005). The participants on Phase One also stated that special education teachers of students with ASD need to have additional coursework that is disability-specific (ex: characteristics of ASD). Some participants defined the coursework as a specific intervention strategy. The strategies that were mentioned referenced formal programs (applied behavior analysis, TEACCH, RDI). This is consistent with the research claiming special education teachers of students with ASD should be trained in a specific methodology (Jennett et al., 2003).

The experiences special education teachers of students with ASD should have during their preparation include a student teaching/internship working with individuals

with the disability. The Phase One participants agreed that student teaching was essential. Additionally, the importance of the cooperating teacher and setting were emphasized.

The final theme to develop in Phase One of the study was dispositions. These were defined as teacher behaviors and attitudes. The role of the institutes of higher education in determining dispositions prior to a candidate's acceptance in a program was established. The participants stated dispositions could be learned while participating in courses and experiences at the higher education level, but not directly taught.

Implications for Teacher Education

The findings from both phases of this study have implications for special education teacher education. The most significant implication is the need for additional coursework and experiences in ASD for special education teachers of students with ASD. According to the participants in Phase One of the study, the knowledge of special education teachers of students with ASD should primarily be obtained through traditional educational methods, specifically at institutions of higher education. Results from this phase of the study can be interpreted as suggesting ASD-specific coursework should be added to the generalist model of preparation commonly found in institutions of higher education. The foundational and cross-categorical courses and experiences should remain, but there needs to be additional offerings in ASD. All participants stated that coursework must include some components of behavior modification and a majority stated that this should be a formalized version of applied behavior analysis. This finding has implications as to the type of courses offered to teacher candidates. The results of Phase Two of the study further support the addition of ASD-specific coursework. The only variable found to be a predictor of knowledge, skill, characteristics of quality and high self-efficacy was the Education Predictor, Extent of Coursework in ASD. The

predictor variable, Extent of Coursework in ASD was measured using a researcher-developed scale. This scale included questions related to the both the foundational coursework and the ASD-specific coursework identified in Phase One. The measure included questions related to general special education, applied behavior analysis and the characteristics of individuals with ASD.

The participants in Phase One concluded that the characteristics of quality special education teachers are subjective in nature and rely more on the observers' experiences and perceptions than the attributes of the teacher being observed. The participants also stated one of the most important components of a quality teacher education is the use of model classrooms and supervisors for practicum and student teaching experiences. These findings implicate the need for consistency among the type of student teaching experiences and more importantly additional training and uniformity in evaluation procedures among supervisors and cooperating teachers. The participants stated the most important component of teacher preparation is a quality experience in the field with students with ASD. The participants' statements about student teaching placements in classrooms further illustrated this concept.

In addition to knowledge obtained from coursework and experiences within the field of special education and ASD, the participants stated that the teachers needed to know about themselves. Internal knowledge, or knowledge about one's own teaching abilities, was stated to be an essential skill for special education teachers of students with ASD. These, again, reflect student teaching practices and the nature of student teaching observations and supervision. The experiences and background of the supervisor and cooperating teacher influence the teacher candidate's ability to accept criticism in the classroom.

Implications for Educational Policy

Current licensure requirements for teachers of students with ASD vary significantly from state to state. The lack of consistency in requirements has a direct effect on higher education. The irregularity in certification and endorsement requirements leads to an irregularity in teacher education practice and policy. This directly affects the knowledge, skills and quality of special education teachers of students with ASD.

Findings from this study indicate the need for teachers of students with ASD to have coursework and experiences with a focus on the education of students with ASD. By implementing a standard of practice for state licensure in ASD, the coursework and experiences can be better regulated. This can then lead to more consistent measures of the effects of teacher education on students with ASD.

The sample surveyed in Phase Two of the study represented a large variety of states with an even larger number of certifications and endorsements. The certification differed in not only requirements, but in name and reciprocity. This furthers the inconsistency in teacher practice. States such as New York require special education teachers to have at least three clock hours of coursework on ASD and states such as Florida require an addition 18 credit endorsement above and beyond a Masters degree to work with students with the disability. Findings from Phase One of this study indicate a teacher education model that includes foundations in special education and “above and beyond” coursework and experiences in ASD leads to better quality teachers.

Limitations of the Study

Although there are many interesting findings from this study, there are limitations. The definition of “expert” for subjects in Phase One of the study was not based on a formal or widely accepted definition of the term. The definition implied

participants were participants in the field of teacher education and special education based on the number of years the individual has worked in teacher preparation and ASD, which denotes experience more than expertise. Additionally, using “experts” to define the constructs also contributed to the often-criticized evaluation of teacher quality.

