January 2012

Autism Spectrum Disorders (ASD): Knowledge, Training, Roles and Responsibilities of School Psychologists

Stacey Small
University of South Florida, shsmall@mail.usf.edu

Follow this and additional works at: http://scholarcommons.usf.edu/etd
Part of the American Studies Commons, Education Commons, and the Psychology Commons

Scholar Commons Citation

This Dissertation is brought to you for free and open access by the Graduate School at Scholar Commons. It has been accepted for inclusion in Graduate Theses and Dissertations by an authorized administrator of Scholar Commons. For more information, please contact scholarcommons@usf.edu.
Autism Spectrum Disorders (ASD): Knowledge, Training, Roles and Responsibilities of School Psychologists

by

Stacey H. Small

A dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
Department of Psychological and Social Foundations
College of Education
University of South Florida

Major Professor: Kathy L. Bradley-Klug, Ph.D.
Linda Raffaele Mendez, Ph.D.
Kathleen Armstrong, Ph.D.
Robert Dedrick, Ph.D.

Date of Approval:
April 27, 2012

Keywords: school psychology, survey, assessment, intervention, education

Copyright © 2012, Stacey H. Small
# Table of Contents

List of Tables iv

List of Figures v

Abstract vi

Chapter One: Introduction 1
  Research Questions 5
  Importance of the Study 6

Chapter Two: Literature Review 7
  Historical Background of ASD 7
  Etiology of ASD 8
    Genetics 8
    Environment 9
    Brain Structures 10
  Educational and Federal Laws Related to Students with ASD 11
    Individuals with Disabilities Education Act (IDEA) 11
    American with Disabilities Act (ADA) 13
    No Child Left Behind (NCLB) 13
  Case Finding and Screening 15
  Assessment 17
    Review 18
    Interview 18
    Observe 20
    Test 22

Treatments and Interventions 30
  Established Treatments 32
    Antecedent Package 32
    Behavioral Package 33
  Early Intensive Behavioral Intervention 34
    Comprehensive Behavioral Treatment for Young Children 34
  Joint Attention Intervention 34
  Modeling 35
  Naturalistic Teaching Strategies 35
  Peer Training Package 35
  Pivotal Response Treatment 36
  Schedule 36
Chapter Four: Results

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter Overview</td>
<td>82</td>
</tr>
<tr>
<td>School Psychologists' Experiences with ASD</td>
<td>82</td>
</tr>
<tr>
<td>What is the Current Knowledge of School Psychologists with</td>
<td>87</td>
</tr>
<tr>
<td>the Symptoms/Diagnosis of ASD?</td>
<td></td>
</tr>
<tr>
<td>What are the Most Common Tools that School Psychologists Use</td>
<td>90</td>
</tr>
<tr>
<td>to Assess ASD?</td>
<td></td>
</tr>
<tr>
<td>How Competent do School Psychologists Perceive Themselves to</td>
<td>95</td>
</tr>
<tr>
<td>be Regarding the Assessment of ASD?</td>
<td></td>
</tr>
<tr>
<td>How Useful do School Psychologists Perceive Various Assessment Tools</td>
<td>96</td>
</tr>
<tr>
<td>to be Regarding the Assessment of ASD?</td>
<td></td>
</tr>
<tr>
<td>What are the Most Common Treatments/Interventions Used by</td>
<td>97</td>
</tr>
<tr>
<td>School Psychologists When Working with Children with ASD?</td>
<td></td>
</tr>
<tr>
<td>How Competent do School Psychologists Perceive Themselves to</td>
<td>105</td>
</tr>
<tr>
<td>be Regarding Treatments/Interventions for ASD?</td>
<td></td>
</tr>
<tr>
<td>How Useful do School Psychologists Perceive Various Treatments/</td>
<td>106</td>
</tr>
<tr>
<td>Interventions to be for Students with ASD?</td>
<td></td>
</tr>
<tr>
<td>What is the Primary Role of School Psychologists When Working</td>
<td>107</td>
</tr>
<tr>
<td>with Students with ASD?</td>
<td></td>
</tr>
<tr>
<td>What Variables are Related to School Psychologists' Knowledge of ASD?</td>
<td>110</td>
</tr>
<tr>
<td>Other Information Pertaining to School Psychologists and ASD</td>
<td>119</td>
</tr>
</tbody>
</table>

Chapter Five: Discussion

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>121</td>
</tr>
<tr>
<td>School Psychologists' Experiences with ASD</td>
<td>122</td>
</tr>
<tr>
<td>School Psychologists' Knowledge of ASD</td>
<td>127</td>
</tr>
<tr>
<td>School Psychologists and Assessment of ASD</td>
<td>129</td>
</tr>
<tr>
<td>School Psychologists and Treatments/Interventions for ASD</td>
<td>135</td>
</tr>
<tr>
<td>School Psychologists' Responsibilities for Students with ASD</td>
<td>137</td>
</tr>
<tr>
<td>School Psychologists' Variables Related to Knowledge of ASD</td>
<td>138</td>
</tr>
<tr>
<td>Implications for Practice</td>
<td>139</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>140</td>
</tr>
<tr>
<td>Future Directions</td>
<td>141</td>
</tr>
<tr>
<td>Conclusion</td>
<td>143</td>
</tr>
</tbody>
</table>

References                                                                 | 145  |

Appendices                                                               | 170  |
| Appendix A: IRB Approval Letters                                       | 171  |
| Appendix B: Permission to Use Knowledge Survey                        | 174  |
| Appendix C: School Psychologists and ASD Survey                       | 175  |
| Appendix D: Letter to Request Participation in Study                  | 209  |
| Appendix E: First Follow-up Contact                                   | 210  |
| Appendix F: Second Follow-up Contact                                  | 211  |
List of Tables

Table 1: Demographics of Participants 61
Table 2: KR-20 for The Knowledge of ASD Scale (Section C) 73
Table 3: Research Questions and Data Sources 74
Table 4: Participants’ Experiences with ASD 85
Table 5: Participants’ Scores on Knowledge Survey 89
Table 6: Results of True/False ASD Questions 89
Table 7: Assessment Use, Competence, and Usefulness 93
Table 8: Intervention/treatment Use, Competence, and Usefulness 100
Table 9: Amount of Time School Psychologists Spend Performing Various Responsibilities Related to Students with ASD 108
Table 10: Summary ANOVA Table for the Relationship Between Demographic and Experience with ASD Variables and Knowledge 116
Table 11: Summary Correlation Table for the Relationship Between Demographic and Experience with ASD Variables and Knowledge 118
List of Figures

Figure 1: Mean Scores used for ANOVA for Use of Assessment Tools 95

Figure 2: Mean Scores used for ANOVA for Use of Treatments/Interventions 104

Figure 3: Percent of Time School Psychologists Spend in Various Responsibilities Related to ASD 109
Abstract

The number of students with autism spectrum disorders (ASD) has increased over the years and therefore it seems inevitable that school psychologists will encounter these students as part of their roles in assessment, consultation, and/or intervention. There are a multitude of articles and books on the signs and symptoms of ASD, as well as suggestions for assessment and intervention, but there are no published data related to school psychologists’ knowledge, training, and roles and responsibilities for students with ASD. Therefore, the current study sought to inform the field of school psychology with respect to these issues. One hundred members of the Massachusetts School Psychology Association (MSPA) completed an online survey that asked information pertaining to demographics, participants’ experiences with the ASD population, participants’ knowledge of ASD, as well as their use, competency, and feelings of usefulness of various assessment techniques and treatments/interventions. Results indicated that overall school psychologists demonstrated adequate knowledge of ASD. Most participants spend their time conducting assessments and reportedly follow best practice guidelines. Generally, school psychologists felt competent conducting assessments and felt that the assessment tools are useful. School psychologists spent less time on treatment/intervention and while they believe that many of the treatments/interventions are useful, they did not feel as competent implementing
Therefore, these results suggest that school psychologists need more training in ASD, especially around treatments/interventions, at the pre-service level through graduate school training and experiences (i.e., practica and internships) as well as at the practitioner level through professional development opportunities.
Chapter I

Introduction

Autism spectrum disorders (ASD) refer to a complex group of related disorders that vary in their severity of symptoms and are characterized by deficits in social interaction, verbal and nonverbal communication, and repetitive behaviors or interests (American Psychiatric Association; APA, 2000). In addition, some people with ASD often have unusual responses to sensory experiences, such as certain sounds or the way objects look (National Institutes of Mental Health; NIMH, 2008). ASD develop early in life and are life-long conditions with implications for educational, social, and community well-being (National Research Council; NRC, 2001).

The current prevalence rate of ASD in the United States is 1 in 88, and 1 in every 54 boys in the United States is affected by autism (Centers for Disease Control and Prevention, 2012). ASD are more common in the pediatric population than some more widely known disorders such as diabetes, spina bifida, or Down syndrome (Filipek et al., 1999). In schools, children (preschool to high school) classified with ASD receive special education services in greater numbers than ever before. According to the U.S. Department of Education (DOE), in the decade spanning the 1991 to 2001 school years, the number of students with ASD served in special education increased from 5,415 to 78,749. Currently, the placement of students with ASD in the mainstream setting is
increasing as well (U.S. DOE, 2005). Specifically, in 1995, 12% of students who received services under the category of “autism” were educated in their general education classrooms for more than 80% of their day. In 2004, this percentage increased to 29% (U.S. DOE, 2005).

Although one might assume that children with ASD are typically identified when they are toddlers or preschoolers, especially those with more severe forms of ASD, it is estimated that only 50% of children are diagnosed before entering kindergarten. Therefore, many children with ASD are first identified by personnel in their local school system, not their local health care system (Yeargin-Allsopp et al., 2003). Data from a survey conducted in the United Kingdom indicated that the average age of children diagnosed with lower functioning forms of ASD (i.e., Autistic Disorder) was about 5.5 years of age and for those with higher functioning forms of ASD (i.e., Asperger’s Disorder), the average age of diagnosis was 11 years of age (Howlin & Asgharian, 1999; Howlin & Moore, 1997). Goin-Kochel, Mackintosh, and Myers (2006) conducted a web-based study with participants from five countries and reported an average diagnosis age of 3.4 years for autism and 7.5 years for Asperger’s syndrome. Regardless of the study, the year conducted, or the reported rate of prevalence, more boys than girls are consistently found to be affected with ASD, with male-to-female ratios ranging from 2:1 to 6.5:1 (Myers, Johnson, & the Council on Children with Disabilities, 2007a). The male-to-female ratio is even higher for those on the more severe end of the spectrum, ranging from 6:1 to as high as 15:1 (Myers et al., 2007a).
Given the increase in the number of youth diagnosed with ASD as well as the increasing placements of these students in the mainstream setting, it seems inevitable that school psychologists will be involved in working with these students as part of the services provided to educational systems and families. Research has found that extensive early intervention results in improved outcomes for children with ASD (NRC, 2001; Rogers, 1998). Therefore, early identification and intervention are important determinants in the course of ASD (Goin & Myers, 2004). Thus, it is essential for school psychologists and other school professionals who work in infant and preschool settings to ensure that children with ASD are identified as soon as possible. In addition, as noted above, many children with ASD are identified by the school system and are evaluated by a team of professionals including the school psychologist. Therefore, it is critical for all school psychologists (not just those working in infant and preschool settings) to understand ASD and be aware of these disorders. Indeed, some students who are on the higher end of the autism spectrum (i.e., Asperger’s Disorder) may not always experience academic difficulties, due to their average to above average cognitive abilities and lack of language delays; however, these students also need support, especially around social skills, and it is imperative that school psychologists also are aware of these students’ specific needs. School psychologists can play an important role in the identification and intervention of students suspected of having ASD, as well as offer support, information, consultation, and recommendations to teachers, school personnel, administration, and families. With their training and skills in assessment,
intervention, and consultation, and their positioning within school systems, school psychologists should play an integral role in the educational planning and programming for children with ASD, including helping with transition services (i.e., post secondary education or work).

In order for school psychologists to serve such an important role in the development of prevention strategies and intervention programs for youth with ASD, it is essential that these professionals understand the characteristics of ASD, be able to appropriately assess these students, provide evidence-based recommendations across the prevention - intervention continuum of services, and provide consultation to educational staff and families. To date, there have been no studies conducted to determine if school psychologists have the training necessary to serve youth with ASD. A number of publications describe the symptoms and characteristics of ASD, suggest the roles that school psychologist can play with these students with ASD, offer suggestions for intervention techniques, and recommend assessment tools to use with this population (i.e., Harris, Glasberg, & Ricca, 1996; Ikeda, 2002; National Autism Center, 2009; Noland & Gabriels, 2004; Shriver, Allen, & Mathews, 1999; Williams, Johnson, & Sukhodolsky, 2005). There is also one study of training programs and school psychologists on training of low incidence disabilities, under which ASD falls (Cole & Shapiro, 2005). An additional study compared the assessment practices of school psychologists and clinical psychologists using a specific autism assessment tool (Akshoomoff, Corsello, & Schmidt, 2006). In addition, a recent book was written that describes how to identify, assess, and treat autism at
school (Brock, Jimerson, & Hansen, 2006). However, there is very little research available regarding the actual role school psychologists currently play in the lives of children with ASD including their training, knowledge, assessment, and intervention practices in this area.

Having knowledge and training in the field of ASD helps make an accurate assessment and leads to appropriate interventions. Being able to appropriately assess and treat students with ASD will benefit children and families struggling with this disorder by providing skills (i.e., social skills, behavior management) to the children and families and/or advice to help them lead a more manageable life. Having proper knowledge and training also helps school psychologists provide accurate information to teachers and other educational personnel in order to offer suggestions for teaching methods, accommodations, behavior management, and/or other interventions. Therefore, the purpose of this study was to provide current data on the knowledge, training, and roles and responsibilities of school psychologists in terms of working with students (preschool through high school) with ASD. This contributes to the field of school psychology by providing information that can be used to inform training programs and professional development opportunities.

**Research Questions**

1) What is the current knowledge of school psychologists with regard to the symptoms/diagnosis of ASD?

2) What are the most common tools that school psychologists use to assess ASD?
3) How competent do school psychologists perceive themselves to be regarding the assessment of ASD?

4) How useful do school psychologists perceive various assessment tools to be regarding the assessment of ASD?

5) What are the most common treatments/interventions used by school psychologists when working with children with ASD?

6) How competent do school psychologists perceive themselves to be regarding treatments/interventions for ASD?

7) How useful do school psychologists perceive various treatments/interventions to be for students with ASD?

8) What is the primary role (i.e., screener, evaluator, service provider, consultant) of school psychologists when working with students with ASD?

9) What variables (e.g., number of years in practice, number of workshops attended on ASD, etc.) are related to school psychologists' knowledge of ASD?

**Importance of the Study**

This study is important because the number of students in schools with ASD has increased over the years. Therefore, school psychologists are likely to encounter working in some capacity with these students by providing assessment, intervention, and/or consultation to educational staff and families. Consequently, it is important to investigate school psychologists' knowledge, training, and roles and responsibilities in order to inform training programs and professional development opportunities to ensure that school psychologists have the proper preparation to work with these students and their families.
Chapter II

Literature Review

This literature review will present background information pertaining to autism spectrum disorders, including history of ASD, possible etiologies, and how federal and educational laws relate to ASD. Information pertaining to diagnosis and treatment of ASD also will be reviewed. Next, information regarding the knowledge and training of school psychologists related to ASD will be explored. Lastly, the role of the school psychologist in working with youth with ASD will be summarized.

Historical Background of ASD

Autism was first described in 1943 by Leo Kanner, a psychiatrist at Johns Hopkins University who published a seminal article describing a small group of children who exhibited impairments in verbal and nonverbal communication, social interaction skills, and engaged in repetitive behaviors or interests. However, it was not until 1980, when autism became a category of its own with the publication of the Diagnostic and Statistic Manual-Third Edition (DSM-III), that a broad spectrum of disorders with similar core behavioral symptoms was identified and grouped under the label of pervasive developmental disorders (PDD) (APA, 1980). Since then, the terminology has changed and the diagnostic criteria have expanded. The current diagnostic manual, the Diagnostic and Statistic Manual-Fourth Edition-Text Revision (DSM-IV-TR), divides PDD into five
categories: Autistic Disorder, Rett’s Disorder, Child Disintegrative Disorder, Asperger’s Disorder, and PDD Not Otherwise Specified (PDD NOS). All of these categories have the following behavioral characteristics in common: various deficits in verbal and nonverbal communication, impaired socialization, and restricted patterns of behavior. Many educational and medical providers think of autism as a “spectrum” disorder, a group of disorders with a range of similar features and therefore refer to the disorders as ASD rather than PDDs. In addition, the term ASD is frequently used by many organizations (i.e., American Academy of Pediatrics, Centers for Disease Control and Prevention) and was chosen to be used in this dissertation rather than PDD for these reasons. In this paper, ASD will be used interchangeably to mean any one of the five disorders that fall under the PDD category; however, when referring to specific published articles, the terminology used in the article will be presented.

**Etiology of ASD**

The cause(s) of ASD have yet to be determined. Before the 1970s, it was incorrectly believed that autism resulted from emotionally cold and indifferent parents (Committee on Children with Disabilities, 2001). Now it is thought that a combination of genetics and the environment play a role in the etiology of ASD (Newschaffer et al., 2007). In addition, many researchers believe that structures of the brain are important and may have implications for the etiology of ASD (Akshoomoff, Pierce, & Courchesne, 2002; Muhle, Trentacoste, & Rapin, 2004).

**Genetics.** There is strong evidence that ASD are inheritable. Parents who have a child with ASD have a 2%–8% chance of having a second child who
also has the disorder (Muhle et al., 2004). Studies show that among identical twins, if one child has ASD, 60-90% of the time the other will also have ASD. For fraternal twins, the risk of both twins having ASD is the same as that in the general population (Ozonoff & Rogers, 2003). ASD tend to occur more frequently than expected among individuals who have certain medical conditions, such as Fragile X syndrome, tuberous sclerosis, congenital rubella syndrome, and untreated phenylketonuria (Committee on Children with Disabilities, 2001). Chromosomal and genetic abnormalities have also been associated with ASD (Committee on Children with Disabilities, 2001; Muhle et al., 2004; Newschaffer et al., 2007); however, current research suggests that less than 10% of all ASD are caused by a medical condition, chromosomal abnormality, or genetic defect (Muhle et al., 2004).

**Environment.** Environmental factors that have been linked to ASD include obstetric, prenatal, and postnatal factors. Many studies have investigated associations between risk for ASD and maternal obstetric characteristics, labor and delivery complications, and neonatal factors (Committee on Children with Disabilities, 2001; Newschaffer et al., 2007). Most of these studies are plagued by methodological issues (i.e., small sample size, lack of adjustment for potential confounding variables). As such, more research needs to be conducted in this area. Prenatal factors such as maternal infection (i.e., rubella, cytomegalovirus, herpes, HIV) and drug exposure (i.e., thalidomide taken during the 20th to 24th weeks of pregnancy, valproic acid, and alcohol) have also been suggested to increase the risk of ASD (Newschaffer, Falin, & Lee,
Postnatal factors such as herpes encephalitis, chickenpox, and chemical exposures such as vaccines that contain mercury and thimerosal have also been associated with ASD (Newschaffer et al., 2007). However, empirical research to date does not demonstrate a link between vaccines and ASD (Committee on Children with Disabilities, 2001; NIMH, 2008; Newschaffer et al., 2002, 2007). There is also some emerging evidence suggesting that low birth weight and/or premature birth may also be a risk factor for ASD (Johnson, 2010; Pinto-Martin, 2011).

**Brain structures.** While explanations remain unclear as to how or why brain structures are different in those with ASD compared to those without the disorder, factors related to brain size, brain structure, and brain chemistry have been investigated (Committee on Children with Disabilities, 2001; Dawson, 2008). Postmortem and MRI studies have shown that many major brain structures are implicated in ASD including the cerebellum, cerebral cortex, limbic system, corpus callosum, basal ganglia, and brain stem (Akshoomoff et al., 2002). Some studies have found that an abnormally large head (macrocephaly) is related to ASD (Bolton, Roobol, Allsop, & Pickles, 2001; Gillberg & de Souza, 2002; Lainhart et al., 1997; Miles, Hadden, Takahashi, & Hillman, 2000). Other research is focusing on the role of neurotransmitters such as serotonin, dopamine, and epinephrine in the etiology of ASD (Committee on Children with Disabilities, 2001; Newschaffer et al., 2002; Volkmar, Lord, Baily, Schultz, & Klin, 2004).
Taken together, it appears that the etiology of ASD is complex and multifaceted. Some theories into the causes are controversial (i.e., the role of vaccines in ASD), and many studies contain methodological flaws. Therefore, further research needs to be conducted in order to investigate the individual role of genetics, the environment, and neuroanatomical causes of ASD, as well as the interplay between them, and any other as of yet unknown causes of the disorder.

**Educational and Federal Laws Related to Students with ASD**

Many laws have been enacted that give individuals with disabilities various rights, including access to a public education. Knowledge of these laws is relevant to this study because prior to these laws, many people with ASD were not educated in public schools and instead were institutionalized. School psychologists who were trained prior to the enactment of these laws may not be as knowledgeable and experienced on the topic of ASD as compared to more recently trained school psychologists. In addition, in the past decade, there has been a dramatic increase in the number of students with ASD receiving special education services (Brock et al., 2006). Typically, the school psychologist would be involved at some level (e.g., assessment, intervention, consultation) in ensuring that the most appropriate services are provided to these students. The following section describes the laws most relevant to youth with ASD.

**Individuals with Disabilities Education Act (IDEA).** Prior to 1975, most children with disabilities in the United States did not receive appropriate educational services. Instead, they were institutionalized or not educated at all. Then, in 1975, congress passed a very important law relating to children with
disabilities, called Public Law (PL) 94-142, otherwise known as the Education of All Handicapped Children Act, which ensured that all school-aged children (5-21 years) with disabilities had the opportunity to receive a free and appropriate public education. In 1986, the law was amended to decrease the age of services from 5-years-old to 3-years-old. This amendment also assisted states in developing early identification and intervention programs for infants and toddlers (birth to three years of age). This amendment is referred to as PL 99-457. In 1990, Congress again revised the special education law and changed its title from the Education of All Handicapped Children Act to the Individuals with Disabilities Education Act (IDEA). It was at this time that the category “Autism” was added to the list of disability categories and definitions, allowing students with this diagnosis to be eligible for special education services. Before IDEA was enacted, children with ASD were labeled as having conditions such as mental retardation, learning disabilities, communication disorders, or emotional disturbance in order to obtain eligibility for special education services. IDEA was amended in 1997 and most recently in 2004, and is currently referred to as the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA). The current (2004) federal definition of autism is:

A developmental disability significantly affecting verbal and non-verbal communication and social interaction, generally evident before age three that adversely affects a child’s educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movement, resistance to environmental change
or change in daily routine, and unusual responses to sensory experiences. The term Autism does not apply if a child’s educational performance is adversely affected primarily because the child has an emotional disturbance. A child who manifests the characteristics of autism after age three could be identified as having autism if the above criteria are satisfied. (US Department of Education, 2006, p. 46756).

IDEIA guides how states and school districts provide special education and related services to children with disabilities. However, states differ in how they choose to define and organize disability categories, and services vary immensely from state to state, and even among school districts within the same state, depending on available resources (Noland & Gabriels, 2004).

**American with Disabilities Act (ADA).** At about the same time as school eligibility laws were changing, the Americans with Disabilities Act (ADA) of 1990 was passed, requiring states to administer their programs in the most integrated settings appropriate to the needs of the person with disabilities. This act resulted in the end of a long series of state and federal legislation that supported the closure of institutions and encouraged governments to support families in their efforts to raise their children with disabilities at home. Thus, children with ASD, especially those with comorbid mental retardation and behavior problems who might have been institutionalized previously, began to attend public schools.

**No Child Left Behind (NCLB).** Another important law that affects students with disabilities is the No Child Left Behind Act of 2001 (NCLB). This law is a complicated and controversial law that was passed as a consequence of
the low academic achievement exhibited by many public school students in the United States. The main facets of NCLB include: ensuring accountability of results, using scientifically based instruction, and providing highly qualified teachers and paraprofessionals. In order to ensure accountability, states are required to develop their own standards and implement a statewide assessment system that measures the state’s standards. This means that students with disabilities, including students with ASD, are required to take state assessments. Therefore, NCLB requires that school districts provide students with disabilities access to appropriate accommodations or modifications for the assessment (if needed) or allows them to participate in an alternative assessment, if appropriate. Prior to NCLB, many schools often used programs and practices based on fads and personal bias, which have not produced effective results (Yell, Drasgow, & Lowrey, 2005). NCLB emphasizes using programs, curricula, teaching methods, and interventions that are scientifically based. When it comes to teaching students with ASD, there are a variety of techniques and interventions used (i.e., discrete trial training, applied behavioral analysis, social stories, modeling, etc.). However, the relationship between particular techniques and long-term outcomes is still not clear, mostly due to methodological issues (NRC, 2001). Nonetheless, Iovannone, Dunlap, Huber, and Kincaid (2003) synthesized information on effective instructional practices for students with ASD and concluded that best practices for students with ASD include: individualized supports and services, systematic instruction, comprehensible and structured learning environments, specific curriculum content, a functional approach to
problem behavior, family involvement, and highly qualified teachers (having the appropriate degree and having passed competency tests in the areas that they teach).

As mentioned previously, it is important for school psychologists to know the signs and symptoms of ASD, to understand the etiology of the disorder, and to be familiar with educational laws related to ASD. School psychologists also need to be aware of procedures that help identify students at-risk for ASD. This will be described in the next section.

**Case Finding and Screening**

While some school psychologists are involved in the assessment process of ASD (which will be described in the next section), Brock et al. (2006) reported that school psychologists should also be involved in the precursors of the assessment process, namely case finding and screening of students suspected of having ASD. “Case finding refers to routine developmental surveillance of all students in the general population to identify atypical developmental patterns” (Brock et al., 2006, p. 33). Case finding involves school psychologists (and other educational professionals) looking for and recognizing the risk factors (i.e., siblings diagnosed with ASD, prior diagnosis of tuberous sclerosis, or fragile X syndrome) and/or warning signs of ASD (i.e., does not babble by 12 months, does not have single words by 16 months, does not attend to human voice by 24 months) and determining if further screening and/or an evaluation are warranted. In order to accomplish this, school psychologists need to listen to and recognize caregiver and/or teacher concerns that signal the presence of symptoms of ASD.
School psychologists also need to know how to ask the right questions of caregivers and teachers to further identify ASD symptoms.

Those students found to be at risk for ASD should be screened for these disorders. Screening is designed to help determine the need for any additional evaluation. According to Filipek and colleagues (1999, 2000), ASD screenings should include lead screening, audiological evaluations, and behavioral screenings. Brock et al. (2006) noted that “All school psychologists should be prepared to participate in the behavioral screening of the student who has risk factors and/or displays warning signs of autism” (p. 37-38). Some empirically studied and recognized screening instruments that are available include the Checklist for Autism in Toddlers (CHAT; Baird et al., 2000), Modified Checklist of Autism in Toddlers (M-CHAT; Robins, Fein, Barton, & Green, 2001), Pervasive Developmental Disorders Screening Test-II (PDDST-II; Siegel, 2004), High Functioning Autism Spectrum Screening Questionnaire (ASSQ; Ehlers & Gillberg, 1993), Childhood Asperger Syndrome Test (CAST; Scott, Baron-Cohen, Bolton, & Brayne, 2002), Australian Scale for Asperger’s Syndrome (ASAS; Attwood, 1998), and Social Communication Questionnaire (SCQ; Rutter, Bailey, & Lord, 2003).

The increasing incidence of ASD, combined with the importance of early identification, prevention, and intervention, creates the need for all school professionals to be more prepared to identify these disorders. With proper prevention and intervention strategies, there is hope that students with ASD will be able to achieve some level of independence. However, intervention can only
be provided if students with ASD are identified. Case finding and screening are the beginning steps in the identification process.

Assessment

There is no medical test to diagnose ASD. Instead, ASD are diagnosed based on the presence of or lack of particular observable behaviors. In order to accurately diagnose ASD, the child should have a comprehensive evaluation by a team of professionals (i.e., school psychologist, speech/language pathologist, special education teacher, occupational therapist) who can assess development in the areas of language, behavior, social skills, and cognitive skills (Ruble & Gallagher, 2004). Although several instruments have been designed to assess ASD, experts recommend that no one single ASD assessment instrument be used as the only basis for diagnosing autism, or any disability. Practitioners who have not seen a large number of young children with ASD may over- or under-diagnose this disorder because of the varying presentation of children with this condition (Kabot, Masoi, & Segai, 2003).

