GIFTED WITH ASPERGER'S SYNDROME (TWICE-EXCEPTIONAL): THE DIFFERENCE POST-GRADUATE CERTIFICATIONS HELD MAKE ON EARLY CHILDHOOD TEACHERS' KNOWLEDGE

by

Terry Lynn Wright

Liberty University

A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

Liberty University

2016

GIFTED WITH ASPERGER'S SYNDROME (TWICE-EXCEPTIONAL): THE DIFFERENCE POST-GRADUATE CERTIFICATIONS HELD MAKE ON EARLY CHILDHOOD TEACHERS' KNOWLEDGE

by Terry Lynn Wright

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, VA

2016

APPROVED BY:

Kathie Morgan, Ph.D. Committee Chair

Reginald Kimball, Ph.D. Committee Member

Eileen Hegel, Ed.D. Committee Member

ABSTRACT

Twice-exceptional students (Gifted with Asperger's Syndrome) can be difficult for even the experienced teacher. Robust knowledge of Asperger's Syndrome and Giftedness prepares teachers to meet the needs of these often-unidentified students. The purpose of this cross sectional survey design research was to study how post-graduate certifications held (dependent variable) affected early childhood teacher knowledge (independent variable) of Asperger's Syndrome and Gifted/talented learner characteristics. From two large suburban school districts and small, private schools in Central Texas, 242 early childhood teachers (pre-k-second grade) participated in three online researcher created instruments entitled Teacher Knowledge of Asperger Characteristics, Teacher Knowledge of Gifted and Talented Characteristics, and a demographic survey. Using information from the survey, the researcher sorted teachers into convenience groups: Texas Generalist only, Texas Gifted/talented certification, and Texas Special Education certification. Using a Welch one-way ANOVA (analysis of variance), a positive and significant difference was determined between post-graduate certifications held and the early childhood teachers' knowledge of Asperger's Syndrome and Gifted/talented existing in the Twice-exceptional learner. Additional research is needed to examine what type and amount of training will equip early childhood teachers in inclusion classrooms with the knowledge to identify and meet the needs of Twice-exceptional students.

Keywords: Asperger's Syndrome, Gifted, Twice-exceptional, teacher training, Autism, early childhood, professional development, certification

Dedication

This dissertation work is dedicated first to my best friend and husband, William Wright. His help and encouragement throughout this journey has just been amazing! Secondly, I would like to recognize the instrumental contributions of my parents, Dorris and Jean Lovell, for picking up the pieces that fell through the cracks at home while I completed this labor of love.

Next, I would also like to recognize the leadership team at Covenant Community Schools for their love and encouragement that never stopped all way through to the end. Thank you for shouldering some of the load so I could finish the task God put before me.

Finally, this dissertation work is dedicated to the students at Covenant Christian Academy. Thank you for your support, love, and many high fives. You are the future. May you go on to do great things for God!

Thank you, God, for life, breath, and hope. I pray that the completion of this task will open doors through which the gospel may be shared and others will come to know you as I do.

Acknowledgements

I would like to thank my chair and committee for the time they spent with me on this journey. Their help and encouragement was immeasurable. Dr. Morgan met with me in person on two occasions. It was a blessing to have a quality research consultant such as Dr. Kimball on my committee to provide the input needed to develop this study. I would also like to thank Dr. Hegel, for the hours spent pouring over my manuscript. The attention to detail, high standards, and words of encouragement had a large impact on the outcome of this work.