The second limitation is the method of obtaining subjects for Phase Two of the study. Snowballing was used to attract potential participants. The results of this method did provide a large cross-section of special education teachers of students with ASD, but also a lot of variation in demographic information. Participants could not be grouped by demographic information (certification, state certified) due to the variability in responses.

The third limitation of the study was the use of a survey. The survey was self-report, where participants indicated to what degree they agreed and disagreed with the statements provided for each section of the measurement instrument. There was no way to verify the information provided. The participants reported on their current teaching role, certification and education without verification of accuracy. The truthfulness of the answers provided could not be verified. The lack of ability to control for conditions surrounding the responses could have an impact on the interpretation of the results.

Finally, the study addressed only a limited number of potential predictors of quality special education teachers of students with ASD. Additional predictors or combinations of predictors could have an effect on the interpretation of the results.

Suggestions for Future Research

The role of teacher education and preparation on the quality of teachers of students with ASD has yet to be established. Each phase of this study merits further research. Additional research is needed to define what an expert in ASD is and how a teacher can become an expert in the field. The role of an expert or experienced

professional in determining the quality of a special education teacher of students with ASD requires further qualitative exploration into the underlying values and beliefs of individuals involved in the field. Further research should explore the constructs from both a top down and a bottom up methodology, including all stakeholders. Additional research is also needed examining special education teacher education programs and the number/type of coursework and experiences in ASD that are available. The effects of these courses and experiences on the special education teacher and the students should also be explored.

Verification and replication of the measurement instruments developed in this study is also needed. Future research should control for extraneous factors and have a method to verify the accuracy of the information provided. Homogeneous groups should be established for researchers to compare more specific demographic information to the variables.

Additional research is needed to determine the best methods for educating students with ASD and how best to teach teachers in these methods. A comparison is needed in overall instructional methodologies (ABA, TEACCH, RDI) and the effects of the components of the interventions on the characteristics of individuals with ASD.

The use of a mixed methods study to explore the constructs also has implications for teacher education and practice. The need for further exploration into the topics of quality, in relation to special education teacher education and practice is needed. This study used a mixed design to best answer the research questions, which included an exploration of the concepts. There need to be additional studies using a combination of research methods. The use of mixed methodologies greatly enhanced this study and provided more in depth information about the topics that would have been gained by

using a single method. Additional exploration is needed to determine how mixed method research can be used to answer the inexact questions surrounding special education teacher preparation, teacher quality and the effects of both on student outcomes.

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APPENDIX A

Conversation Protocol: Phase One

Research Questions

- (1) What are the characteristics, knowledge and skills of quality special education teachers of students with ASD?
- (2) What practices should special education programs teach teachers that will lead to successful outcomes for students with ASD?
- (3) How should special education teacher quality be measured?

Teacher Knowledge and Skill

Questions Related to Knowledge and Skill

1. Is it important to the field of teacher education to have general standards in which to hold all teachers accountable?
2. How/where will a teacher learn these skills?
3. How should these skills be measured for progress and proficiency?
4. What areas of preparation lead to proficiency in these areas?
5. Is the same value placed on these skills for teachers of students with ASD compared to teachers working with students without disabilities?
6. What role does collegiate teacher education play in preparing teachers to teach?

Should the coursework/requirements for all teachers be the same?

If not, what variations should there be for special education?

Autism?

7. What is the best way to measure the effectiveness of teacher preparation?

Should these measures be universally-applied?

8. Should courses and experiences for teachers pursuing a degree/certification in autism differ from those of teacher pursuing a degree/certification in general education? In special education?

If so, what additions/deletions should be made?

Why?

9. What are the characteristics of a quality teacher?
 - a. How/where are these characteristics obtained?
 - b. How are these characteristics measured?
 - c. Can the measurement be universally applied (i.e.: elementary middle and high school, general and special education, content area)

Competency Areas for Teachers of Students with ASD

Questions Related to Special Education Teacher Preparation in ASD

10. What should teachers of students with ASD know?
11. Where should this knowledge be obtained?
12. Should teacher education programs focus on one specific methodology (ABA, TEACCH)
13. What should teacher education programs for teachers of students with autism contain?

Questions Related to Quality

14. How should teacher quality be measured?
15. Are the inputs the same for all teachers?
16. Are the outputs the same for all teachers?
17. Should special education teacher quality be measured differently than general education teacher quality?
18. Should teachers of students with ASD be held to the same standards of quality as other special education teachers?
19. Should the measurement of quality be the same?
20. How can quality be measured without using student outcomes?