While children with suspected ASD may undergo various types of assessment, this review will mainly focus on the school psychologist’s role in this area. In general, best practice in evaluating students with suspected ASD is similar to evaluating any other student and should follow the RIOT acronym: (a) Review reports and records, (b) Interview caregivers and teachers, (c) Observe the child, and (d) Test the child. Each of these areas will be described below in how it specifically relates to students with ASD. It is beyond the scope of this review to describe in depth instruments that are generally familiar to most school
psychologists (i.e., the Wechsler Scales, the Vineland Scales, etc.). Detailed information will be reported only for those instruments that specifically pertain to the assessment of youth with ASD.

**Review.** During the review process, school psychologists usually review records such as a student’s cumulative file, any reports that have been shared with the school such as medical reports, and any additional screening information (i.e., vision or hearing screening, Child Find screening). The purpose of this part of the evaluation process is to gather any available background information on the child.

**Interview.** Interviews can be structured or unstructured. During the interview process, the school psychologist may interview the student. However, this may be difficult depending on the verbal skills of the student. The school psychologist will typically interview the student’s teacher, and the student’s parents/guardians. Information gleaned from the parents can include pregnancy and neonatal development, developmental milestones, medical and family health history, and when the parents were first concerned about their child. Other knowledge obtained from a parent interview may include information pertaining to any evaluations or referrals to any type of specialists (i.e., neurologist, developmental pediatrician, psychiatrist, audiologist, etc.) and outcomes, as well as if the child has had any types of previous interventions. School districts may have developed their own type of developmental history form for parents/guardians to complete as part of the assessment process and this may be a
written form that parents fill out as opposed to an interview; however, school psychologists may interview the parents for follow-up or clarification purposes.

Structured interviews pertaining to students with ASD include the Autism Diagnostic Interview-Revised (ADI-R; Rutter, LeCouteur, & Lord, 2003). The ADI-R is a standardized, semi-structured clinical interview for caregivers of children and adults. It is currently considered the “gold standard” for the diagnosis of autism along with the Autism Diagnostic Observation Schedule (ADOS), which is described below. The ADI-R is appropriate for children and adults with mental ages of at least 24 months old and takes 90-150 minutes to administer. It contains 93 items and focuses on the three core domains of ASD: reciprocal social interactions; communication and language; and repetitive, restrictive, and stereotyped interest and behaviors. The ADI-R has good psychometric properties (Cox et al., 1999; Kabot et al., 2003; Lecavalier et al., 2006; Lord et al., 1994; 1997). The strengths of the ADI-R include its concentration on the three levels of impairment of ASD and its standardized coding and scoring. Limitations include the time it takes to administer, the cost, and the fact that it requires extensive training to administer and score (Glosser, 2007; Matson, Nebel-Schwalm, & Matson, 2007).

There currently are no structured interviews designed specifically for teachers regarding students with ASD. Types of information that may be obtained by the school psychologist in an unstructured teacher interview include: (a) how the student functions academically in the classroom, (b) the student’s strengths and weaknesses, (c) how the student interacts with peers and adults,
(d) how the student’s conversational skills and social skills compare to his/her peers, (e) how the student functions during structured and unstructured times, (f) if the student is able to follow school/classroom rules and routines, and (g) how the student functions if there is a change in his/her daily routine.

Observe. Observations can be structured or unstructured. As with evaluating any student, it is important to directly observe the target child. However, it is also important to acknowledge that the behavior of children with ASD can be quite variable (from one situation to the next), thus generalizability of this type of assessment data is cautioned. In addition, due to the variability in functioning of students with ASD, it may be beneficial to observe students in a variety of situations (i.e., large group instruction, group work, independent work, lunch, recess, free time, etc.). Qualitative observations during standardized assessments also are important.

Structured observation assessment tools to evaluate a student suspected of having ASD have been empirically validated and are available to school psychologists. One of these that is considered the “gold standard” in diagnosing autism (along with the ADI-R described above), is the Autism Diagnostic Observation Schedule (ADOS; Lord et al., 1989). The ADOS is a semi-structured, psychometrically sound observational assessment that is appropriate for toddlers to adults (Lord et al., 1989; Lord, Rutter, DiLavore, & Risi, 2001). It consists of various investigator-directed activities that allow the examiner to observe social and communication behaviors related to the diagnosis of ASD. It takes about 35 to 40 minutes to administer the ADOS. Strengths of the ADOS
include its standardization of directions, materials, and activities; however, as with the ADI-R, the high cost, time, and specialized training required are limitations (de Bildt et al., 2004; Sikora, Hall, Hartley, Gerrard-Morris, & Cagle, 2008).

The Childhood Autism Rating Scale (CARS; Schopler, Reichler, & Renner, 1988) is one of the most widely used diagnostic tools for identifying children with autism (DiLalla & Rogers, 1994; Kabot et al., 2003; Sponheim, 1996; Stella, Mundy, & Stuchman, 1999). It is suitable for children over 2 years of age and takes 5-10 minutes to administer. The CARS is a 15-item behavior rating scale that contains items related to social, language, and cognitive skills. Information is based on examiner observation and interaction with the child, but if needed, CARS data can be obtained from parent interviews and student record reviews. The psychometric properties of the CARS have been shown to be adequate (Eaves & Milner, 1993; Garfin, McCallon, & Cox, 1988; Schopler, Reichler, & Lansing, 1980; Sponheim, 1996). Strengths of the CARS include its technical adequacy, cost-effectiveness, ease of scoring, and minimal training required for administration and scoring (Magyar & Pandolfi, 2007). Criticisms of the CARS include that it no longer reflects current diagnostic criteria (e.g., DSM-IV-TR) since it was first published over 20 years ago and the norms are outdated (Glosser, 2007); however, a new version of the CARS, the CARS2, was recently published (Schopler, Van Bourgondien, Wellman, & Love, 2010).

Students with ASD are a heterogeneous group, and it is not unusual for them to display a range of behaviors such as hyperactivity, short attention span,
impulsivity, noncompliance, aggressiveness, self-injurious behavior, repetitive behavior, and temper tantrums. A Functional Behavior Assessment (FBA) is a problem-solving process that focuses on identifying the purposes of specific behavior in order to guide and select interventions to directly address the problem behavior (Glasberg, 2006). An FBA looks beyond the behavior itself to focus on identifying significant and specific social, affective, cognitive, and environmental factors associated with the occurrence and non-occurrence of specific behaviors. In most school settings, information for FBAs is gathered using a combination of both indirect and direct assessments (Johnston & O’Neill, 2001). The data are then analyzed and hypotheses are derived about the behavior and the function that it is serving for the child. Behavior can serve any number of purposes for the individual including to gain attention, to gain a tangible or sensory consequence, to self-regulate, or to escape from or avoid an undesirable situation. The results of an FBA lead to a Behavior Intervention Plan (BIP) which provides a way to replace the inappropriate behavior with an appropriate substitute that serves the same function as the inappropriate behavior. In addition, IDEA requires schools to complete an FBA to identify the variables that maintain challenging behavior and to develop a behavioral intervention plan (BIP) for students who are at-risk of a change in their educational placement due to their problematic behavior (IDEA1990, 1997; IDEIA, 2004).

**Test.** The psychological assessment of a student suspected of having ASD may contain various types of testing including cognitive, adaptive,
academic, social/emotional, motor and visual-motor skills, and play, as well as tests specifically for ASD. Determining which assessment instruments to use is a difficult and complex decision and depends on the child’s language abilities, the complexity of the directions and tasks, the level of social demands, the ability to work rapidly, and the number of transitions in test activities (e.g., format changes or number of subtests) (NRC, 2001). Most children with ASD often do best when assessed with tests that require less social and verbal interactions.

The purposes of assessing intellectual functioning include generating a profile of the student’s strengths and weaknesses, facilitating educational planning, determining eligibility for certain special education services (since most states require a test of cognitive ability for certain special education services), and prognosis (NRC, 2001; Ozonoff, Goodlin-Jones, & Solomon, 2005). Information also should include verbal and nonverbal domains, memory, problem-solving ability, concept formation, and learning style. Assessing cognitive skills is important, given that, with the exception of Asperger’s Disorder, a majority (80%) of students with ASD also have intellectual disabilities (NRC, 2001). Level of intellectual functioning is associated with severity of ASD symptoms, ability to acquire new skills, level of adaptive functioning, and is one of the best predictors of outcome (Filipek et al., 1999). However, given that many children with ASD are first evaluated when they are very young (i.e., 2- to 3-years old), it is important to keep in mind that childhood intellectual ability does not correlate highly with adult cognitive functioning until five-years of age (Sattler, 1988).
Brock (2004) and Ozonoff et al. (2005) suggest the following intelligence tests are appropriate for use with students with ASD who have language: the Wechsler Preschool and Primary Scale of Intelligence-Third Edition (WPPSI-III; Wechsler, 2002), Wechsler Intelligence Scale for Children-Fourth Edition (WISC-IV; Wechsler, 2003), Wechsler Adult Intelligence Scale-Fourth Edition (WAIS-IV; Wechsler, 2008), Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999), Stanford-Binet Intelligence Scale-Fifth Edition (SB-V; Roid, 2003), and the Differential Ability Scales-II (DAS-II; Elliot, 2007). Intelligence tests that are appropriate to use with students who have communication difficulties include: Leiter International Performance Scales-Revised (Leiter-R; Roid & Miller, 1997), Bayley Scales of Infant Development-Third Edition (Bayley-III; Bayley, 2005), Battelle Developmental Inventory, Second Edition (BDI-2; Newborg, 2005), Mullen Scales of Early Learning (Mullen, 1995), Columbia Mental Maturity Scale-Third Edition (CMMS-III; Burgemeister, Blum, & Lorge, 1972), Tests of Nonverbal Intelligence-Third Edition (TONI-III; Brown, Sherbenou, & Johnson, 1997), and Kaufman Assessment Battery for Children-Second Edition (KABC-II; Kaufman & Kaufman, 2004).

Assessment of adaptive functioning should also be included as part of an evaluation for students suspected of having ASD because adaptive skills tend to be an area of difficulty for those with ASD. Information from formal adaptive behavior measures provides information that is helpful in determining the student’s level of functioning in daily tasks (i.e., self-care, communication, social, functional academics, health and safety) that are required to be successful in the
home, community, and workplace. The most widely used measure of adaptive behavior is the Vineland Adaptive Behavior Scales-Second Edition (Vineland-II; Sparrow & Cicchetti, & Balla, 2005) which contains multiple components and incorporates a semi-structured interview for parents and a questionnaire for teachers (Filipek et al., 1999; Tidmarsh & Volkmar, 2003). Another recommended adaptive measure is the Scales of Independent Behavior-Revised (SIB-R; Bruininks, Woodcock, Weatherman, & Hill, 1996) which may be administered to a caregiver in a structured interview or by a checklist procedure (Filipek et al., 1999). In addition, the Adaptive Behavior Assessment System-Second Edition (ABAS-II; Harrison & Oakland, 2003) can be used.

Students with ASD may present with new and different symptoms as they become older and more mature. In addition, ASD can be associated with co-morbid conditions such as Attention-Deficit/Hyperactivity Disorder (ADHD), oppositional defiant disorder, obsessive-compulsive disorder, anxiety disorders, tic disorders, affective disorders, and psychotic disorders (Matson & Nebel-Schwalm, 2007). While the assessment of these comorbid disorders can be especially difficult in students with ASD, it is important to evaluate these symptoms as they relate to the referral question. Therefore, it may be important for school psychologists to also evaluate a student’s social/emotional functioning. A traditional measure that provides an overview of various behaviors is the Behavioral Assessment System for Children, Second Edition (BASC-II; Reynolds & Kamphaus, 2004), a rating scale that has three different questionnaires to be completed by a parent, teacher, and/or student (depending on the age and
functioning of the student). Another traditional rating scale completed by parents used to gather an overview of behaviors is the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001); however, the CBCL has rarely been used with children with ASD (Pandolfi, Magyar, & Dill, 2009; Sikora et al., 2008). Although not designed specifically for students with ASD, the Social Skills Rating System (SSRS; Gresham & Elliott, 1989), a questionnaire completed by the parent, teacher, and/or student may provide some helpful data. The SSRS has been used in research settings to assess the social skills of students with ASD (Bauminger, 2002). Its newer version, the Social Skills Improvement System (SSIS; Gresham & Elliot, 2008), has a new subscale called Autism Spectrum.

If more specific social/emotional measures are needed, tools such as the Children’s Depression Inventory (CDI; Kovacs, 1992), the Multidimensional Anxiety Scale for Children (MASC; March, 1997), and the Revised Children’s Manifest Anxiety Scale: Second Edition (RCMAS-2; Reynolds & Richmond, 2008) may be used; however, they all are self-report instruments, which may not be appropriate given the functioning of the student, and no empirical studies of the use of these instruments with children with ASD has been performed (Brock et al., 2006; Ozonoff et al., 2005).

Children and youth with ASD may also have difficulties with executive functioning, which are the processes required to prepare for and execute complex behavior, such as planning, inhibition, organizing, self-monitoring, cognitive flexibility, and set-shifting (Griffith, Pennington, Wehner, & Rogers, 1999; Verté, Geurts, Roeyes, Oosterlaan, & Sergeant, 2006). Tests used to
measure executive functioning skills include the Wisconsin Card Sorting Test (WCST; Heaton, Chelune, Talley, Kay, & Curtiss, 1993), the Delis-Kaplan Executive Function System (D-KEFS; Delis, Kaplan, & Kramer, 2001), Developmental Neuropsychological Assessment-2nd Edition (NEPSY-II; Korkman, Kirk, & Kemp, 2007), and the Behavior Rating Inventory of Executive Functioning (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000); however, empirical research investigating the use of these tools with the ASD population is limited. For example, there currently is only one published small study (N=12) using parts of the D-KEFS with adolescent and adult males with ASD (Kleinhans, Akshoomoff, & Delis, 2005). However, according to Ozonoff and colleagues (2005), use of the D-KEFS with the ASD population is increasing. The NEPSY-II was normed on many clinical samples, including those with ASD, but given its recent publication, empirical studies have not yet been conducted. However, research has been done with students with ASD using the original NEPSY which has shown that the NEPSY can differentiate neuropsychological profiles across disorders. (Hooper, Poon, Marcus, & Fine, 2006; Joseph, McGrath, & Tager-Flusberg, 2005). The BRIEF normative sample included those with various disorders, including those with ASD, but only two empirical studies were found using it with children and adolescents with ASD (Gilotty, Kenworthy, Sirian, Black, & Wagner, 2002; Zandt, Prior, & Kyrios, 2009).

Other assessment tools that may be helpful include rating scales that specifically assess ASD symptoms. One such measure is the Gilliam Autism Rating Scale, Second Edition (GARS-2; Gilliam, 2005). The GARS-2 is a
revision of the Gilliam Autism Rating Scale and is widely used in schools and diagnostic clinics. It is a norm-referenced behavioral checklist completed by caregivers, teachers, or clinicians on individuals aged 3 to 22 years suspected of having ASD. The GARS-2 is made up of 42 items grouped into three subscales: Stereotyped Behaviors, Communication, and Social Interaction, and can be completed and scored in 5 to 10 minutes with no special training required. According to the GARS-2 manual, its psychometric properties are considered adequate (Gilliam, 2005). Strengths of the GARS-2 include its ease of use, recent norms, and its use of DSM-IV-TR symptomology (Ozonoff et al., 2005). A limitation of the GARS-2 is that due to its recent publication, no independent evaluations have been conducted on it yet. As for the original GARS, only a few studies have been conducted and they have indicated that the GARS tends to underestimate the likelihood of autism (Mazefsky & Oswald, 2006; South et al., 2002).

Several other specific ASD measures that have been mentioned frequently in the literature include: The Autism Behavior Checklist (ABC; Krug, Arick, & Almond, 1980), The Social Communication Questionnaire (SCQ; Rutter et al., 2003), The Parent Interview for Autism (PIA; Stone, Coonrod, Pozdol, & Turner, 2003), The Pervasive Developmental Disorders Screening Test-II (PDDST-II; Siegel, 2004), and The Asperger Syndrome Diagnostic Scale (ASDS; Myles, Bock, & Simpson, 2001); however, some of these are outdated (i.e., ABC) and/or construction of the standardization sample is not considered adequate (i.e., ASDS) (Brock et al., 2006; Filipek et al., 1999, 2000; Ozonoff et al., 2005).
Besides evaluating cognitive, adaptive, and social/emotional skills, as well as ASD symptoms, assessment of a student’s academic ability should also be conducted. While academic testing may be performed by special education teachers, in some districts, school psychologists may conduct educational achievement testing. As with cognitive testing, it is important to analyze the student’s strengths and weaknesses on academic tests. The Psychoeducational Profile-Third Edition (PEP-3; Schopler, Lansing, Reichler, & Marcus, 2005), the Bracken Basic Concept Scale-Third Edition: Receptive (BBCS-3:R; Bracken, 2006), and the Young Children’s Achievement Test (YCAT; Hresko, Peak, Herron, & Bridges, 2000) are recommended to assess the skills and behaviors of young children with autism. For adolescents and adults who are in the low functioning range, the Adolescent and Adult Psychoeducational Profile (AAPEP; Mesibov, Schopler, Schaffer, & Landrus, 1988) would be a suitable choice. For students with ASD who are older and higher functioning, the Woodcock-Johnson Tests of Achievement-Third Edition (WJ-III; Woodcock, McGrew, & Mather, 2001) and the Wechsler Individual Achievement Test, Second Edition (WIAT-II, Wechsler, 2001) may be appropriate (Goodlin-Jones & Solomon, 2003).

There are other parts of ASD evaluations that school psychologists do not take part in and not every ASD evaluation includes all of the following components, but it is important that school psychologists are cognizant of these procedures because they may be in a position to help a family make a referral for additional testing. ASD evaluations may include a speech/language evaluation,
an occupational therapy evaluation, and a physical therapy evaluation which may be conducted in the school setting. Medical assessments may also be part of ASD evaluations (i.e., audiological examination, growth measurements, EEG or MRI, and laboratory tests) (Myers et al., 2007a; Volkmar, Cook, Pomeroy, Realmuto, & Tanguay, 1999). Psychiatric evaluations may also be conducted if mental health issues are present.

In summary, numerous ASD measures exist to collect information from caregivers and/or teachers and from direct observations. However, few studies exist comparing these instruments with one another and therefore there are limited empirical data available to guide clinicians when deciding upon the most appropriate assessment tool(s) to select.

**Treatments and Interventions**

There are no cures for ASD. Although outcomes vary and some characteristics may change over time, most children with ASD remain on the spectrum as adults, and regardless of their intellectual functioning, continue to experience problems with independent living, employment, social relationships, and mental health. However, research has demonstrated that when given intensive early intervention and various interventions throughout schooling (i.e., speech/language therapy, social skills training), more significant challenges can be prevented and improvements have been documented in areas such as IQ, language, educational placement, and decreased autism symptoms (Cohen, Amerine-Dickens, & Smith, 2006; McEachin, Smith, & Lovaas, 1993; McGee, Krantz, & McClannahan, 1985; NRC, 2001). Therefore, school psychologists are
in a position to help with the challenges of ASD by specifically providing interventions themselves and/or educating parents and educational staff on various treatments and interventions.

While there is no single intervention package for all children with ASD, the primary goals of treatment are to minimize the core features and associated deficits, maximize functional independence and quality of life, and alleviate family distress. Facilitating development and learning, promoting socialization, reducing maladaptive behaviors, and educating and supporting families can help accomplish these goals. Therefore, interventions should address communication, social skills, daily living skills, play and leisure skills, academic achievement, and maladaptive behaviors. Interventions generally require the services of multiple professionals, including general education and special education teachers, speech and language pathologists, occupational and physical therapists, and school psychologists. The treatments that follow include those that have sufficient evidence available to confidently determine that they result in beneficial outcomes for individuals with ASD (Established), treatments that suggest they produce a beneficial outcome but require more research before conclusions can be drawn (Emerging), and treatments that have little evidence to support their use (Unestablished). While some of these treatments apply specifically to school psychologists, others do not. However, it is important for the school psychologist to be knowledgeable of these various interventions and treatment strategies, including those that are empirically supported by research and those that are not in order to consult with families, teachers, and other
school personnel working with students with ASD. In addition, the impact of the information age on parents and professionals can be concerning because many parents believe the information obtained on the internet is valid even when it has not gone through a rigorous professionally based, peer review process. Therefore, it is up to professionals in the field, including school psychologists, to evaluate and provide parents with the skills to accurately evaluate the validity of these treatments (Kabot et al., 2003).

While it is beyond the scope of this dissertation to evaluate the efficacy of the interventions, a brief review of various interventions follows. This review is based on the most recent and comprehensive review of treatments/interventions for students with ASD, called The National Standards Report (National Autism Center, 2009). The reader is referred to this report for more specific information regarding the research studies that were utilized in determining the treatments/interventions.

**Established treatments.** Established treatments are treatments where there is convincing scientific evidence to demonstrate that these treatments provide beneficial effects for students with ASD. The National Standards Report (National Autism Center, 2009) identified eleven treatments as established treatments. They are described below.

**Antecedent package.** These interventions involve the modification of situational events that typically precede the occurrence of a target behavior. These alterations are made to increase the likelihood of success or reduce the likelihood of problems occurring. Treatments falling into this category reflect
research representing the fields of applied behavior analysis (ABA), behavioral psychology, and positive behavior supports. Examples include but are not restricted to: behavior chain interruption (for increasing behaviors); behavioral momentum; choice; contriving motivational operations; cueing and prompting/prompt fading procedures; environmental enrichment; environmental modification of task demands, social comments, adult presence, intertrial interval, seating, familiarity with stimuli; errorless learning; errorless compliance; habit reversal; incorporating echolalia, special interests, thematic activities, or ritualistic/obsessional activities into tasks; maintenance interspersal; noncontingent access; noncontingent reinforcement; priming; stimulus variation; and time delay.

**Behavioral package.** These interventions are designed to reduce problem behavior and teach functional alternative behaviors or skills through the application of basic principles of behavior change. Treatments falling into this category reflect research representing the fields of applied behavior analysis, behavioral psychology, and positive behavior supports. Examples include but are not restricted to: behavioral sleep package; behavioral toilet training/dry bed training; chaining; contingency contracting; contingency mapping; delayed contingencies; differential reinforcement strategies; discrete trial teaching; functional communication training; generalization training; mand training; verbal operants; noncontingent escape with instructional fading; progressive relaxation; reinforcement; scheduled awakenings; shaping; stimulus-stimulus pairing with reinforcement; successive approximation; task analysis; and token economy.
Other examples include but are not restricted to: choice + embedding + functional communication training + reinforcement; task interspersal with differential reinforcement; tokens + reinforcement + choice + contingent exercise + overcorrection; noncontingent reinforcement + differential reinforcement; modeling + contingency management; and schedules + reinforcement + redirection + response prevention.

**Early intensive behavioral intervention-comprehensive behavioral treatment for young children.** This treatment reflects research from comprehensive treatment programs that involve a combination of applied behavior analytic procedures (e.g., discrete trial, incidental teaching, etc.) which are delivered to young children (generally under the age of 8). These treatments may be delivered in a variety of settings (e.g., home, self-contained classroom, inclusive classroom, community) and involve a low student-to-teacher ratio (e.g., 1:1). All of the treatments in this category (a) target the defining symptoms of ASD, (b) have treatment manuals, (c) provide treatment with a high degree of intensity, and (d) measure the overall effectiveness of the program. These treatment programs may also be referred to as ABA programs or behavioral inclusive program and early intensive behavioral intervention.

**Joint attention intervention.** These interventions involve building foundational skills involved in regulating the behaviors of others. Joint attention often involves teaching a child to respond to the nonverbal social bids of others or to initiate joint attention interactions. Examples include pointing to objects, showing items/activities to another person, and following eye gaze.
**Modeling.** These interventions rely on an adult or peer providing a demonstration of the target behavior that should result in an imitation of the target behavior by the individual with ASD. Modeling can include simple and complex behaviors. This intervention is often combined with other strategies such as prompting and reinforcement. Examples include live modeling and video modeling.

**Naturalistic teaching strategies.** These interventions involve using primarily child-directed interactions to teach functional skills in the natural environment. These interventions often involve providing a stimulating environment, modeling how to play, encouraging conversation, providing choices and direct/natural reinforcers, and rewarding reasonable attempts. Examples of this type of approach include but are not limited to focused stimulation, incidental teaching, milieu teaching, embedded teaching, and responsive education and prelinguistic milieu teaching.

**Peer training package.** These interventions involve teaching children without disabilities strategies for facilitating play and social interactions with children on the autism spectrum. Peers may often include classmates or siblings. These interventions may include components of other treatment packages (e.g., self-management for peers, prompting, reinforcement, etc.). Common names for intervention strategies include peer networks, circle of friends, buddy skills package, Integrated Play Groups™, peer initiation training, and peer-mediated social interactions.
**Pivotal response treatment.** This treatment is also referred to as PRT, Pivotal Response Teaching, and Pivotal Response Training. PRT focuses on targeting “pivotal” behavioral areas—such as motivation to engage in social communication, self-initiation, self-management, and responsiveness to multiple cues, with the development of these areas having the goal of very widespread and fluently integrated collateral improvements. Key aspects of PRT intervention delivery also focus on parent involvement in the intervention delivery, and on intervention in the natural environment such as homes and schools with the goal of producing naturalized behavioral improvements. This treatment is an expansion of Natural Language Paradigm which is also included in this category.

**Schedule.** These interventions involve the presentation of a task list that communicates a series of activities or steps required to complete a specific activity. Schedules are often supplemented by other interventions such as reinforcement. Schedules can take several forms including written words, pictures or photographs, or work stations.

**Self-management.** These interventions involve promoting independence by teaching individuals with ASD to regulate their behavior by recording the occurrence/nonoccurrence of the target behavior, and securing reinforcement for doing so. Initial skills development may involve other strategies and may include the task of setting one’s own goals. In addition, reinforcement is a component of this intervention with the individual with ASD independently seeking and/or delivering reinforcers. Examples include the use of checklists.
(using checks, smiley/frowning faces), wrist counters, visual prompts, and tokens.

**Story-based intervention package.** These treatments involve a written description of the situations under which specific behaviors are expected to occur. Stories may be supplemented with additional components (e.g., prompting, reinforcement, discussion, etc.). Social Stories™ are the most well-known story-based interventions and they seek to answer the “who,” “what,” “when,” “where,” and “why” in order to improve perspective-taking.

**Emerging treatments.** Emerging treatments are those for which one or more studies suggest the intervention may produce favorable outcomes. However, additional high quality studies that consistently show these treatments to be effective for individuals with ASD are needed before it can be confidently determined that the treatments are effective. Twenty two types of interventions fall in this category and are described below.

**Augmentative and alternative communication (AAC) device.** These interventions involved the use of high or low technologically sophisticated devices to facilitate communication. Examples include but are not restricted to: pictures, photographs, symbols, communication books, computers, or other electronic devices.

**Cognitive behavioral intervention package.** These interventions focus on changing everyday negative or unrealistic thought patterns and behaviors with the aim of positively influencing emotions and/or life functioning.
Developmental relationship-based treatment. These treatments involve a combination of procedures that are based on developmental theory and emphasize the importance of building social relationships. These treatments may be delivered in a variety of settings (e.g., home, classroom, community). All interventions in this category: (a) target the defining symptoms of ASD, (b) have treatment manuals, (c) provide treatment with a high degree of intensity, and (d) measure the overall effectiveness of the program. These treatment programs may also be referred to as the Denver Model, DIR (Developmental, Individual Differences, Relationship-based)/Floortime, Relationship Development Intervention, or Responsive Teaching.

Exercise. These interventions involve an increase in physical exertion as a means of reducing problems behaviors or increasing appropriate behavior.

Exposure package. These interventions require that the individual with ASD increasingly face anxiety-provoking situations while preventing the use of maladaptive strategies used in the past under these conditions.

Imitation-based Interaction. These interventions rely on adults imitating the actions of a child.

Initiation training. These interventions involve directly teaching individuals with ASD to initiate interactions with their peers.

Language training (production). These interventions have as their primary goal to increase speech production. Examples include but are not restricted to: echo relevant word training, oral communication training, oral verbal
communication training, structured discourse, simultaneous communication, and individualized language remediation.

**Language training (production and understanding).** These interventions have as their primary goals to increase both speech production and understanding of communicative acts. Examples include but are not restricted to: total communication training, position object training, position self-training, and language programming strategies.