Table of Contents

List of Tables

List of Abbreviations

Attention Deficit Disorder – ADD

Attention Deficit Hyperactivity Disorder – ADHD

American Psychological Association – APA

Asperger's Syndrome – AS, ASD

Association for the Gifted and talented - ASGT

Autism Spectrum Disorder – ASD

Diagnostic and Statistical Manual of Mental Disorders – DSM-V

English as a Second Language – ESL

Gifted/talented – GT, AG

Individual Education Plan – IEP

Learning Disabled – LD

National Association for the Gifted and Talented – NAGC

Nevada Partnership for Inclusive Education – NPIE

Professional Development – PD

Reactive Attachment Disorder – RADS

Response to Intervention - RTI

CHAPTER ONE: INTRODUCTION

The purpose of this study was to determine if post-graduate certifications held in Gifted/talented and/or Special Education made a difference in the early childhood teacher's knowledge of Asperger's Syndrome (AS), Gifted/talented (GT), or Gifted/talented with Asperger's Syndrome co-existing in the Twice-exceptional learner (IIE). For the purposes of this study, Twice-exceptional students were those diagnosed with (AS) and (GT). It is not uncommon for early childhood teachers to have unidentified Asperger or Gifted students in the early childhood classrooms. IIE students can challenge even an experienced teacher. A broad understanding of the characteristics of (AS) and (GT) will allow the early childhood teacher to more adequately identify and meet the needs of these challenging students.

In order to optimize the early childhood teacher's ability to serve these IIE learners (often before they are officially diagnosed) district and campus leadership should ensure that the teachers of inclusion classrooms have a working knowledge of the common characteristics of Gifted and Asperger's Syndrome as well as the IIE learner. Although considered a somewhat small population (prevalence of AS is 1:68 or less than 10 percent of the population (Centers for Disease Control and Prevention [CDC], 2015). Gifted prevalence is less than 10% of the general population (Gifted & LD, 2016). The amount of disruption that these students may create when their needs go unmet warrants further investigation. The Texas Education Agency Response to Intervention (RTI) plan in local schools (Texas Education Agency [TEA], 2016) often delays the necessary testing and subsequent diagnosis (Reynolds & Shaywitz, 2009) that allows teachers to

search for appropriate strategies to reach these students, again, justifying the need for further research.

Background

Asperger's Syndrome (AS) is a pervasive developmental disorder. Some consider AS part of a spectrum of Autism disorders termed Autism Spectrum Disorders (ASD) (Amend, Schuler, Beaver-Gavin, & Beights, 2009; Atwood & Gray, 2016). Long thought to be high functioning Autism, some say that it is a disorder separate from Autism (Bianco, Carothers, & Smiley, 2009; Campanelli, 2014; Gallagher & Gallagher, 2002). Children with Asperger's Syndrome have average to above average intelligence (Bianco, 2009; Gallagher & Gallagher, 2002; Kowalski, 2010). AS is primarily a disorder in social interactions. People with AS tend to be oblivious to social conventions (Attwood, 2007; Lovesky, 2004;). Professionals see three general impairments in AS: social interaction, communication and imagination, and a narrow restricted interest (Bashe & Kirby, 2005). Problem behaviors that may occur in AS children include: Lack of understanding of personal space; problematic melt-downs; understanding social cues and conversational language styles; mind blindness (great difficulty understanding the other person's perspective or thinking); inflexible adherence to routines; persistent preoccupation with objects or narrowly focused topic of interest (CDC, 2015; Kowalski, 2010).

Teachers often experience challenges in dealing with gifted and talented (GT) children. GT children may exhibit socio-emotional problems that include difficulty with social relationships (Neihart, 2004). Research has reported problem behaviors that may include isolation from peers, pressures to conform, resistance towards authority, refusal

to complete routine and repetitious work, anxiety, and depression, frustration with everyday life; difficulty accepting criticism; excessive competitiveness or poor study habits (Campanelli, 2014; Delisle, 1992; Diezmann & Watters, 2006).

Students with AS and those identified as GT show a startling number of common characteristics (Campanelli, 2014; National Education Agency, 2012; Neihart, 2004). This commonality of characteristics manifests itself in the challenges presented in serving unidentified students with AS or GT, or those who are Twice-exceptional (IIE). A good understanding of this complexity will allow teachers to provide meaningful feedback to the team of professionals working with AS/GT students.

This understanding will also enable teachers to research best practices and design interventions to facilitate the success of these young learners. In addition, a greater degree of knowledge will aid teachers in identifying those who are IIE. It is important to ensure that the Gifted child with the additional AS characteristics will not get overlooked, thus facilitating the early childhood teacher's ability to reach the needs of all learners.

Problem Statement

One may not identify Gifted children with Asperger's Syndrome because behaviors are labeled inaccurately (Neihart, 2004). The prevalence rate for Twice-exceptional (Asperger's and Gifted) is unknown but with 1:68 children being diagnosed with AS (CDC, 2015), it is easy to see the importance of informing early childhood teachers about the common characteristics of both.