The National Board for Professional Teaching Standards (2002) states there are five core propositions for all teachers.

1. **Teachers are committed to students and their learning.**
 - a. Teachers recognize individual differences in their students and adjust their practice accordingly
 - b. Teachers have an understanding of how students develop and learn
 - c. Teachers treat students equitably
 - d. Teachers' mission extends beyond developing the cognitive capacity of their students
2. **Teachers know the subjects they teach and how to teach those subjects to students**
 - a. Teachers appreciate how knowledge in their subjects is created, organized and linked to other disciplines
 - b. Teachers command specialized knowledge of how to convey a subject to students
 - c. Teachers generate multiple paths to knowledge
3. **Teachers are responsible for managing and monitoring student learning**
 - a. Teachers call on multiple methods to meet their goals
 - b. Teachers orchestrate learning in group settings
 - c. Teachers place a premium on student engagement
 - d. Teachers regularly assess student progress
 - e. Teachers are mindful of their principal objectives
4. **Teachers think systematically about their practice and learn from experience**
 - a. Teachers are continually making difficult choices that test their judgment
 - b. Teachers seek the advice of others and draw on education research and scholarship to improve their practice
5. **Teachers are members of learning communities**
 - a. Teachers contribute to school effectiveness by collaborating with other professionals
 - b. Teachers work collaboratively with parents
 - c. Teachers take advantage of community resources

Scheuermann et al. (2003) claim that the following are the necessary competencies:

Knowledge of the Disorder

- Characteristics
- Definitions and diagnosis
- Etiology and research
- Learning problems

Parent Involvement

- Family issues and perspectives
- Forming a team
- Resources

Theoretical Underpinnings of Instructional Approaches

- Applied behavioral analysis
 - Cognitive developmental theories
 - Biophysical interventions
- Curriculum Development
- Individualizing curriculum decisions
 - Futures planning
 - Writing goals and objectives at various levels of learning

Adaptive Behaviors and Transition

- Planning an individualized program
- Teaching in natural settings
- Teaching age-appropriate skills
- Transition planning and resources

Structure and the Classroom

- Classroom organization
- Routines and schedules
- Using visual supports
- Structuring materials

Trial-by-Trial Teaching

- Discriminative stimuli
- Prompting and errorless learning
- Success and failure criteria
- Consequences
- Inter-trial intervals
- Lesson planning
- Data collection and graphing

Additional Strategies

- Shaping
- Joint action routines
- Joint attention

Teaching Language and Communication

- ASD problems
- Specialized strategies
- Interactive and behavioral approaches
- Augmentative/alternative communication

Teaching Social Competencies

- Behavioral and interactive approaches
- Peer-mediated approach
- Social scripts and stories
- Maintenance and generalization issues

Decreasing Problem Behaviors

- Positive behavioral support
- Functional behavioral assessments and analysis
- Choosing replacement behaviors
- Effective reinforcement
- Special considerations for use of punishment
- Data collection and research design

Special Issues

- Inclusion
- Fad cures
- Teaming
- Managing related personnel/other team members
- Teaching adults
- Training in-home trainers
- The right to the most effective treatment

Naturalistic Teaching

- Mands and prompts
- Models
- Time delay
- Providing natural opportunities
- Lesson planning
- Data collection

Teachers of Individuals with Developmental Disabilities/Autism

Standard 1 Foundations

Knowledge	
ICC1K1	Models, theories, philosophies, and research methods that form the basis for special education practice
ICC1K2	Laws, policies, and ethical principles regarding behavior management planning and implementation
ICC1K3	Relationship of special education to the organization and function of educational agencies
ICC1K4	Rights and responsibilities of students, parents, teachers, and other professionals, and schools related to exceptional learning needs
ICC1K5	Issues in definition and identification of individuals with exceptional learning needs, including those from culturally and linguistically diverse backgrounds
ICC1K6	Issues, assurances and due process rights related to assessment, eligibility, and placement within a continuum of services
ICC1K7	Family systems and the role of families in the educational process
ICC1K8	Historical points of view and contribution of culturally diverse groups
ICC1K9	Impact of the dominant culture on shaping schools and the individuals who study and work in them
ICC1K10	Potential impact of differences in values, languages, and customs that can exist between the home and school
DDA1.K1	Definitions and issues related to the identification of individuals with developmental disabilities/autism spectrum disorders
DDA1.K2	Continuum of placement and services available for individuals with developmental disabilities/autism spectrum disorders
DDA1.K3	Historical foundations and classic studies of developmental disabilities/autism spectrum disorders
DDA1.K4	Trends and practices in the field of developmental disabilities/autism spectrum disorders
DDA1.K5	Theories of behavior problems of individuals with developmental disabilities/autism spectrum disorders
DDA1.K6	Perspectives held by individuals with developmental disabilities/autism spectrum disorders
DDA1.K7	Concepts of self determination, self-advocacy, community and family support and impact in the lives of individuals with developmental disabilities/autism spectrum disorders
Skills	
ICC1S1	Articulate personal philosophy of special education