**Massage/touch therapy.** These interventions involve the provision of deep tissue stimulation.

**Multi-component package.** These interventions involve a combination of multiple treatment procedures that are derived from different fields of interest or different theoretical orientations. These treatments do not better fit one of the other treatment “packages” in this list nor are they associated with specific treatment programs.

**Music therapy.** These interventions seek to teach individual skills or goals through music. A targeted skill (e.g., counting, learning colors, taking turns, etc.) is first presented through song or rhythmic cuing and music is eventually faded.

**Peer-mediated instructional arrangement.** These interventions involve targeting academic skills by involving same-aged peers in the learning process. This approach is also described as peer tutoring.

**Picture exchange communication system.** This treatment involves the application of a specific augmentative and alternative
communication system based on behavioral principles that are designed to teach functional communication to children with limited verbal and/or communication skills.

**Reductive package.** These interventions rely on strategies designed to reduce problem behaviors in the absence of increasing alternative appropriate behaviors. Examples include but are not restricted to water mist, behavior chain interruption (without attempting to increase an appropriate behavior), protective equipment, and ammonia.

**Scripting.** These interventions involve developing a verbal and/or written script about a specific skill or situation which serves as a model for the child with ASD. Scripts are usually practiced repeatedly before the skill is used in the actual situation.

**Sign instruction.** These interventions involve the direct teaching of sign language as a means of communicating with other individuals in the environment.

**Social communication intervention.** These psychosocial interventions involve targeting some combination of social communication impairments such as pragmatic communication skills, and the inability to successfully read social situations. These treatments may also be referred to as social pragmatic interventions.

**Social skills package.** These interventions seek to build social interaction skills in children with ASD by targeting basic responses (e.g., eye
contact, name response) to complex social skills (e.g., how to initiate or maintain a conversation).

**Structured teaching.** Based on neuropsychological characteristics of individuals with autism, this intervention involves a combination of procedures that rely heavily on the physical organization of a setting, predictable schedules, and individualized use of teaching methods. These procedures assume that modifications in the environment, materials, and presentation of information can make thinking, learning, and understanding easier for people with ASD if they are adapted to individual learning styles of autism and individual learning characteristics. All of the treatments falling into this category: (a) target the defining symptoms of ASD; (b) have treatment manuals; (c) provide treatment with a high degree of intensity; and (d) measure the overall effectiveness of the program. These treatment programs may also be referred to as TEACCH (Treatment and Education of Autistic and related Communication-handicapped Children).

**Technology-based treatment.** These interventions require the presentation of instructional materials using the medium of computers or related technologies. Examples include but are not restricted to Alpha Program, Delta Messages, the Emotion Trainer Computer Program, pager, robot, or a PDA (Personal Digital Assistant). The theories behind Technology-based Treatments may vary but they are unique in their use of technology.

**Theory of mind training.** These interventions are designed to teach individuals with ASD to recognize and identify mental states (i.e., a
person’s thoughts, beliefs, intentions, desires and emotions) in oneself or in others and to be able to take the perspective of another person in order to predict their actions.

**Unestablished treatments.** Unestablished treatments are those for which there is little or no evidence in the scientific literature that allows firm conclusions about the effectiveness of these interventions with individuals with ASD to be drawn. There is no reason to assume these treatments are effective. Further, there is no way to rule out the possibility these treatments are ineffective or harmful. Five interventions fall under this category and are described next.

**Academic interventions.** These interventions involve the use of traditional teaching methods to improve academic performance. Examples include but are not restricted to: “personal instruction”; paired associate; picture-to-text matching; The Expression Connection; answering pre-reading questions; completing cloze sentences; resolving anaphora; sentence combining; “special education;” speech output and orthographic feedback; and handwriting training.

**Auditory integration training.** This intervention involves the presentation of modulated sounds through headphones in an attempt to retrain an individual’s auditory system with the goal of improving distortions in hearing or sensitivities to sound.

**Facilitated communication.** This intervention involves having a facilitator support the hand or arm of an individual with limited communication skills, helping the individual express words, sentences, or complete thoughts by using a keyboard of words or pictures or typing device.
Gluten- and Casein-free diet. These interventions involve elimination of an individual’s intake of naturally occurring proteins gluten and casein. Early studies suggested that the Gluten- and Casein-free diet may produce favorable outcomes but did not have strong scientific designs. Better controlled research published since 2006 suggests there may be no educational or behavioral benefits for these diets. Further, potential medically harmful effects have begun to be reported in the literature.

Sensory integrative package. These treatments involve establishing an environment that stimulates or challenges the individual to effectively use all of their senses as a means of addressing overstimulation or understimulation from the environment.

Summary

The information presented thus far has provided the reader with background information pertaining to ASD, such as signs and symptoms, educational laws, possible etiologies, assessment, and treatment-intervention strategies. It is important for school psychologists to know this information because it is highly likely that school psychologists will be involved in some facet with the educational programming of students with ASD and/or families affected by this disorder. However, investigating the knowledge that school psychologists have regarding ASD is very limited. In addition, while having knowledge of ASD is critical, being able to apply that knowledge also is important so that school psychologists are able to appropriately assess students suspected of having ASD and can consult with educational staff and families to provide optimal
outcomes for these youth. Therefore, also understanding school psychologists
training in the area of ASD is imperative. However, empirical research
investigating the preparation (i.e., knowledge and skills) of school psychologists
in the area of ASD does not exist. Since the research on the knowledge and
training of school psychologists is inadequate, one of the purposes of this study
will be to provide current data on this topic.

Knowledge and Training in ASD

To date, there are no published studies investigating knowledge and
training in ASD that exclusively focus on school psychologists as the subjects.
One study included school psychologists as well as other professionals, but was
conducted many years ago (Stone, 1987). Other empirical studies on knowledge
and training have been conducted with various professionals such as clinical
psychologists, pediatricians, speech/language therapists, psychiatrists,
neurologists, medical students, teachers, and parents (Cascella & Colella, 2004;
Heidergerken, Geffken, Modi, & Frakey, 2005; Helps, Newson-Davis, & Callias,
1999; Schwartz & Drager, 2008; Shah, 2001; Stone & Rosenbaum, 1988).
Studies discussed related to other professional training are included in this paper
due to the fact that the research base of school psychologists’ knowledge and
training of ASD is very limited. In addition, the literature suggests that the
knowledge and training of ASD by various other disciplines and parents is weak,
unless professionals have specific expertise in the area of ASD (i.e., they worked
in a university setting and were involved in clinical and/or research in the area of
autism for at least five years). It will therefore be of interest to examine school
psychologists’ knowledge and training compared with other professionals. These studies will be discussed in the following section.

In 1987, Stone was the first to develop an instrument called the Autism Survey to assess professionals’ general knowledge of autism and the criteria used to diagnose the disorder. Stone surveyed 239 professionals, including 42 clinical psychologists, 48 pediatricians, 52 school psychologists, and 97 speech/language therapy pathologists, on their knowledge and beliefs about autism in order to obtain cross-disciplinary perspectives of this disorder. Their responses were compared to those obtained from 18 specialists in the area of autism (individuals who worked in a university setting and were involved for at least 5 years in clinical and/or research in the area of autism). The survey, consisting of two parts, was specifically developed for the study and consisted of questions regarding etiology, diagnosis, and specific features of the disorder. Part I of the survey consisted of 21 statements, each of which was rated on a 6-point scale according to degree of agreement (from 1—fully agree to 6—fully disagree). Part II consisted of two questions regarding diagnostic criteria. The first item asked respondents to check which of 18 characteristics or behaviors are required for a diagnosis of autism and the second item asked respondents to check which characteristics are helpful, though not required, in diagnosing autism. Results indicated significant discrepancies between health care disciplines and autism experts across social/emotional, cognitive, and general descriptive features of autism. For example, responses from ASD experts were consistent with the current research being conducted on autism as well as the
then current DSM-III-R criteria. In contrast, the four groups of professionals tended to have a more “old-fashioned” view of autism. More specifically, the clinical psychologists, pediatricians, school psychologists, and speech/language pathologists were more likely to view autism as an emotional disorder and to see emotional factors as causing autism, as compared to the autism specialists, who were more likely to view autism as a developmental disorder. Respondents from the four disciplines were also more likely to believe that children with autism do not show any social attachments or affectionate behaviors. Regarding cognitive ability, significant differences between the four disciplines and specialists existed. The specialists agreed that most children with autism are mentally handicapped ‘change in terminology has occurred’ and disagreed that they are more intelligent than testing suggests. Opposite results were obtained from respondents from all four disciplines.

Heidergerken and colleagues (2005) conducted a study to expand the research by Stone (1987) and Stone and Rosenbaum (1988) exploring professionals’ knowledge regarding autism. Specifically, the study examined specialists’ (i.e., clinical psychologists, psychiatrists, and speech and language pathologists) and primary providers’ (i.e., pediatricians, neurologists, and family practice) knowledge of updated DSM-IV criteria and general autism knowledge in comparison with a group of autism experts (professionals with the Center for Autism and Related Disabilities). Results of the study indicated that specialists and primary care providers continue to exhibit beliefs consistent with outdated research. For example, both the specialists and primary care providers were
less likely than the autism experts to endorse that children with autism have the ability to display social attachments or affectionate behaviors to their parents and/or others around them. In addition, despite more recent epidemiological research suggesting that autism occurs across all socioeconomic levels (Volkmar, Klin, & Cohen, 1997), specialists and primary care providers were more likely to endorse higher prevalence in the upper socioeconomic categories.

Cascella and Colella (2004) conducted a survey of 82 Connecticut school-based speech-language pathologists (SLPs) to determine their knowledge and training of ASD. Specifically, items related to demographic questions, general ASD knowledge statements (based on DSM-IV-TR criteria), and ASD communication disorders knowledge. Results indicated that the participants had a minimal amount of preprofessional academic or clinical preparation in ASD (69.2% reported no or very little undergraduate and graduate academic preparation in ASD, and 75.3% reported no or very little clinical preparation). In addition, no differences were found in how speech-language pathologists were trained over the past 30 years. Since becoming SLPs, 81.7% of respondents reported attending professional development in the area of ASD. School SLPs rated themselves as the most knowledgeable for the behavioral characteristics associated with ASD and less knowledgeable of educational assessment and intervention formats. Despite a majority of subjects having attended professional development opportunities on ASD, more than half of the participants felt underprepared to work with students with ASD.
Schwartz and Drager (2008) conducted a recent national study investigating the training and knowledge of autism among school-based speech-language pathologists. While most respondents (84%) reported some coursework in their undergraduate or graduate programs that addressed autism, little time was spent discussing the topic, with a little more than half reporting having one or two courses that addressed autism as part of their curriculum in both undergraduate and/or graduate school. With regards to their clinical training, approximately half (55.2%) of respondents worked with students with autism. The SLPs demonstrated accurate knowledge regarding the characteristics of autism, but had more difficulty on questions related to the criteria necessary for a diagnosis of autism. For example, while all respondents agreed that autism occurs more frequently in boys than girls, 21% incorrectly answered the question regarding that children must exhibit impaired social interactions in order to receive a diagnosis of autism. Additionally, the results indicated that some SLPs lack confidence in their abilities to provide services to children with autism.

Helps et al. (1999) investigated teachers’ views of autism and their training needs. Seventy-two teaching and support staff from four mainstream and four special (non-autistic) schools in the United Kingdom, and ten mental health professionals working in the field of autism completed a modified version of The Stone Autism Questionnaire (1987) which asked participants to specify along a six-point scale the factors they thought were commonly associated with a diagnosis of autism. In addition, questions pertaining to educational issues,
experiences with children with autism, and their training needs were added. Although approximately 70% of mainstream teachers had worked with children with ASD, only 5% reported having specific training in undergraduate classes and 5% reported attending professional development in this area. Half of the special school teachers and 40% of the support staff had received professional development. While teachers and support staff correctly thought that autism is a lifelong condition that people do not outgrow; that children with autism need more structure, greater predictability, and more explicit direction to task; and that classroom organization can make a difference to the child’s behavior, they tended not to view children with autism as having learning difficulties, were more likely to describe autism as an emotional disorder, and were less likely to view autism as a developmental disorder. Furthermore, all three groups reported the need for more training in ASD.

Stone and Rosenbaum (1988) conducted a follow-up study using only the first section of Stone’s (1987) Autism Survey to evaluate parents’ and teachers’ knowledge of autism. Both parents and teachers were found to have significant misconceptions regarding many of the features of autism, including developmental, cognitive, and emotional features when compared to specialists in the field. For example, parents and teachers were more likely to agree that autism existed only in childhood and that children with autism possess special talents or abilities as compared to autism experts. Also, as compared to autism specialists, teachers and parents viewed autism as an emotional disorder and they were less likely to view children with autism as mentally retarded.
Knowledge of autism was also studied by Shah (2001) who was interested specifically in medical students’ knowledge of autism. Two hundred and fifty first- and fourth-year students from a medical school in London completed a brief 10-item questionnaire developed by Shah that asked questions regarding diagnosis (based on ICD-10 criteria), cause, symptomatology, treatment, and outcome of autism. The mean score on the survey for first-year students was 1.97 correct out of 10, and for fourth-year students it was 4.15 correct out of 10, suggesting that even towards the end of medical school training, accurate knowledge about autism is limited, although better than it was when students first entered medical school. Fourth-year students were significantly more likely to respond correctly to questions related to diagnostic criteria and core symptoms. However, no significant differences were found between first-year and fourth-year students for other aspects, such as possible causes, cognitive profiles, prognosis, and treatment. Therefore, although fourth-year medical students might be better able to diagnose someone with ASD, the results show that they probably would not know what the appropriate treatment should be.

In summary, the few studies that have been conducted on professionals’ knowledge of ASD indicate that many still have outdated beliefs about ASD that are inconsistent with current research. Also, while all of the above studies provide some information on the demographics of their participants, none of them researched if any of the demographic variables were correlated in any way to respondents’ knowledge of ASD. However, in many of the studies addressed above, limitations to the studies existed including small sample sizes, surveys
were not validated, and terms were not defined (i.e., autism, emotional disorder, developmental disorder). In addition, the only study that specifically used school psychologists as some of the participants was conducted over 20 years ago.

**The Role of the School Psychologist**

Now that the history of ASD has been explained, as well as etiology, assessment, treatment, and knowledge and training in the field of ASD, it is important to discuss the role of the school psychologist in general and as it pertains specifically to students with ASD. According to the National Association of School Psychologists (NASP, 2008), school psychologists help children and adolescents succeed academically, socially, and emotionally. They work with students, teachers, parents and other service providers in order to provide a safe, healthy, and supportive learning environment. School psychologists provide a myriad of duties, which can depend upon the type of setting they work in, the age of students they work with, and their specific job responsibilities as determined by the state, district, and schools they serve. They usually participate as a member of the multidisciplinary team and evaluate students for special education services, including conducting standardized tests (such as cognitive ability, social/emotional, projective personality techniques, academic skills, learning aptitudes, memory, visual/motor, behavior rating scales, and adaptive skills), as well as curriculum-based measurement, observations, interviews, and functional behavioral assessments. School psychologists may serve on prereferral teams that develop and implement interventions for children at risk for academic or behavior problems by using problem solving methods,
monitoring progress, collecting and/or analyzing data for decision making, and determining the effectiveness of student’s response to intervention (RTI). They may serve as a team leader to special education teams, coordinating the special education meetings, completing relevant paperwork, and writing Individualized Education Programs (IEP). School psychologists may also provide direct services to children by conducting intervention and treatment, such as individual and group counseling, social skills training, social pragmatics training, anger management groups, and they may help families and the school-community manage crises such as death and illness. Some may provide consultation to teachers, parents, administration, and support staff around a variety of issues and provide information related to disabilities, treatments, and resources available in the community (i.e., therapists’ names, support groups). They may help with transition services as students prepare to leave the school environment and attend post secondary school or employment. They may also participate in prevention related services by developing programs and collaborating with school staff and agencies in order to promote a healthy school environment, specifically related to mental and physical health issues. They may conduct in-service training workshops for staff on a variety of topics such as understanding different learning styles, information about disabilities, modifications, strategies, and interventions for various disabilities; and special education laws. Lastly, school psychologists may conduct research or help to plan, develop, and evaluate programs, effective interventions and strategies to improve schools.
While the above describes the many roles that a school psychologist can serve, it is interesting and worthwhile to examine exactly what roles school psychologists currently provide in their schools. Subsequently, a description of the school psychologist’s role as it specifically pertains to students with ASD will be explored.

Many studies have been conducted over the years that assess the professional practices of school psychologists (e.g., Curtis, Chesno Grier, & Hunley, 2003; Curtis, Hunley, Walker, & Baker, 1999; Curtis et al., 2008; Ronas et al., 2001). These studies indicate that school psychologists tend to spend most of their time assessing students, but actually would prefer engaging in more nontraditional roles such as providing interventions, consultation, research, and systems change. For example, according to a current survey of school psychologists (Curtis et al., 2008), participants reported conducting a mean of 34.7 initial special education evaluations and 34.3 special education re-evaluations during the 2004-2005 school year. In addition, approximately half of the participants also engaged in consultation and provided individual counseling (47.9% and 53.7%, respectively). Approximately a quarter of the participants (22.7%) reported they also engaged in group counseling. For those surveyed, the mean ratio of students to school psychologists for the 2004-2005 school year was 1482:1. While Curtis and colleagues reported that the mean number of evaluations (both initial and re-evaluations) has decreased since the 1999-2000
school year, the average school psychologist is still conducting over 60 initial and special education evaluations combined per year. If the school psychologist has to attend the special education meetings related to the assessments they conducted and if the average school psychologist serves more than 1400 students, little time seems to be available to do anything else, despite all of the roles and responsibilities that a school psychologist can partake in as outlined above. Adding to this, it appears that students today have more severe medical, emotional, and learning needs as well as sometimes compounded environmental issues (i.e., parent divorce, sick parent, etc.) that all impact a student’s functioning, which can make assessment, intervention, and consultation, even more time consuming. Therefore, some of the greatest challenges currently faced by school psychologists involve serving children and adolescents with the most serious impairments, including those with ASD. While these students have always presented challenges for school psychologists whose focus was on traditional assessment, the low occurrence of these disabilities guaranteed they were encountered only infrequently. However, given that the prevalence of ASD is about 1 in 88, it is very likely that school psychologists will encounter these students on a more frequent basis.

Several reports have called for school psychologists to attain greater training in the development of skills to conduct best practice assessments and intervention procedures in working with students with low incidence disabilities (LID), including ASD (i.e., Bambara, Mitchell-Kvackay, & Iacobelli, 1994; Noland & Gabriels, 2004; Shriver et al., 1999; Spears, Tollefson, & Simpson, 2001;
Williams et al., 2005). One study investigated school psychology training programs and practicing school psychologists on their knowledge of and training for students with low incidence disabilities (Cole & Shapiro, 2005). They surveyed 250 directors of school psychology training programs and 500 randomly selected members of National Association of School Psychologists (NASP). Results indicated that most programs include some training and exposure to strategies for assessment and intervention with students with low incidence disabilities. Most school psychologists (84%) reported having 10 or fewer cases involving students with LID over the previous 12 months. Among those reporting at least one LID case, a majority of practitioners (67%) reported engaging in assessment frequently or very frequently, while slightly less than one third (32%) reported engaging in these activities infrequently or very infrequently. With regard to interventions, slightly less than half (47%) of the respondents assisted in designing interventions frequently or very frequently and slightly more than half (52%) reported engaging in this activity infrequently or very infrequently. When practitioners were asked what skills they would assess, the largest endorsements were given to daily living skills, functional academics, and social skills, all consistent with best practice assessment for this student population. When assessing students with LIDs, respondents reported using teacher–parent interviews, informal behavioral observations, health history, adaptive behavior scales, and life skills assessment the most and were least likely to use projective tests, standardized achievement tests, and standardized intelligence tests with this population. Assessment methods most commonly identified as unfamiliar by
respondents included ecological inventories and community-based assessment. This study did not specifically differentiate ASD from other low incidence disabilities and it did not ask about what types of interventions school psychologists recommend and/or utilize for this population.

**Conclusion**

ASD are no longer disorders that will be infrequently encountered by school psychologists. Rather, school psychologists are very likely to find themselves working in some capacity with children and adolescents with ASD, as well as educational staff and parents. Therefore, school psychologists need to be cognizant of the signs and symptoms of ASD. They also need to know how to assess and provide treatment and interventions for the disorder. Being able to provide consultation to educational staff and families is also an important role of the school psychologist. In this day and age, people’s exposure to information is vast given the easy access to the World Wide Web. Therefore, the school psychologist should be aware of fads, “treatments of the week,” and what has sound scientific merit.

**Purpose of the Study**

The purpose of the present study was to ascertain the current roles and responsibilities of school psychologists pertaining to students with ASD. In so doing, one of the goals of this study was to acquire information about school psychologists’ knowledge of ASD. A second goal was to investigate school psychologists’ training in ASD, both in graduate school and in professional development opportunities. In addition, since a major part of a school
psychologist’s job is evaluation, a third major goal of this investigation was to obtain information about school psychologists’ assessment practices including the instruments they use for assessing ASD, their competency in using the assessment tools, as well as the usefulness of these instruments. Providing service delivery to students with ASD and being familiar with various treatments and intervention procedures and instructional strategies are also jobs of the school psychologist so inquiring as to what the current state of school psychologists’ use, competency, and usefulness of interventions and treatments was also important and is a goal of this study. Another goal was to identify the roles and responsibilities of school psychologists working with students with ASD. The last goal of this study was to determine the relationship between demographic and experience factors (i.e., number of years in practice, number of workshops attended on ASD, etc.) and school psychologists’ knowledge of ASD.

In conclusion, since many children with ASD are not identified until they are school-age and many students with ASD attend public schools; it seems inevitable that school psychologists will play a part in the educational programming of students with these disorders. However, there is a paucity of research on school psychologists’ roles with these students. Therefore, the data collected in this study will inform the profession of school psychology by providing information regarding school psychologists’ knowledge of ASD, as well as their experience in learning about ASD and working with students with the disorder. It also provides current data on the assessment and intervention practices of school psychologists when it comes to students with ASD, including
their competence in using various assessment tools and treatments. All of this information will be used to identify strengths and weaknesses in order to recommend future training and professional development to enable school psychologists to provide the best possible services to youth with ASD and their families, as well as to teachers and other educational staff.
Chapter III

Methods

Chapter Overview

This chapter describes the methods used to conduct the study. Information about the study participants is presented followed by a description of the survey used for data collection. The procedures used to collect the data are then explained. Finally, the specific research questions driving this study are listed along with an overview of the related data analyses.

Participants

Participants for this study consisted of members of the Massachusetts School Psychology Association (MSPA). There were 530 members of MSPA and 370 of them were practitioners. Of the 370 practitioners, 101 completed the survey. However, one survey was eliminated due to the fact that the respondent only worked in a college setting and therefore did not work with students, preschool through high school aged, leaving 100 participants which represented a response rate of 27.0%. MSPA was chosen because the researcher is a practicing school psychologist in a public school in Massachusetts. Massachusetts’ students tend to perform well academically (American Legislative Exchange Council, 2012) and the Boston area was named one of the best places to live if you have ASD (Autism Speaks, 2011). Research has found that Massachusetts (and other northeastern states) has fewer ethnic minority
students, lower ratios of students to school psychologists, shorter school psychologists’ contracts, and higher school psychologists’ salaries. Additionally, school psychologists in Massachusetts focus on determining the underlying dynamics of the student's difficulty, spend more time in direct intervention than assessment, and more clinical supervision is available for school psychologists compared to other regions of the United States (Abshier, 2008, Hosp & Reschly, 2002). Specifically, the role of a school psychologist in Massachusetts is complex and progressive. School psychologists may be called upon to perform a variety of tasks and assume many responsibilities depending on the school district and school in which they work, including that of consultant, counselor, assessment specialist, administrator, researcher, educational programmer, trainer of school staff personnel, preventive mental health agent, and liaison to community organizations. Table 1 shows the characteristics of participants. Participants were not required to answer all questions, so the total N for some questions were less than 100, and some demographic questions allowed participants to answer more than one response resulting in some percentages being greater than 100%.
Table 1

Demographics of Participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Setting (n=100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public school</td>
<td>90</td>
<td>90.0</td>
</tr>
<tr>
<td>Private school</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Independent Practice</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Public school and Independent Practice</td>
<td>6</td>
<td>6.0</td>
</tr>
<tr>
<td>Public school and Private school</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td># of years worked as a school psychologist in the schools (n=100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 years</td>
<td>29</td>
<td>29.0</td>
</tr>
<tr>
<td>6-10 years</td>
<td>16</td>
<td>16.0</td>
</tr>
<tr>
<td>11-15 years</td>
<td>17</td>
<td>17.0</td>
</tr>
<tr>
<td>16+ years</td>
<td>38</td>
<td>38.0</td>
</tr>
<tr>
<td>Type of School (n=99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool</td>
<td>42</td>
<td>42.4</td>
</tr>
<tr>
<td>Elementary school</td>
<td>69</td>
<td>69.7</td>
</tr>
<tr>
<td>Middle school</td>
<td>41</td>
<td>41.4</td>
</tr>
<tr>
<td>High school</td>
<td>34</td>
<td>34.3</td>
</tr>
<tr>
<td>Not applicable</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>5.1</td>
</tr>
<tr>
<td># of schools served (n=100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>42</td>
<td>42.0</td>
</tr>
<tr>
<td>2</td>
<td>29</td>
<td>29.0</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>11.0</td>
</tr>
<tr>
<td>4 or more</td>
<td>17</td>
<td>17.0</td>
</tr>
<tr>
<td>Not applicable</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Location of schools served (n=98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>25</td>
<td>25.5</td>
</tr>
<tr>
<td>Rural</td>
<td>17</td>
<td>17.3</td>
</tr>
<tr>
<td>Suburban</td>
<td>60</td>
<td>61.2</td>
</tr>
</tbody>
</table>

Continued on the next page
Table 1 (continued)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of school psychologists to students (n=100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: &lt;500</td>
<td>34</td>
<td>34.0</td>
</tr>
<tr>
<td>1: 501-1000</td>
<td>31</td>
<td>31.0</td>
</tr>
<tr>
<td>1: 1001-1500</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>1: 1501-2000</td>
<td>11</td>
<td>11.0</td>
</tr>
<tr>
<td>1: &gt;2000</td>
<td>8</td>
<td>8.0</td>
</tr>
<tr>
<td>N/A</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Licensure/Certification (n=100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nationally Certified School Psychologist</td>
<td>52</td>
<td>52.0</td>
</tr>
<tr>
<td>Certified by State Education Agency as School Psychologist</td>
<td>90</td>
<td>90.0</td>
</tr>
<tr>
<td>Licensed School Psychologist (doctorate required; State Board of Psychology)</td>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>Licensed Psychologist (doctorate required; State Board of Psychology)</td>
<td>6</td>
<td>6.0</td>
</tr>
<tr>
<td>Licensed School Psychologist (non-doctoral; State Board of Psychology)</td>
<td>18</td>
<td>18.0</td>
</tr>
<tr>
<td>Licenses Psychological Associate or similar title (non-doctoral; State Board of Psychology)</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Licensed Educational Psychologist</td>
<td>7</td>
<td>7.0</td>
</tr>
<tr>
<td>Licensed Mental Health Counselor</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>American Board of School Neuropsychologists</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Certified by State Education Agency as Teacher</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Current age (n=100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26-35</td>
<td>32</td>
<td>32.0</td>
</tr>
<tr>
<td>36-45</td>
<td>17</td>
<td>17.0</td>
</tr>
<tr>
<td>46-55</td>
<td>20</td>
<td>20.0</td>
</tr>
<tr>
<td>Older than 55</td>
<td>31</td>
<td>31.0</td>
</tr>
<tr>
<td>Highest degree attained (n=99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.A./M. S.</td>
<td>11</td>
<td>11.1</td>
</tr>
<tr>
<td>Specialist</td>
<td>69</td>
<td>69.7</td>
</tr>
<tr>
<td>Doctorate</td>
<td>17</td>
<td>17.2</td>
</tr>
<tr>
<td>All But Dissertation (ABD)</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Year received highest degree (n=100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior to 1979</td>
<td>10</td>
<td>10.0</td>
</tr>
<tr>
<td>1980-1989</td>
<td>13</td>
<td>13.0</td>
</tr>
<tr>
<td>1990-1999</td>
<td>30</td>
<td>30.0</td>
</tr>
<tr>
<td>2000-present</td>
<td>47</td>
<td>47.0</td>
</tr>
<tr>
<td>Gender (n=98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>11.2</td>
</tr>
<tr>
<td>Female</td>
<td>87</td>
<td>88.8</td>
</tr>
</tbody>
</table>

Continued on the next page
A majority of respondents worked only in a public school setting (90.0%), with an additional 6% working in both a private school setting and independent practice, and 1% working in both a public school and private school setting. A minute amount of participants worked only in independent practice or only in a private school (2% and 1%, respectively). Although a majority of participants worked in one school (42.0%), about one sixth of participants worked in four or more schools (17.0%). School psychologists worked in the elementary school setting the most (69.7%), with approximately 40% working in a preschool or middle school, and about 30% working in a high school. Another 5.1% worked in another type of setting (i.e., out of district placement, which is when a student is placed in a specialized school, either public, private, residential, in state or out-of-state, specifically designed to address special learning or behavioral needs of a child in a program not operated by the local education agency). Approximately 60% worked in a suburban setting, roughly one-quarter worked in an urban setting, and about 17% worked in a rural setting. With regards to the ratio of school psychologists to students, roughly one third of participants (34.0%)
worked in a setting of a ratio of one school psychologist to less than 500 students, nearly one third of participants (31.0%) worked in a setting of a ratio of one school psychologist to 500-1000 students, about one third of participants (34.0%) worked in a setting of one school psychologist to more than 1000 students, and one person answered not applicable due to working with out of district placements. A little more than half of the participants had at least 11 years experience working as a school psychologist (55.0%). A majority were certified by a state education agency as a school psychologist (90.0%) and about half were Nationally Certified School Psychologists (52.0%). About half of the respondents were more than 46 years old (51.0%). An overwhelming majority had a specialists degree (69.7%) and approximately three fourths (77.0%) had received their highest degree since 1990. Most of the respondents were female (88.8%) and Caucasian (94.0%). A large amount of school psychologists worked full-time (85.0%), 14% worked part-time and one person worked four days a week.