Many behaviors are confounded with the age of the students and acting out behaviors that one may see in the requisite age groups (Neihart, 2002). These behaviors can include temper tantrums, meltdowns, or running away (Attwood, 2007; Atwood &

Gray, 2016). However, when the two co-exist (IIE) it is even more challenging. Teachers in the early childhood setting need to know and recognize the characteristics of Asperger's Syndrome and Gifted/talented in order to focus on appropriate strategies for meeting the needs of these Twice-exceptional learners (Holdheide & Reschly, 2008).

Early childhood teachers across our nation face multiple challenges in the classroom. In many areas, budget cuts have eliminated classroom aides, inflated classroom teacher to pupil ratios (Center for Public Education, 2016), and reduced recess to less than twenty minutes a day (Stupiansky & Stupiansky, 2009). A recent quote by the National Education Association stated,

> America's public schools strive to educate all children in an inclusive environment. Consequently, children of varying skill levels all learn together in today's classrooms. While there are individual children with distinctive or exceptional learning needs in every classroom, some youngsters show a pattern of extreme strengths combined with areas of significant difficulty. (National Education Association, 2012)

"Individuals with AD [also abbreviation for Asperger's Syndrome] may not always be referred during the early childhood years. The subtleties of the signs or the demonstration of symptoms later in life can confuse the early recognition of AD" (Dahle & Gargiulo, 2004). Young learners with AS may exhibit behavior problems such as compulsivity or hyperactivity. They may throw tantrums, have aggressive tendencies, or routinely hit other children. The confusing issue is that these behaviors often occur without provocation and may include touching others in inappropriate ways (Neihart, 2004).

Teachers experience challenges in dealing with GT children. Gifted children may have problems in social relationships, be resistant to authority, refuse to conform, and may have greater difficulty accepting criticism. They may suffer from boredom, excessive competitiveness, isolation from peers, and experience higher incidences of anxiety and depression than their non-Gifted peers (Delisle, 1992; Diezmann, 2006). Teachers in the early childhood setting need a good knowledge base of the characteristics of Asperger's Syndrome, Gifted/talented, and Twice-exceptional (IIE) learner characteristics in order to facilitate appropriate learner strategies. The problem is teachers in the early childhood classroom seem to lack sufficient background and knowledge of AS, and GT, or IIE characteristics.

Purpose Statement

The purpose of this cross sectional research design was to test the difference teacher certifications held (independent variables) had on the early childhood teacher's knowledge (dependent variable) of Asperger's (Autism) and Gifted/talented learner characteristics. The study looked at the requisite knowledge that early childhood teachers need to identify and meet the needs of a small, but impactful sub-set of learners. Currently 1:68 (Centers for Disease Control and Prevention, 2015) learners will be identified with ASD. In addition, with the prevalence of Gifted at ten percent or less, the study's emphasis may seem very small. However, the presence of just one learner with ASD may affect the whole grade level. The researcher's concern was how practitioners might overlook the learner who is also Gifted/talented. These students might not receive GT services at all (Bartak & Fry, 2004).

Twice-exceptional learners present a unique challenge to the traditional model of schooling. IIE learners must live in two worlds, "…one which champions their strengths and another which often misunderstands and fears their unusual complexities, visage, and perplexing inconsistencies" (Rutter & Schopler, 1987, p. 465). Temple Grandin (1995) wrote, "Gifted individuals with autism have sometimes been expected to learn in classes with individuals who are not prepared to deal with their behaviors and non-traditional social reactions" (p. 26). Silverman (1993) reported, "in researching individuals with disabilities, he believes the strengths and weaknesses often mask each other." (p. 542).

Our nation, to this date, has done a shameful job of identifying and improving the educational outcome for our brightest and best (Delisle, 1992). While admittedly small, this subset has the potential to change the world. Many of the world's change makers are suspected of possessing AS and Gifted characteristics. It is surmised that some of the world's brightest thinkers may have had Asperger's Syndrome. Among those we find Albert Einstein, Sir Alfred Joseph Hitchcock, Sir Isaac Newton, Jane Austen, and many others (Baum, 2016; Grandin, 1995; Rimland, 1995). We must strive to identify these young people to ensure they attain their God-given potential. This study used a sample composed of early childhood teachers in grades pre-k through second grade at elementary campuses in two large suburban school districts and several small, private Christian schools.