Standard 2 Development and Characteristics of Learners

Knowledge	
ICC2K1	Typical and atypical human growth and development
ICC2K2	Educational implications of characteristics of various exceptionalities
ICC2K3	Characteristics and effects of the cultural and environmental milieu of the individual with exceptional learning needs and the family
ICC2K4	Family systems and the role of families in supporting development
ICC2K5	Similarities and differences of individuals with and without exceptional learning needs
ICC2K6	Similarities and differences among individuals with exceptional learning needs
ICC2K7	Effects of various medications on individuals with exceptional learning needs
DDA2.K1	Medical aspects and implications for learning for individuals with developmental disabilities/autism spectrum disorders

DDA2.K2	Core and associated characteristics of individuals with developmental disabilities/autism spectrum disorders
DDA2.K3	Co-existing conditions and ranges that exist at a higher rate than in the general population
DDA2.K4	Sensory challenges of individuals with developmental disabilities/autism spectrum disorders
DDA2.K5	Speech, language, and communication of individuals with developmental disabilities/autism spectrum disorders
DDA2.K6	Adaptive behavior needs of individuals with developmental disabilities/autism spectrum disorders
Skills	
	None in addition to the Common Core

Standard 3 Individual Learning Differences

Knowledge	
ICC3K1	Effects an exceptional condition(s) can have on an individual's life
ICC3K2	Impact of learners' academic and social abilities, attitudes, interests, and values on instruction and career development
ICC3K3	Variations in beliefs, traditions, and values across and within cultures and their effects on relationships among individuals with exceptional learning needs, family, and schooling
ICC3K4	Cultural perspectives influencing the relationships among families, schools, and communities as related to instruction
ICC3K5	Differing ways of learning of individuals with exceptional learning needs, including those from culturally diverse backgrounds and strategies for addressing these differences
DDA3.K1	Impact of theory of mind, central coherence, and executive function on learning and behavior
DDA3.K2	Impact of neurological differences on learning and behavior
DDA3.K3	Impact of self-regulation on learning and behavior
Skills	

Standard 4 Instructional Strategies

Knowledge	
ICC4K1	Evidence-based practices validated for specific characteristics of learners and settings
DDA4K1	Specialized curriculum designed to meet the needs of individuals with developmental disabilities/autism spectrum disorders
Skills	
ICC4S1	Use strategies to facilitate integration into various settings
ICC4S2	Teach individuals to use self-assessment, problem-solving, and other cognitive strategies to meet their needs
ICC4S3	Select, adapt, and use instructional strategies and materials according to characteristics of the individual with exceptional learning needs
ICC4S4	Use strategies to facilitate maintenance and generalization of skills across learning environments
ICC4S5	Use procedures to increase the individual's self-awareness, self-management, self-control, self-reliance, and self-esteem
ICC4S6	Use strategies that promote successful transitions for individuals with exceptional learning needs
DDA4.S1	Match levels of support to changing needs of the individual

DDA4.S2	Implement instructional programs that promote effective communication skills using verbal and augmentative/alternative communication systems for individuals with developmental disabilities/autism spectrum disorders
DDA4.S3	Provide specialized instruction for spoken language, reading and writing for individuals with developmental disabilities/autism spectrum disorders
DDA4.S4	Use instructional strategies that fall on a continuum of child-directed to adult-directed in natural and structured context
DDA4.S5	Consistently use of proactive strategies and positive behavioral supports
DDA4.S6	Involve individuals with developmental disabilities/autism spectrum disorders in the transition planning process
DDA4.S7	Plan for transition needs including linkages to supports and agencies focusing on life long needs