**Measures**

The data for this study were collected by completion of an electronic survey. There were six parts of this survey and most were developed by this author for the purposes of this study; however, the knowledge part of the questionnaire (Part C) was from part of an existing survey by Schwartz and Drager (2008; ©ASHA; American Speech-Language-Hearing Association) which the authors gave this researcher permission to use. Questions regarding case finding and screening, assessment, and intervention/treatment strategies were developed through reviewing published texts such as, *Identifying, Assessing, and*
Treating Autism at School (Brock et al., 2006) and Educating Children with Autism (NRC, 2001). In addition, peer-reviewed publications were accessed including a chapter on autism in Best Practices in School Psychology IV (Ikeda, 2002), as well as articles by the Committee on Children with Disabilities (2001), Filipek et al. (1999; 2000), Kabot et al. (2003), Myers et al. (2007a; 2007b), The National Autism Center (2009), Ozonoff et al. (2005), and Volkmar et al. (1999). More specific information regarding each section of the survey is presented in the following paragraphs. The reader is referred to Appendix C for a full copy of the survey.

Prior to survey questions, there was a Description and Consent section which provided participants with more in-depth information about the survey. Part A of the survey contained 13 items assessing demographic information. Questions included work setting, grade level of participant’s setting (preschool, elementary, middle, or high school), years worked as a school psychologist, number of schools served, location of work setting, total number of students in participant’s work setting, licensures of participants (i.e., state licensure and/or Nationally Certified School Psychologist), age, highest degree attained, year highest degree obtained, gender, race/ethnicity of participant, and type of employee.

Part B asked 12 questions related to respondents’ experiences with ASD. Questions in this area included if and how the respondents learned about ASD (i.e., during school psychology training, professional development opportunities, reading books or articles, watching television programs on ASD, or searching the
internet for information), how many students with ASD the respondent had assessed, the number of students with ASD on the respondent’s caseload, as well as the case finding and screening, assessment, intervention, and consultation practices of respondents for students with ASD.

Part C was designed to assess participants’ knowledge of ASD. It was taken from part of a survey designed by Schwartz and Drager (2008; ©ASHA) who created The Autism Survey: Education and Competence with Autism, to assess speech-language pathologists’ training and knowledge in autism. Their survey has a section entitled Characteristics of Autism, which contains eight true/false items, one multiple-choice item, and twelve questions that are answered on a scale from 1 (Strongly agree) to 4 (Strongly disagree). The knowledge part of this researcher’s knowledge survey contained 13 items in a true/false format. The first eight items were identical to those found in Schwartz and Drager’s survey, except the word autism was replaced by ASD, since that is the term used in this study. The next five items were rewritten into a true/false format instead of a Likert scale that Schwartz and Drager used, to align with the format of this study and the word autism was again replaced by ASD. Questions included characteristics of ASD such as diagnostic criteria and current myths. According to Schwartz and Drager (2008; ©ASHA), questions from this section were created using a multitude of sources, including the DSM–IV (APA, 1994) and Stone’s study on professional knowledge of autism (1987). The validity of the survey is unknown. Cronbach’s alpha reliability was 0.34.
Part D listed various general assessment practices (i.e., record reviews, obtaining developmental histories, observations, interviews, etc.), case finding and screening measures, ASD measures, adaptive measures, cognitive tests, academic achievement instruments, and behavioral assessment measures. For each item, the participant was prompted to answer three questions. The first question was about their experience with the various assessment techniques using a Likert-type rating scale (i.e., Never, Sometimes, Often, and Always). The second question asked about their competence in utilizing the technique using a rating scale (Not Competent, A Little Competent, Moderately Competent, Very Competent, and Not applicable). The last question asked about the usefulness of the technique and also used a rating scale (Not Useful, A Little Useful, Moderately Useful, Very Useful, and Not applicable).

Part E investigated school psychologists’ experience with various treatments/interventions for students with ASD. This area is similar to the above section and prompted the participant to respond to 25 types of treatments/interventions that each asked about the use of various interventions using a Likert-type rating scale (i.e., Never, Sometimes, Often, and Always). Additionally, a question about competency in the various treatments/interventions was included using a rating scale of Not Competent, A Little Competent, Moderately Competent, Very Competent, and Not applicable. Lastly, a question regarding the usefulness of the treatments/interventions was also listed and required respondents to answer with a rating scale (Not Useful, A Little Useful, Moderately Useful, Very Useful, and Not applicable).
The last part of the survey, Section F, asked two miscellaneous questions to determine if a school psychologist had ever provided direct service for students with ASD that was co-taught by another service provider and what specific curriculum (if any), a school psychologist had ever used when providing direct service to students with ASD. Two additional questions were also included that asked about participant’s overall competency in working with students with ASD, their families, and staff, and which area participants felt that they needed more training. Finally, there was a question where respondents provided additional comments related to any part of the survey.

**Instrument Development**

A series of reviews by experts in the field of school psychology were conducted to further refine the survey. A hard copy of the survey was reviewed by two members of this researcher’s doctoral committee as well as members of a graduate school psychology research group, and suggestions were made regarding clarity of questions and content. Then, five practicing school psychologists completed hard copies of the measures and also provided feedback to the author regarding wording of questions and content. Survey modifications based on this feedback included changes in the formatting and wording of questions as well as the elimination of items to reduce the length of the survey and are described in more detail next. On Section A of the Demographics section, two changes were made. For the question which asks about the respondent’s place of employment, the answer choice of “school” was changed to “school district” in order to include those who work for a school
district, but may not specifically work at a school. For Section B of the “Experience with ASD” section, clarification was added to a few questions in order to include the types of diagnosis (educational and/or medical) students with ASD might have. Specifically, the original question of “During the 2010-2011 school year, how many students did you assess for an initial evaluation who you suspected of having an ASD?” was changed to “During the 2010-2011 school year, how many students did you assess for an initial evaluation who you suspected of having an ASD or who already have a medical diagnosis of an ASD?” Similarly, clarification to another question was also made in this section so that the original version of “During the 2010-2011 school year, how many students did you assess for a re-evaluation for ASD?” was changed to “During the 2010-2011 school year, how many students did you assess for a re-evaluation who you suspected of having an ASD or who already had a medical or educational diagnosis of an ASD?” In addition, the two questions of this section that ask about the number of teachers and parents the respondent has consulted with regarding students with confirmed ASD were rewritten to be more specific regarding the consultation services. Therefore, these questions were changed to add the words “who either receive or do not receive special education services.” Another question in Section B originally asked if the respondent’s school(s) where they worked had any specific programs for students with ASD and some of the school psychologists were confused by the word “program” and therefore the question was modified to, “During to 2010-2011 school year, did the school(s) that you worked in have special classrooms for students specifically with ASD
(i.e., a self-contained classroom)？” One question was deleted due to the respondents’ feeling it was both confusing and not necessary. In addition, the sections on assessment and intervention all originally contained a question asking how often the respondent used a specific technique for assessing a student with ASD. These questions were reworded to “Have you ever used this technique” in order to be less wordy. For Section D, “Interview paraprofessional, aide, assistant” was added under the “Technique” part. Under Section D, the title was changed from “Assessment Practices-Academic Achievement” to “Assessment Practices-General Academic Achievement” since this section only included broad achievement tests that sample academics in a variety of areas and does not include achievement tests that are related to specific areas (i.e., the Key-Math). Under Section D, under the “Technique” of “Social Skills Rating System,” “Social Skills Improvement System” was added since this is the newer name of this instrument. Regarding Section E, many modifications were made. Initially, this section listed many treatments/interventions and asked four questions regarding each treatment/intervention: how often the respondent recommends the treatment/intervention, how often the respondent uses the treatment/intervention, how often the respondent helps design/setup/make the intervention, and how competent the respondent feels in using this treatment/intervention. Based on respondent feedback, the questions regarding recommending the treatment/intervention and helping design/setup/make were deleted because the respondents felt they were not necessary and it would make the survey shorter.
Next, three practicing school psychologists reviewed an online version of the survey (www.SurveyMonkey.com) and provided feedback on ease of use and layout. They commented that the survey was relatively easy to read and complete, but stated that it would be easier to follow if the questions and answers were in different colors; therefore, this recommendation was incorporated in the final version of the survey.

Then all of the members of the researcher’s dissertation committee provided feedback, regarding content, wording, organization, and layout of the survey and all recommended changes were incorporated in the revised survey. Some examples include: changing question A1 in order to allow participants who are school psychologists who work directly with children and adolescents, but who do not work in a school setting to also participate in the survey, adding a question in Part A on race/ethnicity, and adding a question on usefulness of assessment tools and treatments/interventions, as well as reorganizing the assessment questions by putting them all in one section and grouping similar categories of assessment instruments. In addition, the list of treatments/interventions in the survey was changed to incorporate the list of treatments/interventions from The National Standards Report (National Autism Center, 2009) that would most likely be used by school psychologists.

After all of these changes to the survey had been made, the researcher conducted the survey in an interview format with two school psychologists and asked them their thinking and reasoning behind their answers to each question. This was done in order to confirm that respondent’s interpretation of questions
and answer choices were the same as the researcher’s. Based on their feedback, the only change to the survey was in the responses to question B8, which asked about the types of students with ASD that respondents worked with. Instead of responding by the level of functioning of students (i.e., High functioning, Moderate functioning, Low functioning), the responses were changed to level of need of student (Low need, Moderate need, High need).

Procedure

Approval from both the University of South Florida Division of Research Integrity and Compliance Institutional Review Board (IRB) and MSPA was sought. Once permission was granted by both agencies, MSPA sent a letter via email (Appendix D) to its members briefly explaining the purpose of the research as well as procedures for participation, including a link to access the survey in order to respond to questions electronically. Two follow-up reminder emails were sent to participants 10 and 20 days after the initial contact (Dillman et al., 2009) (Appendices E and F). In addition, participants were given an opportunity to participate in a random drawing to receive one of five $10.00 gift certificates to www.Amazon.com by sending an email to the researcher with the words “Survey completed” in the Subject line of the email. An incentive was included in order to increase participation rate (Bosnjak & Tuten, 2003; Dillman, Smyth, & Christian, 2009; Tuten, Galesic, & Bosnjak, 2004). Once the researcher received the email from the participant, the participant’s email address was written on a piece of paper and the email was deleted. At the close of the data collection, winners
were contacted by email and sent an electronic gift card and all the pieces of paper with respondents' email addresses were shredded and discarded.

To determine reliability of the knowledge test of the survey (Part C) internal consistency reliability was assessed using Kuder-Richardson Formula 20 (KR 20) from the participants' responses. Cronbach's alpha reliability was 0.41. The item statistics for this information is presented in Table 2.

Table 2

KR-20 for The Knowledge of ASD Scale (Section C)

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-to-Total Correlation</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children must exhibit impaired social interaction to receive a diagnosis of ASD.</td>
<td>0.33</td>
<td>0.87</td>
<td>0.34</td>
</tr>
<tr>
<td>Children must exhibit self-injurious behaviors to receive a diagnosis of ASD.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Children must exhibit behaviors and interests that are repetitive and stereotyped to receive a diagnosis of ASD.</td>
<td>0.32</td>
<td>0.54</td>
<td>0.50</td>
</tr>
<tr>
<td>Children must exhibit impaired communication skills to receive a diagnosis of ASD.</td>
<td>0.21</td>
<td>0.58</td>
<td>0.50</td>
</tr>
<tr>
<td>Some children with ASD exhibit oversensitivity or under-sensitivity to pain.</td>
<td>0.14</td>
<td>0.97</td>
<td>0.18</td>
</tr>
<tr>
<td>More boys are diagnosed with ASD than girls.</td>
<td>0.22</td>
<td>0.96</td>
<td>0.21</td>
</tr>
<tr>
<td>Some children with ASD demonstrate uneven gross motor and fine motor skills.</td>
<td>0.08</td>
<td>0.99</td>
<td>0.11</td>
</tr>
<tr>
<td>Children with ASD never make eye contact.</td>
<td>0.18</td>
<td>0.98</td>
<td>0.15</td>
</tr>
<tr>
<td>Children with ASD are deliberately negative and noncompliant.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Children with ASD do not show emotional attachment, even to parents.</td>
<td>0.00</td>
<td>0.93</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Continued of the next page
Table 2 (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected Item-to-Total Correlation</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most children with ASD do not talk.</td>
<td>-0.03</td>
<td>0.98</td>
<td>0.15</td>
</tr>
<tr>
<td>ASD exist only in childhood. (^a)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>With proper treatment, most children can</td>
<td>0.17</td>
<td>0.99</td>
<td>0.11</td>
</tr>
<tr>
<td>outgrow ASD.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. n=90, Response Scale is True/False, \(^a\)Variance of construct=0*

**Data Analyses**

This section states the specific research questions under investigation in this study followed by a discussion of the data analyses procedures employed to address each question. Table 3 provides a brief overview of the research questions and data sources.

**Table 3**

**Research Questions and Data Sources**

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the current knowledge of school psychologists with regard to the</td>
<td>Part C of Survey: Knowledge of ASD (Participants answered True/False)</td>
</tr>
<tr>
<td>symptoms/diagnosis of ASD?</td>
<td></td>
</tr>
<tr>
<td>What are the most common tools that school psychologists use to assess ASD?</td>
<td>Part D of Survey: Question asked “Have you ever used this technique?” for all</td>
</tr>
<tr>
<td></td>
<td>16 assessment tools. (Participants answered Never/Sometimes/Often/Always)</td>
</tr>
<tr>
<td>How competent do school psychologists perceive themselves to be regarding the</td>
<td>Part D of Survey: Question asked “How competent are you in using this</td>
</tr>
<tr>
<td>assessment of ASD?</td>
<td>technique” for all 16 assessment tools (Participants answered Not Competent/</td>
</tr>
<tr>
<td></td>
<td>A Little Competent/Moderately Competent/Very Competent/Not Applicable)</td>
</tr>
</tbody>
</table>

Continued on the next page
### Table 3 (continued)

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>How useful do school psychologists perceive various assessment tools to be regarding the assessment of ASD?</td>
<td>Part D of Survey: Question asked “How useful do you find this technique” for all 16 assessment tools (Participants answered Not Useful/A Little Useful/Moderately Useful/Very Useful/Not Applicable)</td>
</tr>
<tr>
<td>What are the most common treatments/interventions used by school psychologists when working with children with ASD?</td>
<td>Part E of Survey: Question asked “Have you ever used these treatments/interventions?” for all 25 assessment tools (Participants answered Never/Sometimes/Often/Always)</td>
</tr>
<tr>
<td>How competent do school psychologists perceive themselves to be regarding treatments/interventions for ASD?</td>
<td>Part E of Survey: Question asked “How competent are you in using these treatments/interventions” for all 25 treatments/interventions (Participants answered Not Competent/A Little Competent/Moderately Competent/Very Competent/Not Applicable)</td>
</tr>
<tr>
<td>How useful do school psychologists perceive various treatments/interventions to be for students with ASD?</td>
<td>Part E of Survey: Question asked “How useful do you find these treatments/interventions” for all 25 treatments/interventions (Participants answered Not Useful/A Little Useful/Moderately Useful/Very Useful/Not Applicable)</td>
</tr>
<tr>
<td>What is the primary role (i.e., screener, evaluator, service provider, consultant) of school psychologists when working with students with ASD?</td>
<td>Section B of Survey, Question 9</td>
</tr>
<tr>
<td>What variables (e.g., number of years in practice, number of workshops attended on ASD, etc.) are related to school psychologists’ knowledge of ASD?</td>
<td>Section A of Survey (Demographics), Section B of Survey (Experience with ASD), and Section C of Survey (Knowledge of ASD)</td>
</tr>
</tbody>
</table>

**Research Question #1. What is the current knowledge of school psychologists with regard to the symptoms/diagnosis of ASD?**

Descriptive statistics were calculated including the mean, standard deviation, and range for Part C for a Total Knowledge of ASD score.
Research Question #2. What are the most common tools that school psychologists use to assess ASD?

Participants answered “Never,” “Sometimes,” “Often”, and “Always” for each question on Section D that asked how often school psychologists use various assessment tools. These data were then analyzed several ways. First, the data were re-coded into two categories, those that “Never” used an assessment tool were put into one category for “No” (Never use), and those that answered “Sometimes,” “Often”, or “Always” were put into another category for “Yes” (Use) and the percent of respondents who used each assessment tool, as well as collectively, was calculated. Next, in order to determine the frequency of use of each assessment instrument, as well as all of the assessment instruments together, the data were re-coded into three categories, “Sometimes,” “Often”, and “Always,” which were analyzed as “1”, “2”, and “3,” respectively, and the mean and standard deviation for each assessment tool, as well as collectively, were calculated. In addition, the percent of respondents who answered “Sometimes,” “Often”, and “Always” for each assessment tool was computed. Lastly, a repeated measures ANOVA on the original data where participants responded “Never,” “Sometimes,” “Often,” and “Always,” was conducted to determine if there were any significant differences between school psychologists’ frequency in using the various tests. Since the main effect for the repeated measures of assessment tools ANOVA was statistically significant, follow-up pairwise tests (i.e., Bonferroni) were done to determine where the difference(s) existed.
Research Question #3. How competent do school psychologists perceive themselves to be regarding the assessment of ASD?

For each question in Section D that asked about school psychologists’ competency in using the various assessment tools, participants answered “Not Competent,” “A Little Competent,” “Moderately Competent,” “Very Competent,” and “Not applicable.” These data were then coded into “1” (Not Competent), “2” (A Little Competent), “3” (Moderately Competent), and “4” (Very Competent). “Not applicable” was treated as missing data. The mean and standard deviation for each question was computed. This was done individually for each assessment area, as well as collectively, in order to ascertain how competent school psychologists were in general about assessing students with ASD.

Research Question #4. How useful do school psychologists perceive various assessment tools to be regarding the assessment of ASD?

For each question in Section D that asked how useful school psychologists felt about various assessment tools, participants answered “Not Useful,” “A Little Useful,” “Moderately Useful,” “Very Useful,” and “Not applicable.” Scores were then coded to “1” (Not Useful), “2” (A Little Useful), “3” (Moderately Useful), and “4” (Very Useful). “Not applicable” was treated as missing data. The same descriptive statistics as above were calculated for the question on Section D that asked how useful school psychologists perceive various assessment tools. This was done for each assessment area, as well as collectively, in order to ascertain the usefulness of various assessment tools for evaluating students with ASD.
Research Question #5. What are the most common treatments/interventions used by school psychologists when working with children with ASD?

Participants answered “Never,” “Sometimes,” “Often,” and “Always” for each question on Section E that asked how often school psychologists use various treatments/interventions. These data were then analyzed several ways. First, the data were re-coded into two categories, those that “Never” used a treatment/intervention were put into one category for “No” (Never use), and those that answered “Sometimes,” “Often”, or “Always” were put into another category for “Yes” (Use) and the percent of respondents who used each treatment/intervention, as well as collectively, was calculated. Next, in order to determine the frequency of use of each treatment/intervention, as well as all of the treatments/interventions together, the data were re-coded into three categories, “Sometimes,” “Often”, and “Always,” which were analyzed as “1”, “2”, and “3,” respectively, and the mean and standard deviation for each treatment/intervention, as well as collectively, were calculated. In addition, the percent of respondents who answered “Sometimes,” “Often”, and “Always” for each treatment/intervention was computed. Lastly, a repeated measures ANOVA on the original data where participants responded “Never,” “Sometimes,” “Often,” and “Always,” was conducted to determine if there were any significant differences between school psychologists’ frequency in using the treatments/interventions. Since the main effect for the repeated measures of treatments ANOVA was statistically significant, follow-up pairwise tests (i.e., Bonferroni) were done to determine where the difference(s) existed.
Research Question #6. How competent do school psychologists perceive themselves to be regarding treatments/interventions for ASD?

For each question in Section E that asked about school psychologists’ competency in using the various treatments/interventions, participants answered “Not Competent,” “A Little Competent,” “Moderately Competent,” “Very Competent,” and “Not applicable.” These data were then coded into “1” (Not Competent), “2” (A Little Competent), “3” (Moderately Competent), and “4” (Very Competent). “Not applicable” was treated as missing data. The mean and standard deviation for each question was computed. This was done individually for each treatment/intervention, as well as collectively, in order to ascertain how competent school psychologists were in general about treatments/interventions for students with ASD.

Research Question #7. How useful do school psychologists perceive various treatments/interventions to be for students with ASD?

For each question in Section E that asked how useful school psychologists felt about various treatments/interventions, participants answered “Not Useful,” “A Little Useful,” “Moderately Useful,” “Very Useful,” and “Not applicable.” Scores were then coded to “1” (Not Useful), “2” (A Little Useful), “3” (Moderately Useful), and “4” (Very Useful). “Not applicable” was treated as missing data. The same descriptive statistics as above were calculated for the question on Section E that asked how useful school psychologists perceive various treatments/interventions. This was done for each treatment/intervention,
as well as collectively, in order to ascertain the usefulness of various treatments/interventions for students with ASD.

Research Question #8. What is the primary role (i.e., screener, evaluator, service provider, consultant) of school psychologists when working with students with ASD?

The question B9 was utilized which specifically asked about the percent of time school psychologists spend on case finding and screening, assessment, intervention, consultation, and other, where participants responded on a Likert-like scale of “0% of time,” “1-25% of time,” “26-50% of time,” and “More than 50% of time.” The data were coded as “1,” “2,” “3,” and “4,” respectively. The percent of participants that answered each part of this question was reported. In addition, the average amount of time, as well as the standard deviation for each area, was calculated.

Research Question #9. What variables (e.g., number of years in practice, number of workshops attended on ASD, etc.) are related to school psychologists’ knowledge of ASD?

In order to determine whether a relationship existed between any of the school psychologist demographic factors and experience factors with knowledge of ASD, two different kinds of analyses were utilized, as described below. The demographic variables were: work setting, type of school setting, number of years worked as a school psychologist, number of schools worked at, location of setting, total number of students at schools worked at, licensure/certification, age, highest degree attained, when degree attained, gender, race/ethnicity, and
type of employee. The experience with ASD variables were: learned about ASD as a graduate student, number of students with ASD evaluated, number of students with ASD on caseload, amount of consultation with parents and/or teachers, functioning of ASD students, methods to gain information on ASD, and number of students with ASD worked with in career. The knowledge variable was percent correct on the knowledge part of the questionnaire.

As mentioned in the procedure section, the internal consistency reliability of the knowledge part of the survey as assessed by the KR-20 was low, at 0.41. Therefore, with the low reliability knowledge factor, the relationship between demographic and experience with ASD variables and knowledge items were analyzed independently. If the variables were categorical, the data were analyzed by a one way ANOVA with participants’ scores on the knowledge test as the dependent variable and demographic or experience variables as the independent variable. The assumptions of ANOVA were considered and if they were not met, the Welch statistic was utilized to compare the means. If the variables were continuous, the data were analyzed by a Pearson product-moment correlation with knowledge score and demographic or experience with ASD information as the variables.
Chapter IV
Results

Chapter Overview

The following section begins with a description of the participants’ experiences with ASD. Then, each research question is listed along with the types of analyses conducted and the subsequent results. Finally, additional findings from the survey, unrelated to the original research questions, are presented.

School Psychologists’ Experiences with ASD

The survey included a number of questions addressing school psychologists’ experiences with ASD (e.g., if and how the respondents learned about ASD, how many students with ASD the respondent had assessed, the number of students with ASD on the respondent’s caseload). All of the data are presented in Table 4. It is essential to note that survey respondents did not always answer all of the questions and some questions allowed participants to provide more than one answer; therefore, the total number of respondents for some questions may be less than 100 and percentages may add up to more than 100% for some questions. Importantly, most of the participants (80.0%) had learned about ASD during their graduate training; however, most of the training consisted of only brief information such as learning about ASD as part of a class. Sixteen percent of those surveyed had never participated in an initial evaluation
of students with ASD, while most (61.7%) had conducted an initial evaluation with 1-5 students with ASD and approximately one quarter of respondents had conducted an initial evaluation with 6 or more students (22.4%). In addition, 4.2% of respondents had never participated in a re-evaluation of a student with ASD, while most of the respondents (67.4%) conducted between 1-5 re-evaluations of students with ASD. Regarding provision of direct services as part of an Individualized Education Program, approximately one third (34.0%) of school psychologists reported they did not provide any services to students with ASD, but about half of respondents (47.9%) provided services for 1-6 students, and roughly one fifth of respondents provided services to more than 6 students (18.1%). A small number of participants did not provide any consultation to teachers (5.4%), but approximately three-fourths of school psychologists (77.2%) provided consultation to 1-6 teachers, and 17.4% provided consultation to more than 6 teachers. Many school psychologists also provided consultation to parents, with 37.9% providing consultation to 1-3 parents, 29.5% providing consultation to 4-6 parents, 14.7% providing consultation to 7-9 parents, and 9.5% providing consultation to more than 9 parents. Approximately half (45.7%) of the schools in which participants worked in had classrooms specifically for students with ASD. Respondents worked with students with ASD with varying levels of need, with a majority of them working with students with ASD with low need (72.6%). In addition, 60% worked with students with ASD with moderate need and 55.8% worked with students with ASD with high need. Many of the respondents also worked with students whom they believe have ASD, but
receive special education services under another disability category (i.e., developmental delay, communication), with 46.8% working with 1-2 students, 21.3% working with 3-5 students, and 12.8% working with 6 or more students. The data also showed that all of the respondents engaged in some form of training in ASD. Most attended an in-service, workshop or conference (94.7%), and many read professional journals (75.8%), book(s) or book chapter(s) (72.6%), and searched internet websites (74.7%). Participants also learned about ASD by watching a DVD (10.5%), watching a webcast (3.2%), participating in a video conference (2.1%) or a teleconference (3.2%), consulting with colleagues (7.4%), and taking graduate classes (specifically in ASD or for Board Certified Behavior Analyst) (3.2%). A few others (4.2%) learned about ASD in other ways, such as working at a camp for children with ASD, participating in a NASP listserve, giving a presentation on ASD, and learning about ASD as part of a post doctoral program. A majority (75%) of participants gathered information about ASD in two to four different ways. Specifically, 3.2% of participants learned about ASD using six methods, 12.6% learned about ASD using five ways, 37.9% learned about ASD using four procedures, 28.4% learned about ASD three ways, 12.6% learned about ASD using two ways, and only 5.3% learned about ASD using only one method. All of the respondents have worked in some capacity with students with ASD in their careers (i.e., assessment, intervention, or consultation), with about one fourth (26.3%) of respondents having worked with 1-15 students, about one fourth (27.3%) of respondents
having worked with at least 16-25 students, and a little less than half (46.3%) of respondents having worked with more than 25 students.