The outcome of the study informed the body of knowledge on the early childhood teacher's ability to identify Asperger Syndrome, Gifted/talented, and Twice-exceptional learner characteristics in the early childhood classroom. Additionally, the study's results informed those responsible for professional development within the school district

regarding the need for additional training. The time has come to ensure that early childhood teachers have the knowledge they need to serve all learners in today's pervasively inclusive environment.

Significance of the Study

This study informed the body of knowledge on the early childhood teacher's ability to identify Asperger Syndrome, Gifted/talented, and Twice-exceptional learner characteristics in the early childhood classroom. Researchers have studied and reported on the characteristics of Asperger children and those who are Gifted/talented (Attwood, 2007; Bashe & Kirby, 2005; Dahle, 2004; Gallagher & Gallagher, 2016). It is only in recent years that the issue of Twice-exceptionality has received renewed attention (Campanelli & Ericson, 2014; Gallagher & Gallagher, 2016).

The researcher looked at the amount of knowledge that teachers had regarding Aspergers and Gifted/talented characteristics of learners in the early childhood setting. The study compared teacher knowledge scores with certifications held in three categories: Generalist, Gifted/talented, and Special Education as measured by the researcher's three-part Teacher Knowledge of Exceptional Characteristics in Early Childhood Survey: Teacher Knowledge of Asperger Characteristics (TKAC), Teacher Knowledge of Gifted/talented Characteristics (TKGTC), and a demographic survey. By combining the two scores (TKAC and TKGTC), a score was created for Twice-exceptional (IIE).

School supervisory personnel need to understand the high demands placed on the teachers in the early childhood setting (Ashburner, 2010; Dahle, 2004). Infomed teachers are better prepared to serve high-need students (Auger, 2015). Therefore, it is profitable

to measure what teachers know about recognizing these learners (sometimes before they are identified) in order to seek strategies and resources to manage behaviors. Principals need to know and understand how best to serve these challenging learners. At least part of the answer is facilitating a strong match between the highly qualified knowledgable teacher and the young IIE learner.

Research Question

Understanding how teacher knowledge of Asperger's (Autism) and Gifted/talented co-existing in the Twice-exceptional learner affects the early childhood classroom environment might yield positive results for principals, teachers, learners, and their families. The study looked at the requisite knowledge that early childhood teachers needed to identify and meet the needs of a small, but impactful sub-set of learners. The researcher proposed the following question:

RQ1: Is there a positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics?

Null Hypothesis

The null hypothesis for this study is:

$H_0$1: There is no positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics.

Definitions

1. *Asperger's Syndrome* - "Asperger's syndrome is a developmental disorder that affects a person's ability to socialize and communicate effectively with others.

Children with Asperger's syndrome typically exhibit social awkwardness and an all-absorbing interest in specific topics" (Mayo Clinic, 2016, p. 1).

2. *Asynchrony*- Asynchrony is the term used to describe the mismatch between cognitive, emotional, and physical development of Gifted individuals (National Association for Gifted Children [NAGC], 2016).
3. *Autism Spectrum Disorders*- A serious neurodevelopmental disorder affecting a child's ability to communicate and relate to others (Compart, 2002).
4. *Gifted and Talented* - "Children and youth with outstanding talent who perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment" (United States Department of Education [USDE], 1983).
5. *Impaired Executive Function*- significant difficulties in the following areas: planning, judgement, delaying gratification, self-monitoring, and impulse control (Webb & Deitrich, 2005).
6. *Inclusion* - Inclusive education means that students attend and are welcomed by their neighborhood schools in age-appropriate, regular classes and are supported to learn, contribute, and participate in all aspects of the life of the school. Delivery is accomplished by following the core curriculum and utilizing general class activities (Halvorsen & Neary, 2001).
7. *Neurotypical* - The difference between the way someone with Asperger's Syndrome thinks and the "normal" thinker as defined by society (Auger, 2015).