Standard 5 Learning Environments/Social Interactions

Knowledge	
ICC5K1	Demands of learning environments
ICC5K2	Basic classroom management theories and strategies for individuals with exceptional learning needs
ICC5K3	Effective management of teaching and learning
ICC5K4	Teacher attitudes and behaviors that influence behavior of individuals with exceptional learning needs
ICC5K5	Social skills needed for educational and other environments
ICC5K6	Strategies for crisis prevention and intervention
ICC5K7	Strategies for preparing individuals to live harmoniously and productively in a culturally diverse world
ICC5K8	Ways to create learning environments that allow individuals to retain and appreciate their own and each other's respective language and cultural heritage
ICC5K9	Ways specific cultures are negatively stereotyped
ICC5K10	Strategies used by diverse populations to cope with a legacy of former and continuing racism
Skills	
ICC5S1	Create a safe, equitable, positive, and supportive learning environment in which diversities are valued
ICC5S2	Identify realistic expectations for personal and social behavior in various settings
ICC5S3	Identify supports needed for integration into various program placements
ICC5S4	Design learning environments that encourage active participation in individual and group activities
ICC5S5	Modify the learning environment to manage behaviors
ICC5S6	Use performance data and information from all stakeholders to make or suggest modifications in learning environments
ICC5S7	Establish and maintain rapport with individuals with and without exceptional learning needs
ICC5S8	Teach self-advocacy
ICC5S9	Create an environment that encourages self-advocacy and increased independence
ICC5S10	Use effective and varied behavior management strategies

ICC5S11	Use the least intensive behavior management strategy consistent with the needs of the individual with exceptional learning needs
ICC5S12	Design and manage daily routines
ICC5S13	Organize, develop, and sustain learning environments that support positive intracultural and intercultural experiences
ICC5S14	Mediate controversial intercultural issues among students within the learning environment in ways that enhance any culture, group, or person
ICC5S15	Structure, direct, and support the activities of paraeducators, volunteers, and tutors
ICC5S16	Use universal precautions
DDA5.S1	Provide instruction in community-based settings
DDA5.S2	Demonstrate transfer, lifting and positioning techniques
DDA5.S3	Structure the physical environment to provide optimal learning for individuals with developmental disabilities/autism spectrum disorders
DDA5.S4	Provide instruction in self-regulation
DDA5.S5	Utilize student strengths to reinforce and maintain social skills

Standard 6 Language

Knowledge	
ICC6K1	Effects of cultural and linguistic differences on growth and development
ICC6K2	Characteristics of one's own culture and use of language and the ways in which these can differ from other cultures and uses of languages
ICC6K3	Ways of behaving and communicating among cultures that can lead to misinterpretation and misunderstanding
ICC6K4	Augmentative and assistive communication strategies
Skills	
ICC6S1	Use strategies to support and enhance communication skills of individuals with exceptional learning needs
ICC6S2	Use communication strategies and resources to facilitate understanding of subject matter for students whose primary language is not the dominant language
DDA6.S1	Provide pragmatic language instruction that facilitates social skills
DDA6.S2	Provide individuals with developmental disabilities/autism spectrum disorders strategies to avoid and repair miscommunications

Standard 7 Instructional Planning

Knowledge	
ICC7K1	Theories and research that form the basis of curriculum development and instructional practice
ICC7K2	Scope and sequences of general and special curricula
ICC7K3	National, state or provincial, and local curricula standards
ICC7K4	Technology for planning and managing the teaching and learning environment
ICC7K5	Roles and responsibilities of the paraeducator related to instruction, intervention, and direct service
DDA7.K1	Evidence-based career/vocational transition programs for individuals with developmental disabilities/autism spectrum disorders
Skills	
ICC7S1	Identify and prioritize areas of the general curriculum and accommodations for individuals with exceptional learning needs
ICC7S2	Develop and implement comprehensive, longitudinal individualized programs in collaboration with team members

ICC7S3	Involve the individual and family in setting instructional goals and monitoring progress
ICC7S4	Use functional assessments to develop intervention plans
ICC7S5	Use task analysis
ICC7S6	Sequence, implement, and evaluate individualized learning objectives
ICC7S7	Integrate affective, social, and life skills with academic curricula
ICC7S8	Develop and select instructional content, resources, and strategies that respond to cultural, linguistic, and gender differences
ICC7S9	Incorporate and implement instructional and assistive technology into the educational program
ICC7S10	Prepare lesson plans
ICC7S11	Prepare and organize materials to implement daily lesson plans
ICC7S12	Use instructional time effectively
ICC7S13	Make responsive adjustments to instruction based on continual observations
ICC7S14	Prepare individuals to exhibit self-enhancing behavior in response to societal attitudes and actions
ICC7S15	Evaluate and modify instructional practices in response to ongoing assessment data
DDA7.S1	Plan instruction for independent functional life skills and adaptive behavior
DDA7.S2	Plan and implement instruction and related services for individuals with developmental disabilities/autism spectrum disorders that is both age-appropriate and ability-appropriate
DDA7.S3	Use specialized instruction to enhance social participation across environments
DDA7.S4	Plan systematic instruction based on learner characteristics, interests, and ongoing assessment