Table 4

Participants’ Experiences with ASD

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learned about ASD during school psychology training (n=95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>20.0</td>
</tr>
<tr>
<td>Yes, briefly during course work/practicum/internship (i.e., was taught in part of a class)</td>
<td>72</td>
<td>75.8</td>
</tr>
<tr>
<td>Yes, extensively during course work/practicum/internship (i.e., had an entire semester course on ASD, had extensive experience working with ASD students)</td>
<td>4</td>
<td>4.2</td>
</tr>
<tr>
<td># of students assessed for an initial evaluation (n=94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 students</td>
<td>15</td>
<td>16.0</td>
</tr>
<tr>
<td>1-5 students</td>
<td>58</td>
<td>61.7</td>
</tr>
<tr>
<td>6-10 students</td>
<td>16</td>
<td>17.0</td>
</tr>
<tr>
<td>11-15 students</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>More than 15 students</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td># of students assessed for a re-evaluation (n=95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 students</td>
<td>4</td>
<td>4.2</td>
</tr>
<tr>
<td>1-5 students</td>
<td>64</td>
<td>67.4</td>
</tr>
<tr>
<td>6-10 students</td>
<td>25</td>
<td>26.3</td>
</tr>
<tr>
<td>11-15 students</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>More than 15 students</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td># of students with ASD who receive services from participants (n=94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 students</td>
<td>32</td>
<td>34.0</td>
</tr>
<tr>
<td>1-3 students</td>
<td>25</td>
<td>26.6</td>
</tr>
<tr>
<td>4-6 students</td>
<td>20</td>
<td>21.3</td>
</tr>
<tr>
<td>7-9 students</td>
<td>12</td>
<td>12.8</td>
</tr>
<tr>
<td>Greater than 9 students</td>
<td>5</td>
<td>5.3</td>
</tr>
<tr>
<td># of teachers consulted with regarding students with ASD in their classrooms (n=92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 teachers</td>
<td>5</td>
<td>5.4</td>
</tr>
<tr>
<td>1-3 teachers</td>
<td>38</td>
<td>41.3</td>
</tr>
<tr>
<td>4-6 teachers</td>
<td>33</td>
<td>35.9</td>
</tr>
<tr>
<td>7-9 teachers</td>
<td>6</td>
<td>6.5</td>
</tr>
<tr>
<td>Greater than 9 teachers</td>
<td>10</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Continued on the next page
Table 4 (continued)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td># of parents consulted with regarding their children with ASD (n=95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 parents</td>
<td>8</td>
<td>8.4</td>
</tr>
<tr>
<td>1-3 parents</td>
<td>36</td>
<td>37.9</td>
</tr>
<tr>
<td>4-6 parents</td>
<td>28</td>
<td>29.5</td>
</tr>
<tr>
<td>7-9 parents</td>
<td>14</td>
<td>14.7</td>
</tr>
<tr>
<td>Greater than 9 parents</td>
<td>9</td>
<td>9.5</td>
</tr>
<tr>
<td>Schools participants worked in that have programs for students with ASD (n=94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>43</td>
<td>45.7</td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>50.0</td>
</tr>
<tr>
<td>Not applicable</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>Types of students with ASD that participants provided screening, assessment, intervention, and/or consultation to (n=95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low need</td>
<td>69</td>
<td>72.6</td>
</tr>
<tr>
<td>Moderate need</td>
<td>57</td>
<td>60.0</td>
</tr>
<tr>
<td>High need</td>
<td>53</td>
<td>55.8</td>
</tr>
<tr>
<td>Does not provide screening, assessment, intervention, and/or consultation to students with ASD</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of students participants provided assessment, intervention, and/or consultation services to that they believe have ASD, but receive special education services under another disability category (n=94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 students</td>
<td>18</td>
<td>19.1</td>
</tr>
<tr>
<td>1-2 students</td>
<td>44</td>
<td>46.8</td>
</tr>
<tr>
<td>3-5 students</td>
<td>20</td>
<td>21.3</td>
</tr>
<tr>
<td>6 or more students</td>
<td>12</td>
<td>12.8</td>
</tr>
<tr>
<td>Ways participants have learned about ASD (n=95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attended in-service, workshop, conference</td>
<td>90</td>
<td>94.7</td>
</tr>
<tr>
<td>Read professional journal(s)</td>
<td>72</td>
<td>75.8</td>
</tr>
<tr>
<td>Read book(s) or book chapter(s)</td>
<td>69</td>
<td>72.6</td>
</tr>
<tr>
<td>Searched internet websites</td>
<td>71</td>
<td>74.7</td>
</tr>
<tr>
<td>Watched a DVD</td>
<td>10</td>
<td>10.5</td>
</tr>
<tr>
<td>Watched a webcast</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>Participated in a video conference</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Participated in a teleconference</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>Consulted with colleagues</td>
<td>7</td>
<td>7.4</td>
</tr>
<tr>
<td>Took graduate courses</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Continued on the next page
Table 4 (continued)

<table>
<thead>
<tr>
<th>Variables</th>
<th>$n$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td># of students with confirmed ASD that participants have worked with in any capacity in their professional career ($n=95$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 students</td>
<td>4</td>
<td>4.2</td>
</tr>
<tr>
<td>6-10 students</td>
<td>9</td>
<td>9.5</td>
</tr>
<tr>
<td>11-15 students</td>
<td>12</td>
<td>12.6</td>
</tr>
<tr>
<td>16-20 students</td>
<td>16</td>
<td>16.8</td>
</tr>
<tr>
<td>21-25 students</td>
<td>10</td>
<td>10.5</td>
</tr>
<tr>
<td>26-30 students</td>
<td>6</td>
<td>6.3</td>
</tr>
<tr>
<td>more than 30 students</td>
<td>38</td>
<td>40.0</td>
</tr>
</tbody>
</table>

Note. Not all $n$'s add up to 100 due to missing data and some questions allowed participants to respond to multiple answers and therefore some percents add up to more than 100%.

What is the Current Knowledge of School Psychologists with Regard to the Symptoms/Diagnosis of ASD?

To address the first research question, which asked about school psychologists’ knowledge of ASD, descriptive statistics including the mean, standard deviation, and range for a total knowledge score were calculated based on participants’ responses to part C of the survey which asked 13 true/false questions about ASD. Results indicated that in general, school psychologists have adequate knowledge of ASD, with an average score of 90.3% correct or 11.74 correct out of 13. Respondents’ scores ranged from 61.5% (8 correct out of 13) to 100% correct (13 out of 13). About one third of respondents (31.9%) answered all of the questions correctly and approximately another one third (31.9%) answered only one question incorrectly (Table 5). Table 6 further provides information regarding each of the 13 knowledge questions. All of the participants agreed that the existence of self-injurious behaviors could be present in those with ASD, but they were not a necessary criterion of the disorder. Every participant also agreed that children with ASD are not deliberately noncompliant.
In addition, 100% of the respondents indicated that ASD does not exist only in childhood and only one participant reported that with proper treatment, most children can outgrow ASD. Just about all of the participants (96.8%) agreed that some children with ASD exhibit over- or under-sensitivity to pain stimuli. Most of the respondents (95.7%) were familiar with the notion that more boys than girls are diagnosed with ASD. All but one participant agreed that some children with ASD demonstrate uneven gross motor and fine motor skills. A majority of school psychologists (97.9%) disagreed with the perception that children with ASD never make eye contact. Most (97.8%) also disagreed with the statement that most children with ASD do not talk. Almost all of the respondents (92.5%) disagreed with the statement that children with ASD do not show emotional attachment, even to parents. However, some mixed perceptions of what criteria are necessary for a child to receive a diagnosis for ASD were noted. Although one of the criteria for a diagnosis of ASD is impairments in social interaction skills, 13.8% of the participants did not agree that this was a necessary characteristic to receive a diagnosis. Likewise, although stereotyped and repetitive behaviors are part of the diagnostic criteria of ASD, nearly half of the respondents (43.6%) did not believe that these behaviors are required to receive a diagnosis of ASD. One of the essential criteria of ASD is impairment in communication; however, 41.5% did not agree that communication deficits were necessary for a diagnosis of ASD.
### Table 5

**Participants’ Scores on Knowledge Survey**

<table>
<thead>
<tr>
<th>Score (%)</th>
<th>Frequency</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>61.5%</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>69.2%</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>76.9%</td>
<td>11</td>
<td>11.7</td>
</tr>
<tr>
<td>84.6%</td>
<td>19</td>
<td>20.2</td>
</tr>
<tr>
<td>92.3%</td>
<td>30</td>
<td>31.9</td>
</tr>
<tr>
<td>100.0%</td>
<td>30</td>
<td>31.9</td>
</tr>
</tbody>
</table>

*M*=90.3%   \(SD=9.09\) \(Range=61.5\%\) to 100%

*Note.* \(n=94\).

### Table 6

**Results of True/False ASD Questions**

<table>
<thead>
<tr>
<th>Survey Statement</th>
<th>Number of Respondents</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children must exhibit impaired social interaction to receive a diagnosis of ASD.</td>
<td>94</td>
<td>81 (86.2%)</td>
<td>13 (13.8%)</td>
</tr>
<tr>
<td>Children must exhibit self-injurious behaviors to receive a diagnosis of ASD.</td>
<td>94</td>
<td>0 (0%)</td>
<td>94 (100%)</td>
</tr>
<tr>
<td>Children must exhibit behaviors and interests that are repetitive and stereotyped to receive a diagnosis of ASD.</td>
<td>94</td>
<td>53 (56.4%)</td>
<td>41 (43.6%)</td>
</tr>
<tr>
<td>Children must exhibit impaired communication skills to receive a diagnosis of ASD.</td>
<td>94</td>
<td>55 (58.5%)</td>
<td>39 (41.5%)</td>
</tr>
<tr>
<td>Some children with ASD exhibit over-sensitivity or under-sensitivity to pain.</td>
<td>94</td>
<td>91 (96.8%)</td>
<td>3 (3.2%)</td>
</tr>
<tr>
<td>More boys are diagnosed with ASD than girls.</td>
<td>94</td>
<td>90 (95.7%)</td>
<td>4 (4.3%)</td>
</tr>
<tr>
<td>Some children with ASD demonstrate uneven gross motor and fine motor skills.</td>
<td>94</td>
<td>93 (98.9%)</td>
<td>1 (1.1%)</td>
</tr>
<tr>
<td>Children with ASD never make eye contact.</td>
<td>94</td>
<td>2 (2.1%)</td>
<td>92 (97.9%)</td>
</tr>
</tbody>
</table>

Continued on the next page
Table 6 (continued)

<table>
<thead>
<tr>
<th>Survey Statement</th>
<th>Number of Respondents</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children with ASD are deliberately negative and noncompliant.</td>
<td>93</td>
<td>0 (0%)</td>
<td>93 (100%)</td>
</tr>
<tr>
<td>Children with ASD do not show emotional attachment, even to parents.</td>
<td>93</td>
<td>7 (7.5%)</td>
<td>86 (92.5%)</td>
</tr>
<tr>
<td>Most children with ASD do not talk.</td>
<td>93</td>
<td>2 (2.2%)</td>
<td>91 (97.8%)</td>
</tr>
<tr>
<td>ASD exist only in childhood.</td>
<td>94</td>
<td>0 (0%)</td>
<td>94 (100%)</td>
</tr>
<tr>
<td>With proper treatment, most children can outgrow ASD.</td>
<td>92</td>
<td>1 (1.1%)</td>
<td>91 (98.9%)</td>
</tr>
</tbody>
</table>

What are the Most Common Tools that School Psychologists Use to Assess ASD?

School psychologists’ use of various assessment tools was measured by the questions on section D of the survey which asked, “Have you ever used this technique?” for 16 different assessment tools. Participants responded on a Likert scale with the options of “Never,” “Sometimes,” “Often,” and “Always”. The data were then re-coded into two options. For those that answered “Never,” data were re-coded into “No” (Never use) and for those that answered either “Sometimes,” “Often,” or “Always,” the data were recoded into “Yes” (Use). On average, respondents used the various assessment tools 89.5% of the time (see Table 7). As one can see by looking at the second column in Table 7, four types of assessment tools (Cognitive, Developmental History, Interview Student, and Interview Teacher) were reported as being used by all of the respondents. Another seven assessment tools (Interview Parent, Record Review, Behavioral Assessment, Adaptive Measures, Observe School, Interview Aide, Work Samples) were reported as being used by all but one respondent (98.9%).
little more than 90% of respondents indicated using the assessment technique of Conducting a Functional Behavior Assessment (FBA), and about 80% of respondents used ASD Specific measures. Approximately three quarters of participants reported using Academic Achievement tests. Roughly half used ASD Screening tools, and approximately a third have observed the student at home.

Next, the “Sometimes,” “Often,” and “Always” were again re-coded to “1” (Sometimes), “2” (Often), and “3” (Always) and the mean and standard deviation for each assessment tool, as well as collectively were calculated. This was done in order to compare the frequency of use of those assessment tools that were used and disregarded those assessment tools that were not used so that when the means and standard deviations were calculated, values of zero were not calculated as part of the statistic. This information is listed in the third and fourth columns of Table 7, respectively. In addition, to determine the frequency of use, the percent of respondents who answered “Sometimes,” “Often,” and “Always” is listed in columns 5-7 of Table 7. The total assessment tool mean was 2.14, with a standard deviation of 0.51. The assessment tool with the highest mean is Record Review ($M=2.79$, $SD=0.48$, $n=91$), with 82.4% “Always” using this tool, 14.3% “Often” using this tool, and 3.3% “Sometimes” using this tool. The assessment tool with the lowest mean is Observe Home ($M=1.06$, $SD=0.25$, $n=31$), with no participant “Always” using this tool, 6.5% “Often” using this tool, and 93.5% “Sometimes” using this tool. Results of a repeated measures ANOVA on the original data ($n=86$) for use of the assessment tools where participants
responded “Never,” “Sometimes,” “Often,” and “Always,” revealed a statistically significant difference between the types of assessment tools participants use, $F(9.78, 831.63)=85.28, p<.001$. Follow-up tests indicated 15 comparisons were statistically significant at the $p<.05$ level, 73 pairs were statistically significant at the $p<.001$ level, and 32 pairs were not statistically significant. See Figure 1 for a graph of the means for the ANOVA related to the use of the various assessment tools.
Table 7  
Assessment Use, Competence, and Usefulness  

<table>
<thead>
<tr>
<th>Type of Assessment</th>
<th>% Yes (Use)</th>
<th>M</th>
<th>SD</th>
<th>% Sometimes</th>
<th>% Often</th>
<th>% Always</th>
<th>Competence M</th>
<th>SD</th>
<th>Usefulness M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive (n=91)</td>
<td>100</td>
<td>2.45</td>
<td>0.60</td>
<td>5.5</td>
<td>44.0</td>
<td>50.5</td>
<td>3.91 (n=90)</td>
<td>0.29</td>
<td>3.48 (n=91)</td>
<td>0.67</td>
</tr>
<tr>
<td>Developmental History (n=92)</td>
<td>100</td>
<td>2.45</td>
<td>0.72</td>
<td>13.0</td>
<td>29.3</td>
<td>57.6</td>
<td>3.75 (n=91)</td>
<td>0.46</td>
<td>3.79 (n=92)</td>
<td>0.46</td>
</tr>
<tr>
<td>Interview Student (n=90)</td>
<td>100</td>
<td>2.42</td>
<td>0.75</td>
<td>15.6</td>
<td>26.7</td>
<td>57.8</td>
<td>3.81 (n=91)</td>
<td>0.39</td>
<td>3.65 (n=89)</td>
<td>0.52</td>
</tr>
<tr>
<td>Interview Teacher (n=91)</td>
<td>100</td>
<td>2.58</td>
<td>0.62</td>
<td>6.6</td>
<td>28.6</td>
<td>64.8</td>
<td>3.87 (n=90)</td>
<td>0.34</td>
<td>3.90 (n=91)</td>
<td>0.30</td>
</tr>
<tr>
<td>Interview Parent (n=92)</td>
<td>98.9</td>
<td>2.31</td>
<td>0.78</td>
<td>19.8</td>
<td>29.7</td>
<td>50.5</td>
<td>3.79 (n=91)</td>
<td>0.44</td>
<td>3.91 (n=91)</td>
<td>0.29</td>
</tr>
<tr>
<td>Record Review (n=92)</td>
<td>98.9</td>
<td>2.79</td>
<td>0.48</td>
<td>3.3</td>
<td>14.3</td>
<td>82.4</td>
<td>3.92 (n=91)</td>
<td>0.27</td>
<td>3.78 (n=91)</td>
<td>0.44</td>
</tr>
<tr>
<td>Behavioral Assessment (n=92)</td>
<td>98.9</td>
<td>2.14</td>
<td>0.63</td>
<td>13.2</td>
<td>59.3</td>
<td>27.5</td>
<td>3.83 (n=89)</td>
<td>0.38</td>
<td>3.60 (n=91)</td>
<td>0.58</td>
</tr>
<tr>
<td>Adaptive Measures (n=91)</td>
<td>98.9</td>
<td>1.90</td>
<td>0.74</td>
<td>32.2</td>
<td>45.6</td>
<td>22.2</td>
<td>3.65 (n=91)</td>
<td>0.52</td>
<td>3.46 (n=89)</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Continued on the next page
<table>
<thead>
<tr>
<th>Type of Assessment</th>
<th>% Yes (Use)</th>
<th>M</th>
<th>SD</th>
<th>% Sometimes</th>
<th>% Often</th>
<th>% Always</th>
<th>Competence</th>
<th>Usefulness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Observe School (n=91)</td>
<td>98.9</td>
<td>2.63</td>
<td>0.61</td>
<td>6.7</td>
<td>23.3</td>
<td>70.0</td>
<td>3.82</td>
<td>0.38</td>
</tr>
<tr>
<td>Interview Aide (n=91)</td>
<td>98.9</td>
<td>1.87</td>
<td>0.71</td>
<td>32.2</td>
<td>48.9</td>
<td>18.9</td>
<td>3.84</td>
<td>0.40</td>
</tr>
<tr>
<td>Work Samples (n=90)</td>
<td>98.9</td>
<td>2.02</td>
<td>0.77</td>
<td>28.1</td>
<td>41.6</td>
<td>30.3</td>
<td>3.52</td>
<td>0.59</td>
</tr>
<tr>
<td>Conduct FBA (n=92)</td>
<td>93.5</td>
<td>1.33</td>
<td>0.54</td>
<td>70.9</td>
<td>25.6</td>
<td>3.5</td>
<td>3.18</td>
<td>0.62</td>
</tr>
<tr>
<td>ASD Specific Measure (n=92)</td>
<td>81.5</td>
<td>1.81</td>
<td>0.82</td>
<td>44.0</td>
<td>30.7</td>
<td>25.3</td>
<td>3.45</td>
<td>0.70</td>
</tr>
<tr>
<td>Academic Achievement (n=92)</td>
<td>77.2</td>
<td>1.93</td>
<td>0.83</td>
<td>38.0</td>
<td>31.0</td>
<td>31.0</td>
<td>3.76</td>
<td>0.49</td>
</tr>
<tr>
<td>ASD Screening (n=90)</td>
<td>53.3</td>
<td>1.71</td>
<td>0.80</td>
<td>50.0</td>
<td>29.2</td>
<td>20.8</td>
<td>3.51</td>
<td>0.65</td>
</tr>
<tr>
<td>Observe Home (n=91)</td>
<td>34.1</td>
<td>1.06</td>
<td>0.25</td>
<td>93.5</td>
<td>6.5</td>
<td>0.0</td>
<td>3.66</td>
<td>0.55</td>
</tr>
<tr>
<td>Total</td>
<td>89.5</td>
<td>2.14</td>
<td>0.51</td>
<td></td>
<td></td>
<td></td>
<td>3.71</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Note. Conduct FBA=Conduct Functional Behavior Assessment; Competence Scale was coded as “1” (Not Competent), “2” (A Little Competent), “3” (Moderately Competent), and “4” (Very Competent); Usefulness Scale was coded as “1” (Not Useful), “2” (A Little Useful), “3” (Moderately Useful), and “4” (Very Useful)
Figure 1. Mean Scores used for ANOVA for Use of Assessment Tools

Note. *n*=86; Records=Record Review, Teacher=Interview Teacher, Aide=Interview Aide, Parent=Interview Parent, Student=Observe Student, FBA=Conduct FBA, Screening=ASD Screening, Adaptive=Adaptive Measures, Achievement=Academic Achievement, Behavior=Behavioral Assessment

How Competent do School Psychologists Perceive Themselves to be Regarding the Assessment of ASD?

School psychologists’ perceived competency in the assessment of ASD was measured by the questions on section D of the survey which asked, “How competent are you in using this technique?” for 16 different assessment tools. Respondents answered, “Not Competent,” “A Little Competent,” “Moderately Competent,” “Very Competent,” and “Not applicable.” These data were then coded into “1” (Not Competent), “2” (A Little Competent), “3” (Moderately Competent), “4” (Very Competent) and “0” (Not applicable), which was considered the same as a missing value in the analysis and therefore not used as part of the calculation. In addition, if participants indicated that they did not use an assessment tool, it was automatically assumed that the participant would
answer “Not applicable” for the question that asked about competency. Thus, if a respondent provided a different answer (i.e., Not Competent, A Little Competent, Moderately Competent, or Very Competent), the answer was overridden to “Not applicable.” Columns 8 and 9 of Table 7 provide information regarding the perceived competency of school psychologists. In general, school psychologists reported feeling competent in the assessment of students with ASD as determined by the mean competency of all the assessment tools falling between the “Moderately Competent” and “Very Competent” range ($M=3.71$, $SD=0.20$). In addition, out of the 16 assessment tools, all were given a mean rating of greater than “3,” or at least “Moderately Competent.” Respondents felt the most competent in Record Review ($M=3.92$, $SD=0.27$, $n=91$) and the least competent in Conducting an FBA ($M=3.18$, $SD=0.62$, $n=85$).

**How Useful do School Psychologists Perceive Various Assessment Tools to be Regarding the Assessment of ASD?**

School psychologists’ perceived usefulness of various assessment tools was assessed by the questions on section D of the survey which asked, “How useful do you find this technique?” for 16 different assessment tools. Respondents answered “Not Useful,” “A Little Useful,” “Moderately Useful,” “Very Useful,” and “Not applicable.” Scores were then coded to “1” (Not Useful), “2” (A Little Useful), “3” (Moderately Useful), “4” (Very Useful), and “0” (Not applicable), which was treated the same as a missing variable and therefore not used as part of the calculation. In addition, if participants indicated that they did not use an assessment tool, it was automatically assumed that the participant
would answer “Not applicable” for the question that asked about usefulness. However, if a respondent provided a different answer, (i.e., Not Useful, A Little Useful, Moderately Useful, or Very Useful), the answer was overridden to “Not applicable.” These results can be found in columns 10 and 11 of Table 7.

Overall, respondents reported that most of the tools used to assess students with ASD are useful, with a mean rating of 3.58 ($SD=0.21$), and all of the assessment tools were given a usefulness rating of greater than “3,” but less than “4.” Participants perceived that the most useful assessment technique for a student with ASD is Interview Parent ($M=3.91$, $SD=0.29$, $n=91$) and the least useful technique is Conducting an FBA ($M=3.24$, $SD=0.71$, $n=83$).

**What are the Most Common Treatments/Interventions Used by School Psychologists When Working with Children with ASD?**

School psychologists’ use of various treatments/interventions was measured by the questions on section E of the survey which asked, “Have you ever used these treatments/interventions?” for 25 different treatments/interventions. Participants responded on a Likert scale with the options of “Never,” “Sometimes,” “Often,” and “Always”. These data were re-coded into two options. For those that answered “Never,” the data were re-coded into “No” (Never use) and for those that answered either “Sometimes,” “Often,” or “Always,” the data were re-coded into “Yes” (Use). The results from this question are displayed in Table 8. On average, only about half of the participants (49.9%) provided treatments/interventions to students with ASD. The treatment/intervention used the most was Visual Schedule, with 80.0% of
respondents using this method. The treatment/intervention used the least was Reductive Package, with only 3.6% of respondents using it. In further looking at column two of Table 8, 14 of the 25 treatments/interventions were used by more than 50% of respondents (Visual Schedule, 80.0%; Antecedent, 77.9%; Behavioral, 76.2%; Social Communication, 75.9%; Modeling, 75.3%; Social Skills, 74.4%; Story Based, 71.8%; Self Management, 71.4%; Scripting, 71.1%; Naturalistic, 66.3%; Initiation, 63.4%; Cognitive Behavioral, 63.1%; Peer Training, 54.1%; and Theory Of Mind, 53.0%) and the rest of the treatments/interventions were used by less than half of the participants.