8. *Professional development* - "Professional development includes formal experiences (attending workshops and professional meetings, mentoring, etc.) and informal experiences (such as reading professional publications, watching television documentaries related to an academic discipline, etc.)" (Ganser, 2000, p. 7).
9. *Response to Intervention* – "Response to intervention (RTI) is a multi-tier approach to the early identification and support of students with learning and behavior needs" (RTI Network, 2016).
10. *Theory of the Mind (mind blindness)*- **"**The ability to make inferences about what other people believe to be the case in a given situation allows one to predict what they will do" (Baron-Cohen, Leslie & Frith, 1985, p. 37).
11. *Twice-exceptional* – "Learning disabilities are present in extremely Gifted people who have above average abilities in academic areas. These people are often referred to as "Twice-exceptional" because … Giftedness can pose additional challenges beyond LD" (Gifted & LD, 2016, para. 4).

CHAPTER TWO: LITERATURE REVIEW

Introduction

In schools, while teachers may be willing to identify Twice-exceptional learners, they do not have the background or experience to do so. Administrators and teachers need to know and recognize the characteristics of Gifted/talented and Asperger's Syndrome. Informed teachers are more likely to provide an environment that fosters the success of these IIE learners. The case study below provides an example and context for the literature review to follow.

> Martha welcomes Johnny into her kindergarten class. Immediately she notices that he is preoccupied and gravitates to the learning station that focuses on transportation. "Good morning, Johnny!" Martha says. Johnny does not reply but rather grabs the train and track and goes to work building a train layout. Martha lets Johnny know this is not the time for working in stations, but rather it is circle time. Johnny begins to wail and cry and loses all sense of self-control. Martha's mouth is hanging open; not sure what she did to cause such an adverse reaction. Martha finally gets Johnny calmed down after fifteen minutes of utter chaos. She thinks to herself, "Wow! This little guy is really a spoiled brat. He hasn't ever had to do what he is told!"
>
> As the day progresses, Martha notices that Johnny has taken the colored unifix cubes and arranged them into an intricate pattern representative of a much older student's work. She also notices during calendar time that Johnny understands the passage of time, predicts what days come after others, and generally demonstrates a very high capacity for math concepts. She is amazed and wonders

> where he went to preschool. The first of day of school with little Johnny is complex as he seems both unprepared for kindergarten and ready for second grade all at once. Martha has just encountered her first Twice-exceptional student. Johnny has Asperger's Syndrome and is gifted in math. (Wright, 2007)

Twice-exceptional is an acceptable term for students diagnosed with Asperger's Syndrome (ASD) and Gifted (GT). Early childhood teachers need information about the characteristics of Twice-exceptional students and the particular challenges they may present in the many areas of school life. An extensive toolbox of strategies and interventions will allow teachers to design unique accommodations for this special set of learners.

The diagnosis of Asperger's Syndrome (part of the Autism Spectrum Disorder group) is part of the fastest growing developmental disability in America (CDC, 2014). In California alone, the estimated rate of growth in ASD was 1,148% from 1987 to 2007 (Cavagnaro, 2007). Across the nation, the prevalence rate is 11.3 in 1,000 among 8-year-old children in the United States, which is estimated to be 1 in 68 births (USDE, 2016). In the 2009-10 school year, 8 in 1,000 Kindergarten-twelfth grade students were classified as being on the autism spectrum (Auger, 2015). A question arises whether ASD is under- identified in schools. The seeming discrepancy between national rates and the reported lower rates of those who public schools are actually serving (Safran, 2008) would seem (Auger, 2015) to lend credence to the suspicion that those with ASD are not receiving the necessary services.

According to the Government Accounting Office Report on Autism 2007, early diagnosis and intervention can reduce the cost of lifelong care by as much as two thirds.

With the estimated annual cost of treatment and intervention of $60 billion dollars (Auger, 2015), it is easy to see the importance of early identification. A piece of that puzzle is making sure that teachers have a thorough knowledge of the characteristics of Asperger's Syndrome and Giftedness.