Standard 8 Assessment

Knowledge

ICC8K1	Basic terminology used in assessment
ICC8K2	Legal provisions and ethical principles regarding assessment of individuals
ICC8K3	Screening, prereferral, referral, and classification procedures
ICC8K4	Use and limitations of assessment instruments
ICC8K5	National, state or provincial, and local accommodations and modifications
DDA8.K1	Specialized terminology used in the assessment of individuals with developmental disabilities/autism spectrum disorders
DDA8.K2	Assessments of environmental conditions that promote maximum performance of individuals with developmental disabilities/autism spectrum disorders
DDA8.K3	Components of assessment for the core areas for individuals with developmental disabilities/autism spectrum disorders
DDA8.K4	Individual strengths, skills and learning styles

Skills

ICC8S1	Gather relevant background information
ICC8S2	Administer nonbiased formal and informal assessments
ICC8S3	Use technology to conduct assessments
ICC8S4	Develop or modify individualized assessment strategies
ICC8S5	Interpret information from formal and informal assessments

ICC8S6	Use assessment information in making eligibility, program, and placement decisions for individuals with exceptional learning needs, including those from culturally and/or linguistically diverse backgrounds
ICC8S7	Report assessment results to all stakeholders using effective communication skills
ICC8S8	Evaluate instruction and monitor progress of individuals with exceptional learning needs
ICC8S9	Create and maintain records
DDA8.S1	Select, adapt and use assessment tools and methods to accommodate the abilities and needs of individuals with developmental disabilities/autism spectrum disorders
DDA8.S2	Develop strategies for monitoring and analyzing challenging behavior and its communicative intent
DDA8.S3	Conduct functional behavior assessments that lead to development of behavior support plans

Standard 9 Professional And Ethical Practice

Knowledge	
ICC9K1	Personal cultural biases and differences that affect one's teaching
ICC9K2	Importance of the teacher serving as a model for individuals with exceptional learning needs
ICC9K3	Continuum of lifelong professional development
ICC9K4	Methods to remain current regarding research-validated practice
Skills	
ICC9S1	Practice within the CEC Code of Ethics and other standards of the profession
ICC9S2	Uphold high standards of competence and integrity and exercise sound judgment in the practice of the professional
ICC9S3	Act ethically in advocating for appropriate services
ICC9S4	Conduct professional activities in compliance with applicable laws and policies
ICC9S5	Demonstrate commitment to developing the highest education and quality-of-life potential of individuals with exceptional learning needs
ICC9S6	Demonstrate sensitivity for the culture, language, religion, gender, disability, socioeconomic status, and sexual orientation of individuals
ICC9S7	Practice within one's skill limits and obtain assistance as needed
ICC9S8	Use verbal, nonverbal, and written language effectively
ICC9S9	Conduct self-evaluation of instruction
ICC9S10	Access information on exceptionalities
ICC9S11	Reflect on one's practice to improve instruction and guide professional growth
ICC9S12	Engage in professional activities that benefit individuals with exceptional learning needs, their families, and one's colleagues
ICC9S13	Demonstrate commitment to engage in evidence-based practices

Standard 10 Collaboration

Knowledge	
ICC10K1	Models and strategies of consultation and collaboration
ICC10K2	Roles of individuals with exceptional learning needs, families, and school and community personnel in planning of an individualized program
ICC10K3	Concerns of families of individuals with exceptional learning needs and strategies to help address these concerns

ICC10K4	Culturally responsive factors that promote effective communication and collaboration with individuals with exceptional learning needs, families, school personnel, and community members
DDA10.K1	Services, networks, and organizations for individuals, professionals, and families with developmental disabilities/autism spectrum disorders
Skills	
ICC10S1	Maintain confidential communication about individuals with exceptional learning needs
ICC10S2	Collaborate with families and others in assessment of individuals with exceptional learning needs
ICC10S3	Foster respectful and beneficial relationships between families and professionals
ICC10S4	Assist individuals with exceptional learning needs and their families in becoming active participants in the educational team
ICC10S5	Plan and conduct collaborative conferences with individuals with exceptional learning needs and their families
ICC10S6	Collaborate with school personnel and community members in integrating individuals with exceptional learning needs into various settings
ICC10S7	Use group problem-solving skills to develop, implement, and evaluate collaborative activities
ICC10S8	Model techniques and coach others in the use of instructional methods and accommodations
ICC10S9	Communicate with school personnel about the characteristics and needs of individuals with exceptional learning needs
ICC10S10	Communicate effectively with families of individuals with exceptional learning needs from diverse backgrounds
ICC10S11	Observe, evaluate, and provide feedback to paraeducators
DDA10S1	Collaborate with team members to plan transition to adulthood that encourages full community participation