Next, in order to compare the frequency of use of those treatments/interventions that were used and disregard those treatments/interventions that were not used so that when the means and standard deviations were calculated, values of zero were not calculated as part of the statistic, the “Sometimes,” “Often,” and “Always” were again re-coded to “1” (Sometimes), “2” (Often), and “3” (Always). From this re-coded data, the mean and standard deviation for each treatment/intervention, as well as collectively, were calculated (see third and fourth columns of Table 8). In addition, to determine the frequency of use, the percent of respondents who answered “Sometimes,” “Often,” and “Always” is listed in columns 5-7 of Table 8. The total treatment/intervention mean was 1.43, with a standard deviation of 0.21. The treatment/intervention tool with the highest mean was the same treatment/intervention that had the most “yes” responses, Visual Schedule \( (M=1.79, \ SD=0.70, \ n=85) \), with 16.2% “Always” using this treatment/intervention,
47.1% “Often” using this treatment/intervention, and 36.8% “Sometimes” using this treatment/intervention. The intervention/treatment with the lowest mean was a tie between Pivotal Response (n=12) and Technology Use (n=8) (M=1.00, SD=0.00), with all of school psychologists who answered that they use these treatments/interventions answering “Sometimes.” Results of a repeated measures ANOVA on the original data (n=73) for use of the treatments/interventions where participants responded “Never,” “Sometimes,” “Often,” and “Always,” revealed a statistically significant difference between the types of treatments/interventions respondents use, \( F(12.52, 901.22) = 37.34, p<.001 \). Follow-up tests indicated 34 comparisons were statistically significant at the \( p<.05 \) level, 131 pairs were statistically significant at the \( p<.001 \) level, and 135 pairs were not statistically significant (see Figure 2).
Table 8

*Intervention/treatment Use, Competence, and Usefulness*

<table>
<thead>
<tr>
<th>Type of Intervention/Treatment</th>
<th>% Yes (Use)</th>
<th>M</th>
<th>SD</th>
<th>% Sometimes</th>
<th>% Often</th>
<th>% Always</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Schedule (n=85)</td>
<td>80.0</td>
<td>1.79</td>
<td>0.70</td>
<td>36.8</td>
<td>47.1</td>
<td>16.2</td>
<td>3.34</td>
<td>0.71</td>
<td>3.72</td>
<td>0.51</td>
</tr>
<tr>
<td>Antecedent (n=86)</td>
<td>77.9</td>
<td>1.70</td>
<td>0.70</td>
<td>43.3</td>
<td>43.3</td>
<td>13.4</td>
<td>3.12</td>
<td>0.71</td>
<td>3.51</td>
<td>0.72</td>
</tr>
<tr>
<td>Behavioral (n=84)</td>
<td>76.2</td>
<td>1.61</td>
<td>0.55</td>
<td>42.2</td>
<td>54.7</td>
<td>3.1</td>
<td>3.08</td>
<td>0.65</td>
<td>3.51</td>
<td>0.56</td>
</tr>
<tr>
<td>Social Communication (n=83)</td>
<td>75.9</td>
<td>1.56</td>
<td>0.59</td>
<td>49.2</td>
<td>46.0</td>
<td>4.8</td>
<td>3.08</td>
<td>0.66</td>
<td>3.52</td>
<td>0.60</td>
</tr>
<tr>
<td>Modeling (n=85)</td>
<td>75.3</td>
<td>1.63</td>
<td>0.68</td>
<td>48.4</td>
<td>40.6</td>
<td>10.9</td>
<td>3.15</td>
<td>0.70</td>
<td>3.33</td>
<td>0.67</td>
</tr>
<tr>
<td>Social Skills (n=82)</td>
<td>74.4</td>
<td>1.62</td>
<td>0.64</td>
<td>45.9</td>
<td>45.9</td>
<td>8.2</td>
<td>3.18</td>
<td>0.62</td>
<td>3.37</td>
<td>0.61</td>
</tr>
<tr>
<td>Story Based (n=85)</td>
<td>71.8</td>
<td>1.43</td>
<td>0.53</td>
<td>59.0</td>
<td>39.3</td>
<td>1.6</td>
<td>3.02</td>
<td>0.63</td>
<td>3.37</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Continued on the next page
Table 8 (continued)

<table>
<thead>
<tr>
<th>Type of Intervention/Treatment</th>
<th>% Yes (Use)</th>
<th>M</th>
<th>SD</th>
<th>% Sometimes</th>
<th>2</th>
<th>% Often</th>
<th>3</th>
<th>% Always</th>
<th>Competence M</th>
<th>SD</th>
<th>Usefulness M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Management (n=84)</td>
<td>71.4</td>
<td>1.35</td>
<td>0.52</td>
<td>66.7</td>
<td>31.7</td>
<td>1.7</td>
<td></td>
<td></td>
<td>3.00 (n=57)</td>
<td>0.66</td>
<td>3.3 (n=59)</td>
<td>0.60</td>
</tr>
<tr>
<td>Scripting (n=83)</td>
<td>71.1</td>
<td>1.32</td>
<td>0.51</td>
<td>69.5</td>
<td>28.8</td>
<td>1.7</td>
<td></td>
<td></td>
<td>2.79 (n=58)</td>
<td>0.77</td>
<td>3.14 (n=56)</td>
<td>0.72</td>
</tr>
<tr>
<td>Naturalistic (n=86)</td>
<td>66.3</td>
<td>1.56</td>
<td>0.66</td>
<td>52.6</td>
<td>38.6</td>
<td>8.8</td>
<td></td>
<td></td>
<td>3.14 (n=56)</td>
<td>0.77</td>
<td>3.42 (n=53)</td>
<td>0.66</td>
</tr>
<tr>
<td>Initiation (n=82)</td>
<td>63.4</td>
<td>1.42</td>
<td>0.54</td>
<td>59.6</td>
<td>38.5</td>
<td>1.9</td>
<td></td>
<td></td>
<td>3.02 (n=53)</td>
<td>0.64</td>
<td>3.23 (n=52)</td>
<td>0.83</td>
</tr>
<tr>
<td>Cognitive Behavioral (n=84)</td>
<td>63.1</td>
<td>1.40</td>
<td>0.57</td>
<td>64.2</td>
<td>32.1</td>
<td>3.8</td>
<td></td>
<td></td>
<td>2.96 (n=52)</td>
<td>0.69</td>
<td>2.94 (n=52)</td>
<td>0.78</td>
</tr>
<tr>
<td>Peer Training (n=85)</td>
<td>54.1</td>
<td>1.37</td>
<td>0.61</td>
<td>69.6</td>
<td>23.9</td>
<td>6.5</td>
<td></td>
<td></td>
<td>2.82 (n=44)</td>
<td>0.72</td>
<td>3.29 (n=45)</td>
<td>0.70</td>
</tr>
<tr>
<td>Theory Of Mind (n=83)</td>
<td>53.0</td>
<td>1.34</td>
<td>0.57</td>
<td>70.5</td>
<td>25.0</td>
<td>4.5</td>
<td></td>
<td></td>
<td>2.77 (n=44)</td>
<td>0.71</td>
<td>3.14 (n=42)</td>
<td>0.84</td>
</tr>
<tr>
<td>Joint Attention (n=85)</td>
<td>48.2</td>
<td>1.46</td>
<td>0.64</td>
<td>61.0</td>
<td>31.7</td>
<td>7.3</td>
<td></td>
<td></td>
<td>2.98 (n=41)</td>
<td>0.82</td>
<td>3.36 (n=39)</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Continued on the next page
Table 8 (continued)

<table>
<thead>
<tr>
<th>Type of Intervention/Treatment</th>
<th>% Yes (Use)</th>
<th>M</th>
<th>SD</th>
<th>% Sometimes</th>
<th>% Often</th>
<th>% Always</th>
<th>Competence M</th>
<th>SD</th>
<th>Usefulness M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Mediated (n=84)</td>
<td>39.3</td>
<td>1.18</td>
<td>0.47</td>
<td>84.8</td>
<td>12.1</td>
<td>3.0</td>
<td>2.76 (n=33)</td>
<td>0.71</td>
<td>2.94 (n=32)</td>
<td>0.76</td>
</tr>
<tr>
<td>Academic (n=81)</td>
<td>37.0</td>
<td>1.60</td>
<td>0.68</td>
<td>50.0</td>
<td>40.0</td>
<td>10.0</td>
<td>3.22 (n=32)</td>
<td>0.71</td>
<td>3.30 (n=30)</td>
<td>0.70</td>
</tr>
<tr>
<td>Early (n=85)</td>
<td>36.5</td>
<td>1.32</td>
<td>0.54</td>
<td>71.0</td>
<td>25.8</td>
<td>3.2</td>
<td>2.84 (n=32)</td>
<td>0.81</td>
<td>3.61 (n=31)</td>
<td>0.56</td>
</tr>
<tr>
<td>Exposure (n=84)</td>
<td>25.0</td>
<td>1.10</td>
<td>0.30</td>
<td>90.5</td>
<td>9.5</td>
<td>0.0</td>
<td>2.64 (n=22)</td>
<td>0.79</td>
<td>2.90 (n=21)</td>
<td>0.83</td>
</tr>
<tr>
<td>Structured Teaching (n=83)</td>
<td>21.7</td>
<td>1.50</td>
<td>0.62</td>
<td>55.6</td>
<td>38.9</td>
<td>5.6</td>
<td>3.06 (n=18)</td>
<td>0.80</td>
<td>3.53 (n=17)</td>
<td>0.51</td>
</tr>
<tr>
<td>Imitation (n=84)</td>
<td>21.4</td>
<td>1.33</td>
<td>0.59</td>
<td>72.2</td>
<td>22.2</td>
<td>5.6</td>
<td>2.84 (n=19)</td>
<td>0.77</td>
<td>2.94 (n=18)</td>
<td>0.87</td>
</tr>
<tr>
<td>Developmental (n=83)</td>
<td>16.9</td>
<td>1.64</td>
<td>0.63</td>
<td>42.9</td>
<td>50.0</td>
<td>7.1</td>
<td>3.00 (n=14)</td>
<td>0.68</td>
<td>3.36 (n=14)</td>
<td>0.84</td>
</tr>
<tr>
<td>Pivotal Response (n=83)</td>
<td>14.5</td>
<td>1.00</td>
<td>0.00</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.64 (n=11)</td>
<td>0.81</td>
<td>2.83 (n=12)</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Continued on the next page
Table 8 (continued)

<table>
<thead>
<tr>
<th>Type of Intervention/Treatment</th>
<th>% Yes (Use)</th>
<th>M</th>
<th>SD</th>
<th>% Sometimes</th>
<th>% Often</th>
<th>% Always</th>
<th>Competence M</th>
<th>SD</th>
<th>Usefulness M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Use (n=82)</td>
<td>9.8</td>
<td>1.00</td>
<td>0.00</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.50 (n=8)</td>
<td>0.54</td>
<td>3.25 (n=8)</td>
<td>0.46</td>
</tr>
<tr>
<td>Reductive (n=83)</td>
<td>3.6</td>
<td>1.67</td>
<td>1.16</td>
<td>66.7</td>
<td>0.0</td>
<td>33.3</td>
<td>3.00 (n=3)</td>
<td>1.00</td>
<td>3.00 (n=3)</td>
<td>1.00</td>
</tr>
<tr>
<td>Total</td>
<td>49.9</td>
<td>1.43</td>
<td>0.21</td>
<td></td>
<td></td>
<td></td>
<td>2.96</td>
<td>0.20</td>
<td>3.27</td>
<td>0.24</td>
</tr>
</tbody>
</table>
Figure 2. Mean Scores used for ANOVA for Use of Treatments/Interventions

Note. n=73; Antecedent=Antecedent package; Behavioral=Behavioral package, Early Use=Early intensive behavioral intervention-comprehensive behavioral treatment for young children; Joint Attention=Joint attention intervention; Naturalistic=Naturalistic teaching strategies; Peer Training=Peer training package; Pivotal Response=Pivotal response treatment; Story Based=Story-based intervention package; Cognitive Behavioral=Cognitive behavioral intervention package; Developmental=Developmental relationship-based treatment; Exposure=Exposure package; Imitation=Imitation-based Interaction; Initiation=Initiation training; Peer Mediated=Peer-mediated instructional arrangement; Reductive=Reductive package; Social Communication=Social communication intervention; Social Skills=Social skills package; Technology=Technology-based treatment; Theory of Mind=Theory of mind training; Academic=Academic interventions
How Competent do School Psychologists Perceive Themselves to be Regarding Treatments/Interventions for ASD?

School psychologists’ perceived competency in providing treatments/interventions for students with ASD was measured by the questions on section E of the survey which asked, “How competent are you in using these treatments/interventions?” for 25 different treatments/interventions. Respondents answered, “Not Competent,” “A Little Competent,” “Moderately Competent,” “Very Competent,” and “Not applicable.” These data were then coded into “1” (Not Competent), “2” (A Little Competent), “3” (Moderately Competent), “4” (Very Competent), and “0” (Not applicable), which was treated the same as a missing variable. In addition, if participants indicated that they did not use treatment/intervention, it was automatically assumed that the participant would answer “Not applicable” for the question that asked about competency, and if a respondent provided a different answer (i.e., Not Competent, A Little Competent, Moderately Competent, or Very Competent), the answer was overridden to “Not applicable.” Columns 8 and 9 of Table 8 provide information regarding the perceived competency of school psychologists in providing treatments/interventions. In general, school psychologists reported feeling almost “Moderately Competent” in providing treatments/interventions for students with ASD ($M=2.96$, $SD=0.20$). The treatment/intervention with the highest mean competency score was Visual Schedule ($M=3.34$, $SD=0.71$, $n=67$) and the one with the lowest score was Technology Use ($M=2.50$, $SD=0.54$, $n=8$). Out of the 25 treatments/interventions, 14 of them had a mean competency score of greater
than or equal to “3.00” (See Table 8). The remaining 11 treatments/interventions had competency ratings of greater than 2.00, but less than 3.00 (See Table 8).

How Useful do School Psychologists Perceive Various Treatments/Interventions to be for Students with ASD?

School psychologists' perceived usefulness of various treatments/interventions was assessed by the questions on section E of the survey which asked, “How useful do you find these treatments/interventions?” for the 25 different treatments/interventions. Respondents answered “Not Useful,” “A Little Useful,” “Moderately Useful,” “Very Useful,” and “Not applicable.” Scores were then coded to “1” (Not Useful), “2” (A Little Useful), “3” (Moderately Useful), “4” (Very Useful), and “0” (Not applicable), which was considered the same as missing data. In addition, if participants indicated that they did not use a treatment/intervention, it was automatically assumed that the participant would answer “Not applicable” for the question that asked about usefulness, and if a respondent provided a different answer (i.e., Not Useful, A Little Useful, Moderately Useful, or Very Useful), the answer was overridden to “Not applicable.” Columns 10 and 11 of Table 8 provide information regarding the perceived usefulness of the various treatments/interventions. On average, school psychologists rated all of the treatments/interventions as at least “Moderately Useful” ($M=3.27$, $SD=0.24$). The treatment/intervention with the highest usefulness score is Visual Schedule ($M=3.72$, $SD=0.51$, $n=68$) and the one with the lowest is Pivotal Response ($M=2.83$, $SD=0.72$, $n=12$). In looking at column 10 of Table 8, 20 out of the 25 treatments/interventions listed were given
a usefulness rating of greater than or equal to 3.00, but less than 4.00 and the remaining 5 treatments/interventions were rated between 2.00 and 3.00.

What is the Primary Role of School Psychologists When Working with Students with ASD?

To address the primary role of school psychologists, data were obtained from question B9 on the survey which asked participants what percent of their time working with students with confirmed or suspected ASD was spent on Case finding and screening, Assessment, Intervention/treatment, Consultation, and Other where they had to rate each on a Likert scale “0% of time,” “1-25% of time,” “26-50% of time,” and “More than 50% of time,” which were coded as “1,” “2,” “3,” and “4,” respectively. Results (see Table 9) indicated that when it comes to working with students with confirmed or suspected ASD, school psychologists spend most their time assessing students \( (M=2.59, SD=0.80) \) and the least amount of time providing case finding and screening \( (M=1.78, SD=0.54) \).
Table 9

*Amount of Time School Psychologists Spend Performing Various* Responsibilities Related to Students with ASD

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td>90</td>
<td>1.78</td>
<td>0.54</td>
</tr>
<tr>
<td>Assessment</td>
<td>94</td>
<td>2.59</td>
<td>0.80</td>
</tr>
<tr>
<td>Intervention</td>
<td>94</td>
<td>2.15</td>
<td>0.87</td>
</tr>
<tr>
<td>Consultation</td>
<td>91</td>
<td>2.29</td>
<td>0.64</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>2.25</td>
<td>0.46</td>
</tr>
</tbody>
</table>

*Note.* Participants answered how much time they spent on the various responsibilities by answering “0% of time,” “1-25% of time,” “26-50% of time,” “More than 50% of time.” This data were then coded to 1, 2, 3, 4, respectively and the mean and standard deviation were calculated based on these numbers.

More specifically, 66.7% reported spending 1-25% of their time on case finding and screening, with about a quarter of participants (27.8%) spending no time on case finding and screening. A very small percentage of participants (5.6%) reported spending 26-50% of their time on case finding and screening. When it comes to assessment, there was only one participant who reported that he or she did not assess students with ASD. A little more than half of respondents (57.4%) reported spending 1-25% of their time assessing students with ASD. In addition, approximately one quarter (23.4%) use 26-50% of their time assessing students with ASD and about one fifth (18.1%) reported spending more than 50% of their time assessing students with ASD. Approximately one fourth (24.5%) of respondents do not provide intervention/treatment services to students with ASD, but a little less than half (42.6%) expend 1-25% of their time providing intervention/treatment for students with ASD. Approximately one quarter (26.6%) reported using 26-50% of their time providing
intervention/treatment, and 6.4% spend more than half their time providing intervention/treatment for students with ASD. Many school psychologists (68.1%) also spend 1-25% of their time providing consultation to educational staff and/or families. Almost a quarter of participants (22%) expend 26-50% of their time providing consultation services. Approximately 5% of school psychologists reported spending more than half of their time consulting with educational staff and/or families and a minute amount (4.4%) do not provide consultation services at all. Eight percent spend their time in other responsibilities related to working with students with ASD such as helping out in crises and chairing IEP meetings (see Figure 3 for a visual representation of these findings).

Figure 3. Percent of Time School Psychologists Spend in Various Responsibilities Related to ASD
What Variables are Related to School Psychologists’ Knowledge of ASD?

The last research question focused on the relationship between demographic variables and experience with ASD variables and school psychologists’ knowledge of ASD. Demographic variables (from Section A of the questionnaire) included work setting, type of school setting, number of years worked as a school psychologist, number of schools worked at, location of setting, total number of students at schools worked at, licensure/certification, age, highest degree attained, when degree attained, gender, race/ethnicity, and type of employee. Experience with ASD variables (from Section B) included learned about ASD as a graduate student, number of students with ASD evaluated, number of students with ASD on caseload, amount of consultation with parents and/or teachers, functioning of ASD students, methods to gain information on ASD, and number of students with ASD worked with in career. Knowledge of ASD was the percent correct that respondents answered on the knowledge section of the questionnaire (from Section C). As mentioned in the methods section, the internal consistency reliability of the knowledge part of the survey as assessed by the KR-20 was low, at 0.41, indicating a great deal of error variance with the knowledge scores. Therefore, with the absence of a reliable knowledge factor, the relationship between demographic and experience with ASD variables and knowledge items were analyzed independently. If the variables were categorical, the data were analyzed by a one way ANOVA with participants’ scores on the knowledge test as the dependent variable and demographic or experience variables as the independent variable. The
assumptions of ANOVA were considered and they were met in all cases unless otherwise specified. If the variables were continuous, the data were analyzed by a Pearson product-moment correlation with knowledge score and demographic or experience with ASD information as the variables. The variables for which an ANOVA were computed are reported in the next paragraph and are presented in Table 10. Those that were computed using a Pearson product-moment correlation are reported in the paragraph after the ANOVA results and are presented in Table 11.

For work setting, the data were re-coded as follows: those who only work in a public school were coded as a “yes” and those that work in a public school setting and another setting or not in a public school at all were coded as a “no.” Results indicated there was not a statistically significant difference between scores on the knowledge test and work setting, $F(1,92)=.01$, $p=.93$. For the type of school setting, participants answered preschool, elementary, middle, high school, or some combination since respondents could provide more than one answer. For each type of school setting, the data were re-coded as either “yes” or “no.” Data analyses yielded no statistically significant difference in knowledge score and type of setting in which respondents worked. Specifically, the results indicated that for those participants who worked at least some of the time in a preschool setting, $F(1,89)=.00$, $p=.98$, for those that worked at least some of the time in an elementary school setting, $F(1,89)=1.44$, $p=.23$, and for those that worked at least some of the time in a high school setting, $F(1,89)=.00$, $p=.98$, there was no statistically significant difference. For those who worked in a
middle school setting, the Levene’s test showed the assumption of equality of variances was violated. Therefore, the Welch statistic was used to compare the means for those who worked in this setting. As with the other settings, the results indicated there was no statistically significant difference between those who worked at least some of the time in a middle school and their knowledge score, $F(1,70.97)=1.17, p=.28$.

For each location variable (urban, rural, suburban), respondents could answer all that apply. Therefore the data were re-coded into “yes” or “no” for each location variable. There was no statistically significant relationship between any of the locations where participants worked and their score on the knowledge test, urban, $F(1,92)=.05, p=.82$; rural, $F(1,92)=.09, p=.76$; suburban, $F(1,92)=.01, p=.94$. The data also did not reveal statistically significant results regarding the relationship between the type of degree (M.A./M.S., Specialist, Doctorate) and participant’s score on the knowledge test, $F(2,88)=2.28, p=.11$. The Levene’s test showed the assumption of equality of variances was violated with regards to the relationship between gender of participants and their knowledge score, therefore the Welch statistic was used to compare the means. Results did not yield statistically significant results, $F(1,11.40)=2.24, p=.16$. With respect to race/ethnicity, a majority of participants were Caucasian (94%); therefore, the data were analyzed to see if there was a relationship between respondents who were Caucasian compared to those who are Non-Caucasian and their knowledge scores. The homogeneity of variance assumption was violated and therefore the Welch statistic was used. Results indicated no statistically significant differences
between race/ethnicity and knowledge score, \( F(1,5.26)=.66, p=.45 \). Results were also analyzed to determine if there was a statistically significant difference between school psychologists who worked full-time compared to those that worked part-time on their scores on the knowledge test. Analyses revealed a statistically significant difference, \( F(1,92)=4.60, p<.05 \), with those who worked part-time scoring higher on the knowledge test (\( M=95.27, SD=8.62 \)) compared to those who worked full-time (\( M=89.55, SD=8.96 \)). 

With regards to if school psychologists had learned about ASD during their graduate training (No, Briefly, Extensively) and if this was related to knowledge scores, results indicated no statistically significant differences, \( F(2,91)=.98, p=.38 \). School psychologists were asked if there were special classrooms for students with ASD (i.e., self-contained) where they worked. The data also did not yield any statistically significant differences between the type of classroom and knowledge scores, \( F(1,87)=.36, p=.55 \).

Participants held various licensures/certifications for practicing as a school psychologist. Having the certification of being a Nationally Certified School Psychologist (NCSP) represents the highest level of certification attainable by school psychologists. Therefore, the data were analyzed comparing those that have the NCSP certification to those that do not in relationship to their performance on the knowledge part of the survey. The assumption of homogeneity of variance was violated so the Welch statistic was computed. Results did not indicate any statistically significant results, \( F(1,78.85)=1.07, p=.30 \). For the type of students with ASD that participants worked with (low
need, moderate need, high need), participants could provide more than one response. Therefore, the data were re-coded into “yes” or “no” for each type of student with ASD with whom participants worked. Results yielded that there was not a statistically significant difference between respondents’ knowledge scores and the type of students with ASD with whom they worked—low need, \( F(1,92)=.01, p=.94 \); moderate need, \( F(1,92)=1.427, p=.24 \); high need, \( F(1,92)=.33, p=.57 \).

In determining if there was a relationship between any of the demographic or experience with ASD variables and participants’ knowledge scores, none of the variables that were analyzed using a Pearson product-moment correlation were statistically significant. Specifically, the relationship between scores on the knowledge test and number of years participants have practiced as school psychologists did not yield any correlation (\( r=.03, n=94, p=.79 \)). There was a small, negative correlation between knowledge score and number of schools participants worked in; however, the correlation was not statistically significant (\( r=-.15, n=94, p=.15 \)). There was also a small, negative correlation between number of students at the schools participants worked in and performance on knowledge test; however, again, the correlation was not statistically significant (\( r=-.17, n=93, p=.10 \)). The data indicated that there was not a statistically significant correlation between age of participant and knowledge score as well as the date participants received their highest degree and their performance on the knowledge part of the survey (\( r=-.07, n=94, p=.52, r=-.03, n=94, p=.77 \), respectively). With regards to the number of initial evaluations and re-
evaluations that participants conducted on students with ASD and the relationship to their knowledge score, again, there was no statistically significant correlation (Initial evaluations, \( r = .03, n = 93, p = .78 \); Re-evaluations, \( r = -.02, n = 94, p = .88 \)). In comparing the number of students with ASD on the respondents’ caseloads and their knowledge scores, a correlation was not found (\( r = .01, n = 93, p = .95 \)). The number of teachers consulted and participants’ knowledge scores was not correlated (\( r = .01, n = 91, p = .95 \)). The number of parents consulted and participants’ knowledge scores also was not correlated (\( r = .08, n = 94, p = .44 \)). A small, positive relationship was found between the total number of students that participants have worked with in their careers that have ASD and their scores on the knowledge part of the survey; however, the relationship was not significant (\( r = .14, n = 94, p = .17 \)). As mentioned in a previous section, participants responded to a variety of methods that they have engaged in learning about ASD, such as attending in-services or workshops, reading journals or books, searching the internet, watching a DVD or webcast, participating in a teleconference or videoconference, consulting with colleagues, or taking coursework. The total number of methods participants engaged in learning about ASD was calculated and a Pearson product-moment correlation was computed to determine if there was any relationship between the number of ways participants learned about ASD and their knowledge scores. Results yielded a small positive correlation which was not statistically significant, (\( r = .15, n = 94, p = .15 \)).
Table 10

*Summary ANOVA Table for the Relationship Between Demographic and Experience with ASD Variables and Knowledge*

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work Setting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only in a Public School</td>
<td>85</td>
<td>90.32</td>
<td>9.05</td>
<td>.01</td>
<td>.93</td>
</tr>
<tr>
<td>Public School and Other Setting or Not Public School</td>
<td>9</td>
<td>90.60</td>
<td>10.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool</td>
<td>39</td>
<td>90.73</td>
<td>8.12</td>
<td>.00</td>
<td>.98</td>
</tr>
<tr>
<td>Not Preschool</td>
<td>52</td>
<td>90.68</td>
<td>8.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>63</td>
<td>89.99</td>
<td>8.81</td>
<td>1.44</td>
<td>.23</td>
</tr>
<tr>
<td>Not Elementary</td>
<td>28</td>
<td>92.31</td>
<td>7.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>39</td>
<td>89.55</td>
<td>9.58</td>
<td>1.17</td>
<td>.28</td>
</tr>
<tr>
<td>Not Middle</td>
<td>52</td>
<td>91.57</td>
<td>7.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>33</td>
<td>90.68</td>
<td>8.76</td>
<td>.00</td>
<td>.98</td>
</tr>
<tr>
<td>Not High</td>
<td>58</td>
<td>90.72</td>
<td>8.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>23</td>
<td>89.97</td>
<td>9.68</td>
<td>.05</td>
<td>.82</td>
</tr>
<tr>
<td>Not Urban</td>
<td>71</td>
<td>90.47</td>
<td>8.96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>17</td>
<td>90.95</td>
<td>10.96</td>
<td>.09</td>
<td>.76</td>
</tr>
<tr>
<td>Not Rural</td>
<td>77</td>
<td>90.21</td>
<td>8.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suburban</td>
<td>57</td>
<td>90.28</td>
<td>8.29</td>
<td>.01</td>
<td>.94</td>
</tr>
<tr>
<td>Not Suburban</td>
<td>37</td>
<td>90.44</td>
<td>10.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Degree</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.A./M.S.</td>
<td>10</td>
<td>91.54</td>
<td>8.47</td>
<td>2.28</td>
<td>.11</td>
</tr>
<tr>
<td>Specialist</td>
<td>65</td>
<td>91.36</td>
<td>8.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctorate</td>
<td>16</td>
<td>86.06</td>
<td>11.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>85.31</td>
<td>12.14</td>
<td>2.24</td>
<td>.16</td>
</tr>
<tr>
<td>Female</td>
<td>81</td>
<td>90.98</td>
<td>8.58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on the next page
Table 10 (continued)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>88</td>
<td>90.65</td>
<td>8.96</td>
<td>.66</td>
<td>.45</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>6</td>
<td>85.90</td>
<td>8.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>81</td>
<td>89.55</td>
<td>8.96</td>
<td>4.60</td>
<td>.04*</td>
</tr>
<tr>
<td>Part-time</td>
<td>13</td>
<td>95.27</td>
<td>8.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>92.71</td>
<td>7.01</td>
<td>.98</td>
<td>.38</td>
</tr>
<tr>
<td>Briefly</td>
<td>71</td>
<td>89.60</td>
<td>9.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extensively</td>
<td>4</td>
<td>92.31</td>
<td>10.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classrooms for ASD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>42</td>
<td>90.84</td>
<td>7.83</td>
<td>.36</td>
<td>.55</td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>89.69</td>
<td>10.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Licensure/Certification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCSP</td>
<td>51</td>
<td>91.25</td>
<td>8.00</td>
<td>1.07</td>
<td>.30</td>
</tr>
<tr>
<td>Non-NCSP</td>
<td>43</td>
<td>89.27</td>
<td>10.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Need</td>
<td>68</td>
<td>90.38</td>
<td>8.75</td>
<td>.01</td>
<td>.94</td>
</tr>
<tr>
<td>Not Low Need</td>
<td>26</td>
<td>90.24</td>
<td>10.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Need</td>
<td>56</td>
<td>89.42</td>
<td>9.34</td>
<td>1.43</td>
<td>.24</td>
</tr>
<tr>
<td>Not Moderate Need</td>
<td>38</td>
<td>91.70</td>
<td>8.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Need</td>
<td>52</td>
<td>90.83</td>
<td>8.76</td>
<td>.33</td>
<td>.57</td>
</tr>
<tr>
<td>Not High Need</td>
<td>42</td>
<td>89.74</td>
<td>9.56</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Work setting was coded as Only Public School or Public School and other or only other; Type was coded as preschool or no preschool, elementary school or not elementary school, middle school or not middle school, high school or not high school; Location was coded as urban or not urban, rural or not rural, suburban or not suburban; Degree was coded as M.A./M.S, Specialist, Doctorate; Gender was coded as male or female; Learned was coded as did not learn about ASD during graduate school, briefly learned about ASD during graduate school, extensively learned about ASD during graduate school; Classrooms for ASD was coded as participant worked in a school that had a classroom specifically for ASD or participant worked in a school that did not have a classroom specifically for ASD; Licensure/Certification was coded as NCSP or non-NCSP; Type of Students was coded as students with low need or not low need, students with moderate need or not moderate need, students with high need or not high need; *p<.05
Table 11

**Summary Correlation Table for the Relationship Between Demographic and Experience with ASD Variables and Knowledge**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of years</td>
<td>94</td>
<td>.03</td>
<td>.79</td>
</tr>
<tr>
<td>Number of schools</td>
<td>94</td>
<td>-.15</td>
<td>.15</td>
</tr>
<tr>
<td>Number of students</td>
<td>93</td>
<td>-.17</td>
<td>.10</td>
</tr>
<tr>
<td>Age of participant</td>
<td>94</td>
<td>-.07</td>
<td>.53</td>
</tr>
<tr>
<td>Date highest degree</td>
<td>94</td>
<td>-.03</td>
<td>.77</td>
</tr>
<tr>
<td>Number of initial evaluations</td>
<td>93</td>
<td>.03</td>
<td>.78</td>
</tr>
<tr>
<td>Number of re-evaluations</td>
<td>94</td>
<td>-.02</td>
<td>.88</td>
</tr>
<tr>
<td>Number on caseload</td>
<td>93</td>
<td>.01</td>
<td>.95</td>
</tr>
<tr>
<td>Number of teachers consulted</td>
<td>91</td>
<td>.01</td>
<td>.95</td>
</tr>
<tr>
<td>Number of parents consulted</td>
<td>94</td>
<td>.08</td>
<td>.44</td>
</tr>
<tr>
<td>Total number of students with ASD worked with in career</td>
<td>94</td>
<td>.14</td>
<td>.17</td>
</tr>
</tbody>
</table>

**Note.** Number of years was coded as 1-5 years, 6-10 years, 11-15 years, 16+ years; Number of schools was coded as 1, 2, 3, 4 or more; Number of students was coded as <500, 500-1000, 1001-1500, 1501-2000, >2000; Age of participant was coded as less than 25 years, 25-35, 36-45, 46-55, older than 55; Date highest degree was coded as prior to 1979, 1979-1989, 1990-1999, 2000-present; Number of initial evaluations was coded as 0 students, 1-5 students, 6-10 students, 11-15 students, more than 15 students; Number of re-evaluations was coded as 0 students, 1-5 students, 6-10 students, 11-15 students, more than 15 students; Number on caseload was coded as 0 students, 1-3 students, 4-6 students, 7-9 students, greater than 9 students; Number of teachers consulted was coded as 0 teachers, 1-3 teachers, 4-6 teachers, 7-9 teachers, greater than 9 teachers; Number of parents consulted was coded as 0 parents, 1-3 parents, 4-6 parents, 7-9 parents, greater than 9 parents; Total number of students with ASD worked with in career was coded as 0 students, 1-5 students, 6-10 students, 11-15 students, 16-20 students, 21-25 students, 26-30 students, more than 30 students; Total number of methods participants learned about ASD was coded as 1, 2, 3, 4, 5, 6.
Other Information Pertaining to School Psychologists and ASD

The last section of the survey asked some miscellaneous questions regarding school psychologists and ASD. When providing social skills or social pragmatic instruction, of the 52 respondents who answered this question, 36.5% provided the instruction by themselves, 34.6% co-taught with another person, and 28.8% provided instruction both by themselves and co-taught. For those that co-taught, they were asked to specify with whom they co-teach. Of the 27 participants who provided this information, speech/language therapists and special education teachers were listed most often. Respondents were also asked if they used a specific curriculum for social skills or social pragmatics instruction. Of the 60 school psychologists who responded to this question, a little more than half (56.7%) said that they have used a specific curriculum. Some examples of curriculums mentioned include various social thinking materials by Michelle Garcia Winner, Second Step, Skillstreaming, and Navigating the Social World. When asked overall, how competent do participants feel in working in any capacity with students with ASD, their families, and staff, respondents were provided open-ended responses and results were mixed. Some responded that overall they felt very competent, while others felt less competent, especially as it related to providing treatments/interventions. Participants were also asked to provide information on what areas of ASD did they feel they needed more training. Again, many listed treatments/interventions, as well as assessment, especially assessment tools specifically related to ASD. Lastly, participants were allowed to write any additional comments that they had.
While only 18 people answered, the most common comment was that they did not provide direct service to those with ASD.
Chapter V

Discussion

Introduction

In the last decade, the number of students identified as having ASD has increased considerably and it is currently the fastest growing group of students served through special education (Ludlow, Keramidas, & Landers, 2007). In addition, the number of students with ASD placed in the mainstream setting is increasing (U.S. DOE, 2005). Consequently, given the increase of individuals diagnosed with ASD, it is anticipated that school psychologists will be involved in some capacity with these students as part of the services provided to educational systems and families. Therefore, the purpose of this study was to examine school psychologists’ knowledge, training, and roles and responsibilities related to students with ASD.