Research has shown that students with ASD (other labels in older literature use AS) and those identified as Gifted show a startling number of common characteristics: verbal fluency or precocity, a fascination with number and/or have excellent memories, may have a strong focus on one topic, may bother the people around them with constant talk about their current passion, may have hypersensitivity to sensory stimuli, and both experience asynchronous development (Attwood, 2007; Auger, 2015; Bashe & Kirby, 2005; Neihart, 2000). This commonality of characteristics manifests itself in the challenges presented in correctly identifying students with ASD or Gifted, or those who have both. Experts recommend that the classroom teacher team with other professionals regarding the appropriate strategies to meet the challenging needs of the IIE learner (Attwood, 2007). However, especially in the early grades, these young learners may be unidentified thereby confounding the teacher's ability to research appropriate strategies (Amend, 2003). Strategies that work well with IIE students do not necessarily work with general education students. The differences may create challenges with the current emphasis on full inclusion (Bianco, 2009). An example of this difference is the lack of emphasis on direct instruction. Trends in elementary education have moved away from direct instruction towards more collaborative group work, with some districts strongly frowning on direct instruction (Kohn, 1999). A review of literature reveals that ASD students in particular require large amounts of direct instruction to master abstract

concepts (Horn, 2009; Neihart, 2004). Many Twice-exceptional learners need accommodations in order to be successful. Examples are reduced assignment loads, extra time to complete tasks, and the need for visual cues to assist with transitions (Campanelli & Ericson, 2014).

Although a belief that a diagnosis for Asperger's Syndrome includes 1 in 68 children (CDC, 2015) in the U. S., current research on strategies that work for ASD students is limited. Strategies that are thought to work are: breaking up long assignments into manageable parts, giving adequate notice that a routine is changing, providing strong support for sensory issues, and a heightened awareness that the student does not understand what others are thinking (Amend, Schuler, Beaver-Gavin, & Beghts, 2009; Attwood, 2007, 2016; Konza, 2005). Additional research will help teachers fully reach these students.

Moreover, when one adds the additional layer of Giftedness, the research on these Twice-exceptional students and what works for them in the classroom is only just now working its way into educational circles. Extensive research turned up only a few good resources about how to accommodate these Twice-exceptional students. One of the most complete resources was from the Ohio Department of Education: Twice-exceptional Guide: Preparing Ohio Schools to Close the Achievement Gap for Gifted Students with Disabilities (Campanelli & Ericson, 2014).

The researcher noted positive success using social stories and role-play to assist ASD students with managing their emotions. Figuring out what works with IIE learners poses multiple challenges. Each learner is different and what works differs from learner to learner. However, one can speculate that strategies that work for ASD or GT may

work for the IIE students. More research is needed to glean information from teachers and others out in the field. The best information available suggests that teaching professionals need to adopt a whole child approach and should work collaboratively with the child's learning team as well as the family (Campanelli & Ericson, 2014).

Working with a focus on the strengths of the learner, the early childhood teacher serves on the forefront and often fights to meet the needs of children who may be unidentified. Poor pre-service training may result in teachers feeling unsupported and frustrated in the presence of inclusion and the Response to Intervention model (Nevada Partnership for Inclusive Education, 2015; Reynolds & Shaywitz, 2009). These kinds of mandates collide to place the ill-prepared teacher in the position of creating successful learners out of twenty-two four or five-year-olds.

Administrators need to recognize the need for proper training and support for the early childhood teaching professional. The starting point for administrators is a survey of the general education teacher's knowledge base regarding ASD, Giftedness, and the IIE learner characteristics. Armed with knowledge, high quality professional development will allow teachers to serve the IIE students with more positive results.

Theoretical Framework

The theoretical framework for this study is rooted in the Age and Stage Theory and Adult Learning Theory (Kearsley, 2015; Slavin, 1988). School districts need to provide quality professional development. One of the ways this can help teachers is by building a strong base of knowledge in areas neglected in their pre-service training. In the Age and Stage Theory, (application of Piagetian theory) adults continue to learn after

completing formal classroom training. Learning from their experiences allows teachers to grow and overcome challenges (Slavin, 1988).