Handbook on Research in Teacher Education (Goodwin & Oyler, 2008, pg.468)

Inputs (Academic Credentials and Professional Knowledge) (before certification)

1. GPA
2. Content Majors
3. Subject Matter Knowledge
4. Pedagogical Knowledge
5. Field Experience
6. Instructional Methods

Outputs (Indicators of Teacher Knowledge and Quality) (after certification)

1. Performance on Teacher Tests
2. Students' Standardized Test Scores
3. Artifacts and Work Samples
4. Teacher Certification

APPENDIX B

Please read the following description of the study

Teachers College, Columbia University
INFORMED CONSENT

DESCRIPTION OF THE RESEARCH: You are invited to participate in a research study on special education teachers and autism spectrum disorders. You are asked to complete a survey on your teacher education and your work with students with autism spectrum disorders. Questions in the survey will ask about your experiences in your teacher education program and your confidence to work with students with autism spectrum disorders.

RISKS AND BENEFITS: The risks associated with this study are minimal. You may become tired or bored while completing the survey. If you experience these effects, you may stop the survey and continue at another time. The benefits of this survey could be increased self-knowledge and increased self-confidence in your teaching. By completing the survey, you may become more aware of your abilities as a teacher.

PAYMENTS: You may be compensated for participating in this research. One in ten participants will receive a \$20 Barnes and Noble Gift Card. A random numbers table will be used to decide which participant will receive a gift card. The gift cards will be distributed through the email address you used to register on surveymonkey.com. In order to be eligible for the gift card, you must complete all questions in the survey.

DATA STORAGE TO PROTECT CONFIDENTIALITY: Only researchers directly involved in the study will be able to view the completed surveys. Once completed, the surveys will be printed and stored in a locked filing cabinet. Your name will not be associated with your survey once completed. Each survey will be coded for confidentiality.

TIME INVOLVEMENT: Your participation will take approximately 15-20 minutes.

HOW WILL RESULTS BE USED: The results of the study will be used for the researcher's dissertation and potentially conferences, journals, or articles, or used for educational purposes.

PARTICIPANT'S RIGHTS

Principal Investigator: Amanda Mazin

Research Title: Preparing Teachers in Autism Spectrum Disorders: Identifying the Components of Quality Teacher Education

	Yes	No
I have read the Research Description .	<input type="radio"/>	<input type="radio"/>
I have had the opportunity to ask questions about the purposes and procedures regarding this study.	<input type="radio"/>	<input type="radio"/>
My participation in research is voluntary. I may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status or other entitlements.	<input type="radio"/>	<input type="radio"/>
The researcher may withdraw me from the research at his/her professional discretion.	<input type="radio"/>	<input type="radio"/>
If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue to participate, the investigator will provide this information to me.	<input type="radio"/>	<input type="radio"/>
Any information derived from the research project that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.	<input type="radio"/>	<input type="radio"/>
If at any time I have any questions regarding the research or my participation, I can contact the investigator, who will answer my questions.	<input type="radio"/>	<input type="radio"/>
I can print a copy of the Research Description and this Participant's Rights document.	<input type="radio"/>	<input type="radio"/>
Written, video and/or audio taped materials may be viewed in an educational setting outside the research	<input type="radio"/>	<input type="radio"/>

If there are questions or concerns you can contact:

The principal investigator at: 917-816-1845 or ANL2105@columbia.edu

The Teachers College, Columbia University Institutional Review Board /IRB. The phone number for the IRB is (212) 678-4105. Or write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151.

Please check the following box if you would like to participate in the study.