One hundred members of MSPA participated in an online survey, representing a response rate of 27%. The participants in this study were similar demographically in many aspects to participants in the most recent NASP survey of school psychologists in that participants were mostly female, Caucasian, worked in public schools, worked in suburban settings, and were certified through the state department of education (Curtis et al., 2008). There was a greater representation of school psychologists with specialist degrees who responded to this current study (70%) as compared to respondents in the NASP survey (40%).
Differences also existed in that school psychologists in the current study were more likely to work in a school context that is consistent with the NASP recommended ratio of 1000 to 1 (NASP, 2010) with 65% of participants working within that ratio compared to approximately 40% in the NASP study. Additionally, in the present study, 45% of participants had been practicing school psychologists for 10 or less years, while 55% have been practicing school psychologists for more than 10 years. About half of participants were between the ages of 26 and 45, about half were more than 45-years-old, and an overwhelming majority of participants received their highest degree since 1990. Participants in this study worked mainly in one school (42%), 29% worked in two schools, 11% worked in three schools, and 17% worked in 4 or more schools. A majority worked in the elementary setting (69.7%), 42.4% worked in the preschool setting, 41.4% worked in the middle school setting, and the least worked in a high school setting (34.3%). Most of the participants (85.0%) also worked full-time.

The following sections of this chapter will provide a discussion and interpretation of each of the nine research questions under investigation in this study. Limitations of the study also will be discussed along with implications for practice and directions for future research.

**School Psychologists’ Experiences with ASD**

With regard to school psychologists’ experiences working with the ASD population, there are no published studies that can be used to directly compare the results of the present study. The limited amount of literature that does exist
about the training of educational professionals in the field of ASD mainly addresses the preparation of special education teachers. Scheuermann, Webber, Boutout, and Goodwin (2003) posed the following question: “If a teacher meets state standards for special education certification but has no coursework in or experience with autism, is that teacher 'highly qualified' to teach students with autism?” (p. 197). The same question can be applied to school psychologists. In the current study, the amount of specific training in respondents’ school psychology training programs appears limited, despite the fact that a majority of participants received their highest degree after 1990, and specifically, almost half of the participants received their highest degree in the last decade, when there was an increasing awareness of the topic of ASD. Although a majority of respondents received some training on ASD in their graduate school training, approximately three quarters of participants reported they only learned about ASD briefly during their graduate training, and a very small percentage (4.2%) learned about ASD extensively during their graduate school career. Consequently, the overwhelming majority of graduate students pursuing degrees in school psychology are not receiving training in the knowledge and skills necessary to optimally serve students with ASD.

In order to further their knowledge of ASD, participants were involved with various learning experiences, with most attending in-services, workshops, or conferences and many also reading professional journals and books or book chapters on the subject, and searching the internet. A smaller percentage of participants also broadened their knowledge on the subject of ASD by watching a
DVD or webcast, participating in a video conference or a teleconference, and consulting with colleagues. Although the above mentioned learning opportunities may enhance one’s knowledge of ASD, many researchers have shown that knowledge does not always translate into direct application of this knowledge in practice (Barnhill, Polloway, & Sumutka, 2011; McGee & Morrier, 2005; Scheuermann et al., 2003). Hands-on-training has been found to be a more effective way to develop knowledge and skills, therefore providing opportunities for school psychologists to receive more applied experiences working with students with ASD throughout their graduate training (e.g., practicum and internship) would be beneficial.

School psychologists provide a variety of roles in their schools, including assessing students as part of a team process to determine if they qualify for special education services, providing mandated three-year re-evaluations to those who have evidence of a disability and have needed special education services for the past three years, providing direct service, as well as consulting with parents and teachers regarding a variety of issues, as well as helping with transitional planning (from school to employment or further education). School psychologists were therefore asked about their assessment, treatment/intervention, and consultation practices of the last school year. When it comes to assessing students for ASD, more than half of the respondents participated in the initial or re-evaluation of 1-5 students, with approximately one-quarter of participants initially or re-evaluating six or more students. Because a major role of school psychologists is participating in the assessment process, it is
surprising given the number of students with ASD in schools today, that 16% of respondents did not conduct initial evaluations, but the number decreased to less than 5% when it came to conducting re-evaluations. However, it is plausible that school districts may not allow school psychologists to make the initial diagnosis of ASD and therefore, students may have had evaluations by outside providers (i.e., developmental pediatricians, neuropsychologists, etc.). Depending on what testing was conducted by these outside providers, when the student is initially evaluated by the school system, school psychologists may not engage in actually evaluating the student.

Approximately one third of school psychologists reported that they did not provide treatments/interventions to students with ASD and about half provided treatments/interventions to 1-6 students. Given that there are many students in schools with ASD, it is notable that so many respondents did not participate in the treatment process. However, it is plausible that these school psychologists spend their time assessing students, which tends to be the main responsibility of many school psychologists (Curtis et al., 2008). Most of the school psychologists in the present study also reported participating in the consultation process regarding students with ASD with about three quarters consulting with 1-6 teachers and roughly three quarters consulting with 1-9 parents. These results are promising due to the importance placed on consultation by leaders in the field (Gutkin & Curtis, 1999; Ysseldyke, Burns, & Rosenfield, 2009; Ysseldyke et al., 2006).
Given the premise of educating students in the least restrictive environment, half of the schools that participants worked in did not have programs specifically designed for students with ASD. Students with ASD also present with various levels of abilities in their cognitive skills, language, social interaction, behavior, self-help skills, and academic abilities. It is often said that no two individuals with ASD are alike (Pierangelo & Giuliani, 2008). Given the diverse needs of these students, the amount of support that they need at school varies and respondents reported working in some capacity with students with ASD with various levels of need. More specifically, greater than 70% of participants work with students with ASD with low need, 60% work in some capacity with moderate need students with ASD, and 55.8% work with students with ASD who have high needs.

In order to receive services through special education, there must be evidence that the student’s needs cannot be met in the general education setting without significant support. Many students who may appear to have ASD may not yet have the diagnosis for a variety of reasons, such as the student is young or a school system may not be able to diagnose the ASD disability, and therefore these students receive services through such special education categories as Developmental Delay or Communication Disorder. Almost half of respondents, provided assessment, intervention, and/or consultation to 1-2 students whom they believe have ASD, but receive special education services under another disability category. Approximately another 20% of participants reported working with 3-5 students whom they believe have ASD, but receive special education
services under another disability category, and approximately 13% of respondents work with 6 or more students whom they believe have ASD, but receive special education services under another disability category.

In their professional careers, school psychologists have worked with students with ASD in many capacities such as assessment, treatment/intervention, and/or consultation. Specifically, a majority (40%) have worked with more than 30 students with ASD during their careers as school psychologists and less than 5% of participants have worked with 1-5 students with ASD during their careers.

**School Psychologists’ Knowledge of ASD**

As part of the survey, one section asked school psychologists to respond to 13 true/false questions representing diagnostic criteria, characteristics, and misperceptions of ASD. Results should be interpreted cautiously due to the limited reliability of this part of the questionnaire. Overall, respondents performed very well on the knowledge section, scoring an average of 90.3% (SD=9.09, Range= 61.5% to 100%). In particular, approximately one third of school psychologists correctly answered all 13 knowledge questions and roughly another one third answered only one question incorrectly, indicating that around 66% of school psychologists received at least a 92.3% on the knowledge test. Eight of the thirteen questions were taken from a survey created by Schwartz and Drager (2008) who surveyed speech/language pathologists about their knowledge of ASD. Results of the current study were similar to the results obtained by Schwartz and Drager (2008). In both studies, most participants
disagreed that children must exhibit self-injurious behaviors to receive a diagnosis of ASD and that children with ASD never make eye contact. In addition, participants in both studies appropriately agreed with the following statements: Some children with ASD exhibit over-sensitivity or under-sensitivity to pain; More boys are diagnosed with ASD than girls; and Some children with ASD demonstrate uneven gross motor and fine motor skills. Although in both studies only approximately 50% of participants correctly answered that children must exhibit behaviors and interests that are repetitive and stereotyped to receive a diagnosis of ASD, the difference between those that answered correctly and incorrectly was minimal. This is disconcerting given that stereotyped and repetitive behaviors are a required diagnostic criteria of ASD indicating mixed perceptions by professionals on what criteria are necessary for a child to receive a diagnosis of ASD. Also, while impairments in social interaction abilities is a diagnostic criterion for ASD, 21% of speech/language pathologists and 13.8% of school psychologists in the current study did not agree that this deficit was required for a child to receive a diagnosis of ASD. The biggest difference between the two studies was on the question that children must exhibit impaired communication skills to receive a diagnosis of ASD. Eighty-five percent of the speech/language pathologists correctly answered this question, compared to 58.5% of school psychologists in the present study. Although it is encouraging that the results of the current survey demonstrate higher levels of knowledge than those professionals (i.e., speech/language pathologists, medical doctors, medical students, clinical psychologists, school
psychologists, teachers, and parents) in the Cascella and Colella (2004), Helps et al. (1999), Heidergerken et al. (2005), Shah (2001), Stone (1987), and Stone and Rosenbaum (1988) studies, there are still some misperceptions of school psychologists on the criteria necessary for a diagnosis of ASD.

**School Psychologists and Assessment of ASD**

To date, there are no published data that describe the school psychologist’s role in the assessment of ASD. Data from the current study therefore provide information on the tools that school psychologists are using to assess ASD, as well as how competent they feel in using these tools and how useful they feel these tools are for assessing ASD. As described by NASP, best practice for evaluating students with ASD in the school system includes a review of records, interviews of caregivers and teachers, observations of the student, and formal testing (Ikeda, 2002). Based on the data collected, school psychologists reported engaging in all of these activities as part of the evaluation process. Specifically, with regard to the percent of participants who use various informal assessment practices, all of the school psychologists interviewed both the student with ASD and the teacher of the student with ASD, as well as obtained a developmental history of the student. All but one of the participants reviewed records, observed the student in the school setting, and interviewed the parent of the student with ASD they were evaluating. In looking at the frequency that participants engaged in the above-mentioned assessment practices, more than 80% of respondents participated in all of these activities “often” or “always.” In addition, most of the participants (98.9%) engaged in interviewing the aide of
the student with ASD and obtaining work samples; however, the frequency of use of these assessment practices was roughly 70% “often” or “always” using these tools. Conducting an FBA on the student with ASD was done by 93.5% of participants, with less than 30% “always” or “often” conducting an FBA. The assessment technique used the least was observing the student with ASD in the home setting, with only approximately one third of school psychologists participating in this activity. It is hypothesized that school psychologists may not have the time to observe a student at home, or there could be another professional in the school district (i.e., behavior specialist, social worker) that participates in observing the student at home, or some school districts may feel that it is not the job of the school system to observe a student in the home setting. In addition, not all students with ASD display the types of behaviors that warrant a home observation.

With regard to formal testing, the only measure that was used by all of the participants was cognitive assessments, with almost 95% of school psychologists “often” or “always” conducting these assessments as part of ASD evaluations. This finding is consistent with the fact that traditionally one of the main roles of a school psychologist has been to conduct intellectual assessments. All but one participant conducted behavioral assessments, with 86.8% using this measure “often” or “always.” Measures of adaptive functioning also were conducted by 98.9% of the participants; however, the frequency of use was less, with fewer than 70% “often” or “always” engaging in adaptive testing. Since one of the diagnostic criteria of ASD has to do with atypical behavior, it seems appropriate
that a behavioral assessment would be conducted as part of most ASD evaluations. However, when it comes to adaptive skills, many students with ASD, especially those that are higher functioning, may not exhibit impairments in adaptive skills and therefore an assessment of these skills would not be warranted. ASD specific measures were used by roughly 80% of respondents, with a little more than half “always” or “often” using ASD specific measures. One reason for the lower use of ASD specific measures compared to some of the others could be that school districts may not allow school psychologists to use them if they are not allowed to diagnose ASD. For formal assessments, academic achievement testing was used the least with approximately three fourths of participants using them. In some districts, academic testing might not be in the realm of a school psychologist’s duties, as special education teachers may be the school professionals who perform academic achievement testing.

Only a little more than half of respondents participated in ASD case findings and screenings, with approximately one half “always” or “often” participating in these screenings. Research indicates that outcomes for children with ASD can be greatly improved with the delivery of intensive intervention services (NRC, 2001). However, students can only receive intervention services if they are identified. Case findings and screenings are the initial steps in this process. School psychologists should be prepared to recognize the presence of risk factors and/or early warning signs of ASD and be familiar with screening tools to ensure children with ASD are being identified and provided with the appropriate treatments/interventions and services (Brock et al., 2006). Although
recognizing the risk factors and/or early warning signs of ASD when children are young is essential for early intervention services, it is also very important to be aware of students on the higher end of the autistic spectrum (i.e., Asperger’s Disorder), who may be able to perform well academically and therefore may not be identified with ASD at a young age. However, these students also struggle, especially in the social realm, and may require support.

When it comes to school psychologists’ competency in using the various assessment tools, in general for those who used the assessment instruments, participants felt competent, with a mean score of 3.71 (SD=.20, range=3.18-3.91) out of 4.00. Participants felt the most competent reviewing records and the least competent conducting an FBA. It is not surprising that school psychologists who answered that they reviewed records, felt the most competent. Looking at records is a task that does not require an extensive amount of time or training; therefore, it seems likely that school psychologists viewed this method as the one with which they felt most competent. Reviewing records is also most likely taught in graduate programs and is not specific to the ASD population, so school psychologists have received this training. Participants who answered that they conducted an FBA felt the least competent. The use of an FBA has become an important tool when developing an educational plan to address problematic behaviors with children with ASD (Rogers, 2001; Schwartz, Boulware, McBride, & Sandall, 2001). Although FBAs can be labor intensive, it is important that school psychologists who are completing FBAs feel competent in conducting them. In addition, it was not until 1997 that the concept of FBA was first
introduced into IDEA. Therefore, it might be helpful in future research to investigate if those who graduated prior to 1997 feel less competent in conducting FBAs compared to those who graduated after 1997, when it seems more likely that FBAs would be taught in graduate school.

In looking specifically at the research of school psychologists and FBAs, the literature is limited. However, the most recent and comprehensive study conducted was a dissertation by Tara Egan Nusz (2009). She found that most of the respondents reported that their graduate programs provided “little emphasis” on FBAs. Results also indicted that while nearly 86.0% of school psychologists were involved in some form of the process of conducting an FBA, less than 70% of psychologists reported that they were conducting FBAs in a manner endorsed by the research on best practices in FBAs. In addition, she also found that there was considerable variability in “typical” FBA practices, particularly with regards to data collection methods, reasons for which FBA is conducted, and content included in FBA. Therefore, the combined results from Nusz’s research on school psychologists and this current study suggest that more training in FBAs is necessary.

Regarding school psychologists’ perceived usefulness of the various assessment tools, in general for those who used the assessment instruments, participants felt they were useful. Participants felt the most useful assessment technique was interviewing the parent and the least useful was conducting an FBA. It is interesting that participants felt non-standardized methods, such as interviewing parents and teachers, as well as observing the student in the school
setting and obtaining a developmental history were more useful than traditional testing measures such as evaluating behavioral, cognitive, adaptive, and academic skills for assessing students with ASD. This could be helpful for training programs and professional development opportunities. Also, school psychologists are known for conducting assessments, especially evaluating the cognitive skills of students, particularly since they are the only school professionals qualified to do so. In the present study, all of the respondents indicated that they conducted cognitive assessments as part of an evaluation for ASD and they felt extremely competent using cognitive measures. However, out of the 16 assessment methods listed, it was ranked the 10th most useful assessment tool. This information may have school psychologists rethink their assessment practices for students with ASD. In addition, while conducting an FBA was utilized by 93.5% of respondents, it was rated as the assessment tool that respondents felt the least competent using and it was also rated the least useful method in assessing a student with ASD. It could be hypothesized that if participants do not feel as competent using a technique then they do not feel that technique is useful. This again calls for the need for more training of school psychologists in the area of FBAs.

Taken together, the results of the present study suggest that participants are engaging in best practice methods of conducting evaluations of students with ASD. In general, participants also felt competent in using the various assessment methods and felt that the assessment tools were useful in the assessment process for ASD.
School Psychologists and Treatments/Interventions for ASD

Students with ASD present with various levels of abilities in their cognitive skills, language, social interaction, behavior, self-help skills, and academic abilities. Therefore the types of treatments/interventions students with ASD may receive vary depending on the level of student need. In the school setting, the type of treatment/intervention may be provided by a variety of professionals (i.e., school psychologist, speech/language pathologist, special education teacher, occupational therapist, social worker, etc).

Fourteen of the 25 treatments/interventions listed in the survey were used by at least half of the participants, with the treatment/intervention of Visual Schedule used by the most participants (80.0%). The remaining 11 treatments/interventions were used by less than half of the participants, with the treatment/intervention of Reductive package used by the least amount of school psychologists (3.6%). For some of the treatments/interventions listed, it is surprising that more school psychologists did not report participating in them, such as Social Skills training, since one of the roles of a school psychologist is to promote the social well-being of students and therefore school psychologists seem to be the most likely designee in a school system to provide this intervention (NASP, 2008). Specifically, those with ASD who are on the higher end of the spectrum and are more likely to spend most of their time in the general education setting, require support around social skills. However, in many schools, if students are performing well academically, they may not be identified as needing help. Therefore, the skill set for working with these students can be
different than working with students who are on the lower end of the spectrum where it is obvious that they need help in various areas of functioning (i.e., academic, speech/language, social, self-help, etc.).

Regarding school psychologists’ competency in using the various treatments/interventions, in general for those who used the treatments/interventions, participants felt moderately competent. Respondents felt the most competent in Visual Schedule and the least competent with Technology Use. Visual Schedule was also the treatment/intervention used by most of the participants. Visual schedules can easily be made, are relatively easy to implement, and do not require much training compared to some of the other treatments/interventions. On the other hand, technology requires access to the type of technology (i.e., computer, software, applications, etc.) and therefore requires equipment, training, and can be expensive; therefore, these issues may play a role in why school psychologists felt the least competent in this area.

School psychologists’ perceived usefulness of the various treatments/interventions was also investigated. In general for those who used the treatment/intervention, participants felt they were useful. Respondents felt that Visual Schedule was the most useful treatment/intervention for students with ASD. Pivotal Response treatment was rated as the least useful treatment/intervention. One hypothesis for this finding is that participants may be unfamiliar with the terminology of Pivotal Response treatment. In addition, it requires specific training which can require time and financial obligations that may not be easily accessible to school psychologists.
It is also noted that the treatment/intervention of Early intensive behavioral intervention-comprehensive behavioral treatment for young children (Early Use) was used by 36.5% of participants and it was the 18\textsuperscript{th} most used treatment/intervention out of 25. In terms of competency, participants ranked it 17 out of 25; however, it was ranked 2\textsuperscript{nd} in terms of usefulness. This is commensurate with the research that has demonstrated early intervention results in improved outcomes for children with ASD (NRC, 2001; Rogers, 1998). However, it also shows that while participants who use this treatment/intervention find it useful, they do not feel as competent in providing early treatment/intervention.

In summary, of the treatments/interventions listed, none of the treatments/interventions were used by all of the participants, with the highest use rate (80.0%) for Visual Schedules and the lowest use rate (3.6%) for Reductive package. In general, school psychologists felt almost moderately competent in providing treatments/interventions. This demonstrates a need for more training in providing treatments/interventions to students with ASD. On average, respondents also perceived the treatments/interventions as useful.

**School Psychologists’ Responsibilities for Students with ASD**

In the present study, with regards to their time spent with the ASD population, school psychologists spend most of their time in the assessment process, followed by time providing consultation, participating in other ASD related activities (i.e., IEP meetings, crises management), conducting interventions/treatments, and lastly participating in case finding and screenings.
The findings of this study are similar to those in the extant literature on the roles of school psychologists in that they tend to spend a majority of their time in traditional assessment activities, despite research indicating that school psychologists prefer to engage in more nontraditional roles such as consultation, counseling, interventions and systems change (Curtis et al., 2008; Hosp & Reschly, 2002).

School Psychologists’ Variables Related to Knowledge of ASD

Data from the present study found that just about all of the demographic and experience with ASD variables were not statistically significantly related to participant’s knowledge score. However, these data should be interpreted cautiously given the low reliability of the knowledge section of the survey. The only significant relationship was related to the question of the type of employment (part-time vs. full-time). Particularly, school psychologists who worked part-time scored statically higher on the ASD knowledge part of the questionnaire than those who worked full-time. This was an unexpected finding because one would surmise that either there would not be a difference in knowledge score between full-time and part-time school psychologists, or if there was a difference, one would think that those that work full-time would score higher. However, in the present study, those that worked part-time had more years of experience as a school psychologist, tended to be older, received their highest degree prior to 2000, and worked with more students with ASD in their careers compared to those that worked full-time. These factors may have influenced the knowledge score and therefore further investigation is warranted.
Implications for Practice

The number of students with ASD has increased and therefore it is likely that school psychologists will encounter these students as part of the services they provide, whether it is assessment, intervention, and/or consultation. Various books and publications exist describing the symptoms and characteristics of ASD, offer suggestions for intervention techniques, and recommend assessment tools. When it comes to practice, in general, school psychologists were knowledgeable about ASD. Their assessment procedures followed best practices; however, many school psychologists did not use ASD specific measures. It might be advantageous for school psychologists to have expertise in these instruments. On the other hand, in the present study school psychologists felt that in assessing students for ASD, non-standardized measures (i.e., observations, interviews with parent and teacher, obtaining a developmental history) were more useful than standardized formal assessments. Therefore, this suggests that school districts should rethink their assessment practices for students with ASD. In general, school psychologists also felt competent conducting assessments, but they felt least competent conducting FBAs, suggesting that school psychologists need more training in this area. With regards to treatments/interventions, many school psychologists in the present study did not provide treatments/interventions to students with ASD. In addition, for those that did, while they felt that many of the listed treatments/interventions were useful, they did not feel as competent implementing them, suggesting that school psychologist need more training, specifically in relation to
treatments/interventions. In addition, the amount of learning about ASD during
graduate school and internship was limited. Therefore, it appears that both more
pre-service training and professional development opportunities in the
symptoms/diagnosis, assessment, and treatments/interventions for ASD is
warranted.

Limitations of the Study

There are a number of potential limitations of the study. First, the
information was obtained by self-report; therefore, there is no way to determine if
the respondents answered truthfully or not. Second, participants included only
those who are members of MSPA and may not be representative of all school
psychologists in Massachusetts. Third, participants were from only one state and
generalizability of these results to school psychologists who work in other states
is limited. Fourth, the survey is about ASD and this is clearly communicated in
the email request to participate and on the main webpage of the survey.
Therefore, those who have a specific interest in ASD may have been more likely
to complete the survey, leading to a potentially biased sample of respondents.
Fifth, the construction of the questionnaire provided inconsistent responses on
parts D and E such that if a respondent answered that they “Never” used an
assessment or intervention/treatment, then one would assume that for the
following questions of “How competent are you in using these…” and “How
useful do you find these…,” the respondent would answer “Not applicable.”
However, this was not always the case and therefore the researcher changed the
data to “Not applicable” if a participant answered another choice on these
questions. Sixth, the survey was quite long which may have deterred some participants from answering all of the questions, especially those items in the latter parts of the survey. Finally, the current study may not have adequately measured school psychologists' knowledge of ASD due to the low reliability of the knowledge section of the questionnaire.

**Future Directions**

The current study provides many opportunities for future research. First, a larger and more geographically representative sample of school psychologists from across the United States should be included in any follow-up studies related to this topic. Second, further research in ways to adequately measure school psychologists’ knowledge of ASD is suggested. Recommendations include obtaining knowledge information from ways other than from asking specific characteristic and diagnoses questions where there are delineated correct/incorrect answers and possibly exploring more qualitative ways to measure knowledge. For example, school psychologists from different geographical locations could be given written case studies and/or watch a video about various children/adolescents. Based on that information, participants could respond either in writing or through focus groups and discuss what diagnosis(es) they would provide (if any), how they came to that conclusion, what tools they would use for assessment, and what treatments/interventions they would recommend. Third, the assessment practices of school psychologists may vary depending on the setting in which they work and the diagnostic parameters in that setting related to ASD. Therefore, future surveys would benefit from adding
questions to address these issues. Fourth, the various standardized assessment instruments listed in the current survey were organized by category. In future research it would be beneficial to separate out each individual standardized test in order to specifically determine which assessment instruments school psychologists are using. Fifth, the current survey was quite lengthy which may have deterred some from answering all of the questions (especially those in the latter sections); therefore, finding ways to shorten the length of the survey would be helpful. Sixth, the current survey contained 25 different treatments/interventions and used terminology that may not be familiar to school psychologists, therefore shortening the number of treatments/interventions listed and possibly using language that school psychologists are more familiar with would be beneficial. Seventh, in the university setting there are a variety of specialties where information about ASD would be taught, besides school psychology (i.e., special education, speech/language, BCBA programs, to name a few). Investigating ways that future and present school psychologists can enhance their training and skills through cross-disciplinary training would be helpful. Eighth, exploring the skills and training, as well as the assessment and treatments/interventions practices that school psychologist specifically use and/or recommend for students on the lower end of the spectrum (i.e., Autistic Disorder) compared to students on the higher end of the spectrum (i.e., Asperger’s Disorder) would be beneficial. Students with impaired cognitive functioning and language difficulties would have different challenges than those with average to above average intellectual functioning. Lastly, designing a research study
investigating how consumers of ASD services (e.g., youth, parents, and teachers) view those services may provide a realistic perspective of school psychology practices. For example, five students with ASD, their families, as well as their teachers from different parts of the country could be selected to participate in a focus group. Participants could be asked questions regarding the assessment process, services they received from the school psychologist, and other ways that school psychologists might have provided assistance such as recommending resources and/or helping with transition services.

Conclusion

The purpose of this study was to determine school psychologists’ knowledge, training, and roles and responsibilities for students with ASD. School psychologists performed well on the knowledge section of the survey, and there was no relationship between participants’ knowledge score and any of the demographic or experience with ASD variables, with one exception. Those that worked part-time scored higher on the knowledge scale than those who worked full-time. With regards to training, although most participants reported learning about ASD as a graduate student, most of the training consisted of only brief information such as learning about ASD as part of a class. Many have furthered their training through attending in-services, workshops, conferences, reading journal and books, and searching the internet. With regards to students with ASD, school psychologists reported spending most of their time conducting assessments. They are following best practices in the assessment of ASD, and in general they feel competent conducting assessments and feel that the
assessment tools are useful, although they reported non-standardized informal methods (i.e., interviews with teacher and parent, observations, obtaining a developmental history) are more useful that standardized formal measures (i.e., cognitive, adaptive, behavioral, academic). Some school psychologists have opportunities to consult with parents and teachers and many do not participate in case finding and screening of students with potential ASD. School psychologists spend less time on treatment/intervention, and while they feel that many of the treatments/interventions are useful, they do not feel as competent implementing them. In conclusion, while school psychologists have some knowledge of the symptoms/diagnosis of ASD and feel relatively competent using a number of the assessment tools, results from the present study provide support for more applied training at the pre-service level, as well as additional professional development opportunities, for those school psychologists currently in practice.
References


Lord, C., Pickles, A., McLennan, J., Rutter, M., Bregman, J., Folstein, S., . . .


Appendices
Appendix A: IRB Approval Letters

April 8, 2011

Stacey Small
Psychological and Social Foundations

RE: Exempt Certification for IRB#: Pro00002323
Title: Autism Spectrum Disorders (ASD): Knowledge, Training, Roles and Responsibilities of School Psychologists

Dear Stacey Small:

On 4/7/2011, the Institutional Review Board (IRB) determined that your research meets USF requirements and Federal Exemption criteria as outlined in the federal regulations at 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(c) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (G) any disclosure of the human subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects’ financial standing, employability, or reputation.

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures. Please note that changes to this protocol may disqualify it from exempt status. Please note that you are responsible for notifying the IRB prior to implementing any changes to the currently approved protocol.

The Institutional Review Board will maintain your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received, whichever is longer. If you wish to continue this protocol beyond five years, you will need to submit a continuing review application at least 60 days prior to the exemption expiration date.
Should you complete this study prior to the end of the five-year period, you must submit a request to close the study.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

[Signature]

John Schinka, PhD, Chairperson
USF Institutional Review Board

Cc: Various Menzel, CCRP, USF IRB Professional Staff
Stacey Small
Psychological and Social Foundations

RE: Approved Amendment Request
IRB#: MS1.Pro0002323
Title: Autism Spectrum Disorders (ASD): Knowledge, Training, Roles, and Responsibilities of School Psychologists

Dear Ms. Small:

On 8/3/2011 the Institutional Review Board (IRB) reviewed and approved your Amendment by expedited review procedures.

The submitted request has been approved from date: 8/3/2011 to date: 4/7/2016 for the following:

Protocol Document(s):
School Psychologist and ASD(0.02)

1. Change in study population: Subjects will be members of the Massachusetts School Psychology Association (MSFA) rather than the National Association of School Psychologists (NASP).
2. Revised online survey, including introductory page (which serves as the online consent form):
   - Deleted reference to the study being approved by NASP
   - Deleted question about which state the participant practiced in as this question is no longer relevant as participants will only be from one state (Massachusetts)
3. Change in recruitment:
   - Recruitment postcard revised: Address was changed from "Dear NASP Member" to "Dear School Psychologist" and the word "postcard" was changed to "email."
   - An additional follow-up email was added to help increase the number of participants
4. Change in total # of subjects from 1000 to 400
5. Revised protocol to reflect changes in procedure.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

John Schuiker, Ph.D., Chairperson
USF Institutional Review Board
Appendix B: Permission to Use Knowledge Survey

Section C of the Survey (Knowledge of ASD) is a modified version of a survey by Schwartz and Drager

Permissions Asha 8/27/08 to me

Dear Stacey: Permission is granted for this use contingent upon approval of author Schwartz. Please include a credit for the source.

Sincerely,
Brent Jacocks, Director
Publications Production
ASHA

Heatherann Schwartz 10/2/08 to me

Hi Stacy!!

I send you an email several weeks ago when I first received your email regarding using the survey I created for my Master's thesis. However, I have since learned that there were significant problems with the server and am guessing you did not receive that email as I just received another email from Dr. Drager at PSU.

I absolutely, 100% give you permission to use the survey for your dissertation!! I think it will be quite interesting to see how psychologists compare to speech therapists in their knowledge and training about autism. All that I ask is that once you're analyzed the results you receive, please let me know how everything turned out!!

Congrats on getting as far as your dissertation and please let me know if you have any questions as you go through the survey or your project that I might able to help with, being that I have gone through this survey before!

Sincerely,
Heatherann :)

174
Appendix C: School Psychologists and ASD Survey

**Description & Consent**

This survey assesses school psychologists' knowledge, training, and roles and responsibilities related to students with autism spectrum disorders (ASD). When completing the survey, ASD refer to students who have been diagnosed with any one of the following disorders: Autistic Disorder, Rett's Disorder, Child Disintegrative Disorder, Asperger's Disorder, and Pervasive Developmental Disorder Not Otherwise Specified (PDD NOS).

Your participation in this study is completely voluntary and you are free to discontinue responding to the survey at any time. However, if you do not work directly with youth, you do not need to complete the survey. I do not foresee any risks as a result of participating in this study. Your responses will be anonymous and no personally identifiable information will be requested. The information that you provide will be combined from others and presented as group data. However, the Dept. of Health and Human Services can review all research records. The results of the study will help better understand school psychologists' current practices with regards to assisting students with ASD and will provide information that can be used to inform training programs and professional development opportunities.

The name of the study is “ASD and School Psychologist” and it has been approved by the University of South Florida Division of Research Integrity and Compliance Institutional Review Board (USF IRB) (eIRB#2323) in Tampa, FL. Should you have any questions regarding your rights as a research participant, you may contact the USF IRB at (813) 974-5638 or you may access their website at http://www.research.usf.edu

If you should have any questions about this study or if you would be interested in being provided with a summary of the results, please contact:

Stacey Small, Ed.S., NCSP (shsmall@mail.usf.edu)

Thank you very much for your assistance. I greatly appreciate it!

By clicking "Next" you affirm your consent to participate in the study. Also, remember to click the “Done” button on the last page in order to submit your responses.
A. Demographics
This section asks various demographic questions. Please click on your response.

1. What was the setting where you worked during the 2010-2011 school year? (check all that apply)
   - □ Public School or Public School District
   - □ Private School
   - □ Faith-Based School
   - □ College/University
   - □ Independent Practice
   - □ State Department
   - □ Hospital/Medical Setting
   - □ Other (please specify)

2. During the 2010-2011 school year, what type of school did you work in? (check all that apply)
   - □ Preschool
   - □ Elementary school
   - □ Middle school
   - □ High school
   - □ Not applicable
   - □ Other (please specify)

3. Including the 2010-2011 school year, how many years after internship have you worked as a school psychologist?
   - ○ 1-5 years
   - ○ 6-10 years
   - ○ 11-15 years
   - ○ 16+ years

4. What was the number of schools you served during the 2010-2011 school year?
   - ○ 1
   - ○ 2
   - ○ 3
   - ○ 4 or more
   - ○ Not applicable
5. What was the location of the school(s) where you worked during the 2010-2011 school year? (check all that apply)
   □ Urban
   □ Rural
   □ Suburban
   □ Not applicable

6. Please estimate the total number of students at the schools you served during the 2010-2011 school year?
   o <500
   o 500-1000
   o 1001-1500
   o 1501-2000
   o >2000
   o Not applicable

7. What was your licensure/certification during the 2010-2011 school year? (check all that apply)
   □ Nationally Certified School Psychologist
   □ Certified by State Education Agency as School Psychologist
   □ Certified by State Education Agency as Psychometrist, or similar title
   □ Licensed School Psychologist (doctorate required; State Board of Psychology)
   □ Licensed Psychologist (doctorate required; State Board of Psychology)
   □ Licensed School Psychologist (non-doctoral; State Board of Psychology)
   □ Licensed Psychological Associate or similar title (non-doctoral; State Board of Psychology)
   □ Board Certified Behavior Analyst (BCBA)
   □ Other (please specify)

8. What is your current age?
   o less than 25 years
   o 25-35
   o 36-45
   o 46-55
   o older than 55
9. What is your highest degree attained?
   - M.A./M.S./M.Ed.
   - Specialist (i.e., Ed.S, CAGS)
   - Doctorate (i.e., Ph.D., Ed.D, Psy.D., Ed.D)
   - Other (please specify)

10. What is the date that you received your highest degree?
    - prior to 1979
    - 1979-1989
    - 1990-1999
    - 2000-present

11. What is your gender?
    - Male
    - Female

12. What is your race/ethnicity?
    - American Indian/Alaskan Native
    - Asian American/Pacific Islander
    - Black/African American
    - Caucasian
    - Hispanic
    - Other (please specify)

13. What was your type of employment during the 2010-2011 school year?
    - Full-time
    - Part-time
    - Other (please specify)
B. Experience with Autism Spectrum Disorders (ASD)
This section asks about your experience with ASD. Please click on your response.

1. Did you learn about ASD during your school psychology training?
   - No
   - Yes, briefly during course work/practicum/internship (i.e., was taught in part of a class)
   - Yes, extensively during course work/practicum/internship (i.e., had an entire semester course on ASD, had extensive experience working with ASD students)

2. During the 2010-2011 school year, how many students did you assess for an initial evaluation who you suspected of having an ASD or who already had a medical diagnosis of ASD?
   - 0 students
   - 1-5 students
   - 6-10 students
   - 11-15 students
   - more than 15 students

3. During the 2010-2011 school year, how many students did you assess for a re-evaluation with a suspected or confirmed diagnosis of ASD?
   - 0 students
   - 1-5 students
   - 6-10 students
   - 11-15 students
   - more than 15 students

4. During the 2010-2011 school year, how many students with confirmed ASD received services from you (i.e., consultation, counseling, social skills groups, social pragmatic groups, etc.) as part of their Individualized Education Program (IEP)?
   - 0 students
   - 1-3 students
   - 4-6 students
   - 7-9 students
   - greater than 9 students
5. During the 2010-2011 school year, how many teachers did you consult with (give advice/suggestions) regarding students with confirmed ASD in their classrooms who either receive or do not receive special education services?
   - 0 teachers
   - 1-3 teachers
   - 4-6 teachers
   - 7-9 teachers
   - greater than 9 teachers

6. During the 2010-2011 school year, how many parents did you consult with (give advice/suggestions) who have children with confirmed ASD who either receive or do not receive special education services?
   - 0 parents
   - 1-3 parents
   - 4-6 parents
   - 7-9 parents
   - greater than 9 parents

7. During the 2010-2011 school year, did the school(s) that you worked in have special classrooms for students specifically with ASD (i.e., a self-contained classroom)?
   - Yes
   - No
   - Not applicable

8. During the 2010-2011 school year, what types of students with confirmed ASD did you provide screening, assessment, intervention, and/or consultation to? (check all that apply)
   - Low need (i.e., student spends 80% or more of their time in the general education classroom)
   - Moderate need (i.e., student spends between 60%-79% of their time in the general education classroom)
   - High need (i.e., student spends less than 60% of their time in the general education classroom)
   - I did not provide screening, assessment, intervention, and/or consultation to students with ASD
9. During the 2010-2011 school year, what percent of your time working with students with confirmed or suspected ASD was spent on:

<table>
<thead>
<tr>
<th>Activity</th>
<th>0% of time</th>
<th>1-25% of time</th>
<th>26-50% of time</th>
<th>More than 50% of time</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Case finding and screening</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>(b) Assessment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>(c) Intervention/treatment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>(d) Consultation</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>(e) Other (please specify)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

10. During the 2010-2011 school year, how many students have you provided assessment, intervention, and/or consultation services to that you believe have ASD, but receive special education services under another disability category (i.e., developmental delay, communication)?

- ○ 0 students
- ○ 1-2 students
- ○ 3-5 students
- ○ 6 or more students
- ○ Not applicable
11. In the last five years, please check how you have gained information on ASD? (check all that apply)

☐ I have not gained information on ASD
☐ Attended in-service, workshop, conference
☐ Read professional journal(s) (e.g., School Psychology Review, Journal of Autism and Developmental Disorders)
☐ Read book(s) or book chapter(s)
☐ Searched internet websites
☐ Watched a DVD
☐ Watched a webcast
☐ Participated in a video conference
☐ Participated in a teleconference
☐ Other (please specify)

12. What is the approximate number of students with confirmed ASD that you have worked with in any capacity in your professional career?

☐ 0 students
☐ 1-5 students
☐ 6-10 students
☐ 11-15 students
☐ 16-20 students
☐ 21-25 students
☐ 26-30 students
☐ more than 30 students
### C. Knowledge of ASD

1. The following questions follow a True/False format and ask questions regarding ASD. Please click on your response.

<table>
<thead>
<tr>
<th>Question</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Children must exhibit impaired social interaction to receive a diagnosis of ASD.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>b. Children must exhibit self-injurious behaviors to receive a diagnosis of ASD.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>c. Children must exhibit behaviors and interests that are repetitive and stereotyped to receive a diagnosis of ASD.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>d. Children must exhibit impaired communication skills to receive a diagnosis of ASD.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>e. Some children with ASD exhibit over-sensitivity or under-sensitivity to pain.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>f. More boys are diagnosed with ASD than girls.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>g. Some children with ASD demonstrate uneven gross motor and fine motor skills.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>h. Children with ASD never make eye contact.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>i. Children with ASD are deliberately negative and noncompliant.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>j. Children with ASD do not show emotional attachment, even to parents.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>k. Most children with ASD do not talk.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>l. ASD exist only in childhood.</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>m. With proper treatment, most children can outgrow ASD.</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>
D. Assessment Practices

For this section, please think about your experiences in assessing student(s) with suspected ASD (or for a re-evaluation for a student who already has ASD) and click on your responses to the questions:

Note: Competent is defined as a demonstrated ability to successfully and appropriately use the technique or to successfully and appropriately administer, score and interpret the assessment instrument(s)

1. Review cumulative records
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   c. How useful do you find this technique?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not Useful

2. Review academic work samples
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
c. How useful do you find this technique?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

3. Interview teacher(s)
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   
   c. How useful do you find this technique?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable

4. Interview paraprofessional, aide, assistant
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
c. How useful do you find this technique?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

5. Interview parent(s)/guardian(s)
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   c. How useful do you find this technique?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable

6. Interview student
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
c. How useful do you find this technique?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

7. Observe student at school
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   c. How useful do you find this technique?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable

8. Observe student at home
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
c. How useful do you find this technique?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

9. Obtain a developmental history
   a. Have you ever used this technique?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)

   b. How competent are you in using this technique?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable

   c. How useful do you find this technique?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

10. Conduct an FBA (Functional Behavioral Assessment)
    a. Have you ever used this technique?
       - Never (0% of the time)
       - Sometimes (1-50% of the time)
       - Often (51-99% of the time)
       - Always (100% of the time)

    b. How competent are you in using this technique?
       - Not Competent
       - A Little Competent
       - Moderately Competent
       - Very Competent
       - Not applicable
c. How useful do you find this technique?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

11. Case Finding and Screening Measures (i.e., Checklist for Autism in Toddlers, Modified Checklist of Autism in Toddlers, Pervasive Developmental Disorders Screening Test-II)
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   c. How useful do you find this technique?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable

12. ASD Specific Measures (i.e., Autism Diagnostic Interview-Revised, Autism Diagnostic Observation Schedule, Childhood Autism Rating Scale, Gilliam Autism Rating Scale, Second Edition)
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
c. How useful do you find this technique?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   c. How useful do you find this technique?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable

   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
b. How competent are you in using this technique?
   - Not Competent
   - A Little Competent
   - Moderately Competent
   - Very Competent
   - Not applicable

c. How useful do you find this technique?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

   a. Have you ever used this technique?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)

   b. How competent are you in using this technique?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable

   c. How useful do you find this technique?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable
   a. Have you ever used this technique?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)

   b. How competent are you in using this technique?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable

   c. How useful do you find this technique?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable
E. Treatments/Interventions

For this section, please think about your experiences in providing treatments/interventions for student(s) with ASD and click on your responses to the questions:

Note: **Competent** is defined as a demonstrated ability to successfully and appropriately use the treatment/intervention

1. **Antecedent package** - Involves the modification of situational events that typically precede the occurrence of a target behavior, made to increase the likelihood of success or reduce the likelihood of problems occurring (i.e., cueing, prompting, environmental modification of task demands).
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

2. **Behavioral package** - Designed to reduce problem behavior and teach functional alternative behaviors or skills through the application of basic principles of behavior change (i.e., chaining; contingency contracting; differential reinforcement strategies; token economy).
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
b. How competent are you in using these treatments/interventions?
   - Not Competent
   - A Little Competent
   - Moderately Competent
   - Very Competent
   - Not applicable

c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

3. Early intensive behavioral intervention-comprehensive behavioral treatment for young children - Comprehensive treatment programs that involve a combination of applied behavior analytic procedures which are delivered to young children (generally under the age of 8).

   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)

   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable

   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable
4. Joint attention intervention - Involves building foundational skills involved in regulating the behaviors of others, often involving teaching a child to respond to the nonverbal social bids of others or to initiate joint attention interactions (i.e., pointing to objects, showing items/activities to another person, and following eye gaze).
   a. Have you ever used these treatments/interventions?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   c. How useful do you find these treatments/interventions?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable

5. Modeling - Relies on an adult or peer providing a demonstration of the target behavior that should result in an imitation of the target behavior by the individual with ASD (i.e., live modeling and video modeling).
   a. Have you ever used these treatments/interventions?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

6. Naturalistic teaching strategies - Involves using primarily child-directed interactions to teach functional skills in the natural environment (i.e., incidental teaching, milieu teaching).
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

7. Peer training package - Involves teaching children without disabilities strategies for facilitating play and social interactions with children with ASD.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

8. Pivotal response treatment—Also referred to as PRT, Pivotal Response Teaching, and Pivotal Response Training. It focuses on targeting “pivotal” behavioral areas (i.e., motivation, responding to multiple cues, child self-initiations, and self-management) that will have widespread effects on other behaviors.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

9. Visual schedule—Involves the presentation of a task list that communicates a series of activities or steps (can be written words, pictures or photographs, or work stations) required to complete a specific activity.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
b. How competent are you in using these treatments/interventions?
   o Not Competent
   o A Little Competent
   o Moderately Competent
   o Very Competent
   o Not applicable

c. How useful do you find these treatments/interventions?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

10. **Self-management** - Involves promoting independence by teaching individuals with ASD to regulate their behavior by recording the occurrence/nonoccurrence of the target behavior, and securing reinforcement for doing so (i.e., use of checklists, checks, smiley/frowning faces, wrist counters, visual prompts, and tokens).
   a. Have you ever used these treatments/interventions?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)

b. How competent are you in using these treatments/interventions?
   o Not Competent
   o A Little Competent
   o Moderately Competent
   o Very Competent
   o Not applicable

c. How useful do you find these treatments/interventions?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

11. **Story-based intervention package** - Involves a written description of the situations under which specific behaviors are expected to occur (i.e., Social Stories™).
   a. Have you ever used these treatments/interventions?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
b. How competent are you in using these treatments/interventions?
   o Not Competent
   o A Little Competent
   o Moderately Competent
   o Very Competent
   o Not applicable

c. How useful do you find these treatments/interventions?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

12. Cognitive behavioral intervention package. Focuses on changing everyday negative or unrealistic thought patterns and behaviors with the aim of positively influencing emotions and/or life functioning.
   a. Have you ever used these treatments/interventions?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)

b. How competent are you in using these treatments/interventions?
   o Not Competent
   o A Little Competent
   o Moderately Competent
   o Very Competent
   o Not applicable

c. How useful do you find these treatments/interventions?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable
13. **Developmental relationship-based treatment**: Also referred to as the Denver Model, DIR (Developmental, Individual Differences, Relationship), Floortime, Relationship Development Intervention. Involves a combination of procedures that are based on developmental theory and emphasize the importance of building social relationships.

   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)

   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable

   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

14. **Exposure package**: Requires that the individual with ASD increasingly face anxiety-provoking situations while preventing the use of maladaptive strategies used in the past under these conditions.

   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)

   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

15. Imitation-based Interaction: Relies on adults imitating the actions of a child.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

16. Initiation training: Involves directly teaching individuals with ASD to initiate interactions with their peers.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

17. **Peer-mediated instructional arrangement** - Also known as peer tutoring. Involves targeting academic skills by involving same-aged peers in the learning process.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

18. **Reductive package** - Relies on strategies designed to reduce problem behaviors in the absence of increasing alternative appropriate behaviors (i.e., water mist, behavior chain interruption (without attempting to increase an appropriate behavior), protective equipment, and ammonia).
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
c. How useful do you find these treatments/interventions?
   o Not Useful
   o A Little Useful
   o Moderately Useful
   o Very Useful
   o Not applicable

19. **Scripting** - Involves developing a verbal and/or written script about a specific skill or situation which serves as a model for the child with ASD.
   a. Have you ever used these treatments/interventions?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
   
   b. How competent are you in using these treatments/interventions?
      o Not Competent
      o A Little Competent
      o Moderately Competent
      o Very Competent
      o Not applicable
   
   c. How useful do you find these treatments/interventions?
      o Not Useful
      o A Little Useful
      o Moderately Useful
      o Very Useful
      o Not applicable

20. **Social communication intervention** - Also referred to as social pragmatic interventions. Involves targeting some combination of social communication impairments such as pragmatic communication skills, and the inability to successfully read social situations.
   a. Have you ever used these treatments/interventions?
      o Never (0% of the time)
      o Sometimes (1-50% of the time)
      o Often (51-99% of the time)
      o Always (100% of the time)
b. How competent are you in using these treatments/interventions?
   - Not Competent
   - A Little Competent
   - Moderately Competent
   - Very Competent
   - Not applicable

c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

21. Social skills package
   - Seeks to build social interaction skills in children with ASD by targeting basic responses (e.g., eye contact, name response) to complex social skills (e.g., how to initiate or maintain a conversation).
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)

b. How competent are you in using these treatments/interventions?
   - Not Competent
   - A Little Competent
   - Moderately Competent
   - Very Competent
   - Not applicable

c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable
22. Structured teaching—Also referred to as TEACCH (Treatment and Education of Autistic and related Communication-handicapped Children). Involves a combination of procedures that rely heavily on the physical organization of a setting, predictable schedules, and individualized use of teaching methods.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

23. Technology-based treatment—Requires the presentation of instructional materials using the medium of computers or related technologies (i.e., Alpha Program, Delta Messages, the Emotion Trainer Computer Program, pager, robot, or a PDA (Personal Digital Assistant).
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable

24. **Theory of mind training**: Designed to teach individuals with ASD to recognize and identify mental states (i.e., a person’s thoughts, beliefs, intentions, desires and emotions) in oneself or in others and to be able to take the perspective of another person in order to predict their actions.
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
   b. How competent are you in using these treatments/interventions?
      - Not Competent
      - A Little Competent
      - Moderately Competent
      - Very Competent
      - Not applicable
   c. How useful do you find these treatments/interventions?
      - Not Useful
      - A Little Useful
      - Moderately Useful
      - Very Useful
      - Not applicable

25. **Academic interventions**: Involves the use of traditional teaching methods to improve academic performance (i.e., answering pre-reading questions, completing cloze sentences, handwriting training).
   a. Have you ever used these treatments/interventions?
      - Never (0% of the time)
      - Sometimes (1-50% of the time)
      - Often (51-99% of the time)
      - Always (100% of the time)
b. How competent are you in using these treatments/interventions?
   - Not Competent
   - A Little Competent
   - Moderately Competent
   - Very Competent
   - Not applicable

c. How useful do you find these treatments/interventions?
   - Not Useful
   - A Little Useful
   - Moderately Useful
   - Very Useful
   - Not applicable
F. Other
For this section, please check you answers (for questions 1 and 2) and write in your responses (for questions 3-5).

1. If you provide social skills or social pragmatics instruction, do you: (check all that apply)
   □ provide the instruction by yourself
   □ co-teach the social skills or social pragmatics group with: ___________________
   (please indicate with whom you co-teach, for example, speech/language pathologist, etc.)

2. If you provide social skills or social pragmatics instruction, have you ever used a specific curriculum?
   ○ No
   ○ Yes (please specify)

3. Overall, how competent do you feel in working in any capacity with students with ASD, their families, and staff?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. In what particular area(s) do you need more training regarding students with ASD, their families, and staff?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

5. Please provide any additional comments (optional).
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

Thank you!!
Thank you for participating!

Remember: If you would like to participate in a drawing to receive a $10.00 gift card to Amazon.com, please send an email to shsmall@mail.usf.edu and in the subject line write "Survey Completed."
Appendix D: Letter to Request Participation in Study

Dear School Psychologist:

There is an increase in the number of youth diagnosed with autism spectrum disorders (ASD) as well as an increase of placements of these students in the mainstream setting. Therefore, it seems plausible that school psychologists are involved in working with these students as part of the services provided to educational systems and families, whether it be case finding and screening, assessment, consultation, and/or treatment/intervention. However, very little empirical evidence has investigated school psychologists' knowledge, training, and roles and responsibilities related to students with ASD and consequently, a survey has been developed to investigate this topic.

The survey takes 15-20 minutes to complete and your responses are anonymous. As an incentive, I am offering a drawing to five randomly selected participants to each receive a $10.00 gift card to Amazon.com. Thank you for your time and consideration. I hope that you participate in my survey! However, if you do not work directly with youth, you do not need to complete this survey.

Please contact the following link for more information and access to my survey:
http://www.surveymonkey.com/s/stacey

Sincerely,
Stacey Small, Ed.S., NCSP
School Psychology Doctoral Student
University of South Florida
shsmall@mail.usf.edu
Appendix E: First Follow-Up Contact

Dear School Psychologist,

About 10 days ago you should have received an email requesting your participation in a survey of school psychologists’ knowledge, training, and roles and responsibilities with regards to students with autism spectrum disorders (ASD). If you have already completed the survey, thank you very much!! Please disregard this message. If you have not completed the survey, please consider taking 15-20 minutes to complete it.

As an incentive, I am offering a drawing to five randomly selected participants to each receive a $10.00 gift card to Amazon.com

Thank you for your time and consideration. I hope that you participate in my survey!

Please contact the following link for more information and access to my survey.
http://www.surveymonkey.com/s/stacey

Sincerely,
Stacey Small, Ed.S., NCSP
School Psychology Doctoral Student
University of South Florida
shsmall@mail.usf.edu
Appendix F: Second Follow-Up Contact

Dear School Psychologist,

About 20 days ago you should have received an email requesting your participation in a survey of school psychologists’ knowledge, training, and roles and responsibilities with regards to students with autism spectrum disorders (ASD). If you have already completed the survey, thank you very much!! Please disregard this message. If you have not completed the survey, please consider taking 15-20 minutes to complete it.

As an incentive, I am offering a drawing to five randomly selected participants to each receive a $10.00 gift card to Amazon.com

Thank you for your time and consideration. I hope that you participate in my survey!

Please contact the following link for more information and access to my survey.
http://www.surveymonkey.com/s/stacey

Sincerely,
Stacey Small, Ed.S., NCSP
School Psychology Doctoral Student
University of South Florida
shsmall@mail.usf.edu