I have read the Research Description and understand my rights as they pertain to this study. By choosing this box, I give my consent and agree to participate in this study

My highest degree**The year I received my highest degree****My current professional role/roles (ex: classroom teacher; supervisor; consultant; etc)****Years of professional experience working with individuals with disabilities****Years of professional experience working with individuals with autism spectrum disorders****Number of students I currently work with who have an autism spectrum disorder**

- 0 students
- 1-6 students
- 7-13 students
- 14+ students

Other (please specify)

Number of students with an autism spectrum disorder that I have worked with in my professional career

- 1-10 students
- 11-20 students
- 21-30 students
- 31+ students

Other (please specify)

I have worked with students in the following grade levels (Check all that apply)

- Preschool
- Elementary School
- Middle School
- High School

Other (please specify)

My certification/endorsement (Check all that apply)

- General Education
- Special Education
- Early Childhood Education
- Severe/Multiple Disabilities
- Autism
- School Administration/Supervision

Other (please specify)

I received my highest degree at the following university/college**I am certified to teach in the following state(s):****I completed _____ number of courses in my graduate studies that solely addressed autism spectrum disorders**

- 0 courses
- 1-3 courses
- 4-6 courses
- 7-10 courses
- 10 + courses

I completed _____ number of courses in my graduate studies that addressed autism spectrum disorders in some manner.

- 0 courses
- 1-3 courses
- 4-6 courses
- 7-10 courses
- 10 + courses

What department were the courses offered (ex: Special Education; Psychology, Human Development, etc.)

As part of my student teaching (both undergraduate and graduate), I worked with students diagnosed with autism spectrum disorders. (Please answer Yes or No).

I feel prepared to work with students with autism spectrum disorders (Please answer Yes or No).

For each of the following statements, choose the answer that best reflects to what extent you AGREE with the statement.

	strongly agree	agree	disagree	strongly disagree
I feel my education program prepared me to use data to modify instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to understand human growth and development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to teach content areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to teach functional content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to plan, engineer and maintain educational environments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to supervise classroom personnel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to interpret state and federal policy and relate it to the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to plan a lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to write an IEP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to read and apply the results of a psychological assessment/report	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel my education program prepared me to be comfortable being evaluated and critiqued	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For each of the following statements, choose the answer that best reflects how much you AGREE with the statement.

	strongly agree	agree	disagree	strongly disagree
I update my portfolio and use it to measure my progress as an educator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I interact positively with each one of my students every day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I assist my students in mastering goals and objectives at an appropriate pace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am frequently observed by my supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I attend many optional staff development activities at my school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I attend many optional workshops, conferences and courses outside my school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to see others learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel competent leading a class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can self-reflect on my teaching style and abilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the temperament to be a teacher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know what is effective with my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can establish rapport with my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a mentor at my current job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can provide accessible instruction to each one of my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can modify instruction to meet the needs of my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For each of the following statements, choose the answer that best reflects how much you AGREE with the statement.

	strongly agree	agree	disagree	strongly disagree
I have a high number of positive interactions with my student(s) each day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have enthusiasm for my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I easily establish rapport with colleagues and students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can easily monitor everything going on in my classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can operationally define skills, deficits and signs of learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know when to reinforce and when to ignore behaviors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can set up a classroom for learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can link research to practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For each of the following statement, choose the answer that best reflects the amount of coursework your TEACHER EDUCATION PROGRAM contained

	extensive coursework	limited coursework	very little coursework	zero coursework
Coursework on legislation and policy for students with disabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on ethical codes of conduct	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on the history of disabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on curriculum preparation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on working with families	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My teacher education program contained coursework on the social needs of students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on the communication needs of students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on the behavioral needs of students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on the learning issues of students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on foundations of special education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on the effective uses of different educational techniques for students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contained coursework on curriculum for students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contained coursework on modifications/accommodations for students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on instructional methodologies for students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coursework on ABA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For each of the following statements, choose the answer that best reflects how much influence you have in the classroom.

	a great deal of influence	some influence	very little influence	no influence
Behavior in the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivate students in the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get students to believe they can do well in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Help students value learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create good activities for my students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get students to follow behavior plans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calm a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establish a behavior management system for each student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessment strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing alternative explanation or example when students are confused	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assisting families in helping their children do well in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implementing alternative strategies in my classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For each of the following statements, choose the answer that best reflects how much you know about the statement.

	extensive knowledge	limited knowledge	very little knowledge	zero knowledge
The characteristics of individuals with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How to structure educational environments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How to implement instructional methods for older students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How to implement instructional methods for younger students with autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How to teach daily living skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transition to post-secondary opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How to develop social skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How to know when something is working and when it is not	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Current research/literature of autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Myths about autism spectrum disorders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methods to involve families	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Applied Behavior Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Typical child development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How to write appropriate and measurable goals and objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positive behavior supports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reinforcement/Punishment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Theoretical underpinning of special education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you very much for completing this survey. You will be notified by email if you have won the Barnes and Noble Gift Card.

Please enter your email address.