Adult Learning Theory (Knowles, 1970) emphasizes the importance of good professional development. Knowles highlights the idea that adults learn best when they see a need for what is being offered. The first principle, Involved Adult Learners, (Knowles, 1970 as cited in Kearsley, 2015) simply means active involvement versus passive. Adults need to be actively involved. The second principle, Adult Learners' Experience, states that all past experience provides a backdrop (including mistakes) for current learning. The third principle, Relevance and Impact to Learners' Lives, is an acknowledgement that most adult learners are interested in learning about what impacts their profession in an immediate way. Finally, the fourth principle of Knowles' theory gives insight into the delivery of effective instruction and is problem centered. Teachers are most likely to engage in professional development that is problem centered rather than content centered (Kearsley, 2015). Teachers are able to provide a strong framework of successful strategies for meeting the needs of IIE learners when given the appropriate resources. Passing the required state tests for Gifted/talented certification and/or Special Education certification would provide necessary extensive professional development.

Asperger's Syndrome

Asperger's Syndrome, named after Hans Asperger, was among the first to describe a defining set of characteristics for a subset of the population that had normal intelligence, well-developed language skills, but exhibited significant difficulties in the use of pragmatic language (Asperger, 1944, 1991). He observed Autism-like behaviors

and difficulties with social and communication skills in boys who had normal intelligence and language development. It was not until 1994 that Asperger's Syndrome was added to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 2000). At this point the American Psychological Association (APA) separated Asperger's Syndrome from the other forms of autism. Asperger's Syndrome (AS) is a pervasive developmental disorder. Long thought to be high functioning Autism, some say that it is a disorder separate from Autism (Attwood, 2002, 2007; Gallagher & Gallagher, 2002).

In May of 2013, the result of much debate led to the publication of the DSM-V (American Psychiatric Association, 2014). The separate classification for Asperger's Syndrome was removed and has been replaced with the larger umbrella, ASD. The removal of the separate classification may or may not affect the way insurance companies cover the needs of these children.

Another aspect that has been implemented is the addition of a severity label. The severity labels are based on the amount of support the child requires with respect to the difficulties in social communication, intense restricted interest, and the degree of repetitive movement (Compart, 2002). In the past, a child with Asperger's might carry multiple labels and experience a changed diagnosis from one doctor's interpretation of the required symptomology to the next. The new criteria are more restrictive and may cause some who are high functioning to lose the ASD designation. We do not know the affect these changes will have on the state, the educational community, and in the medical community with regards to providing needed services

"Children with Asperger's Syndrome have average to above average intelligence" (Gallagher & Gallagher, 2002, p. 1). ASD is primarily a disorder in social interactions. People with ASD tend to be oblivious to social conventions (Attwood, 2007). Three general impairments are seen in ASD: social interaction, communication and imagination, and a narrow restricted interest (Bashe & Kirby, 2005). A look at the diagnostic criteria from the DSM-IV-R will give a good overview of what the classic Asperger diagnosis would look like. Six primary criteria were considered essential with the first one being a marked impairment in social interaction:

- The marked impairment must include at least two of the following: Repetitive and stereotyped patterns of behavior, interests, and activities; multiple nonverbal behaviors, such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; failure to develop peer relationships appropriate to developmental level; a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest to other people); or finally, a lack of social or emotional reciprocity.
- The second primary criteria was restricted interest as manifested by at least one of the following: Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal in intensity or focus; apparently inflexible adherence to specific, nonfunctional routines or rituals; or stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements).

- The third primary criterion was a clinically significant impairment in social, occupational, or other important areas of functioning.
- Next, was a finding of no clinically significant general delay (e.g., single words used by age two years, communicative phrases used by age three years) in language acquisition.
- Fifth, no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behavior (other than social interaction), and curiosity and the environment in childhood. In addition, criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia. (DSMV-IV, 2000, p. 45-47, p. 198).

These criteria are included in this review because unidentified cases of ASD may be present in the general student population. In the early childhood environment, one may encounter unidentified young students because they have not previously been in a formal education setting. It is important that teachers are knowledgeable about ASD to improve access to Gifted/talented programs.

Two issues that may be confounded in the ASD child are impaired Executive Functioning and Theory of Mind (also known as mind-blindness). Impaired Executive Functioning presents as difficulties organizing, planning, and/or focusing attention on related tasks. The Theory of the Mind relates to, "…one's ability to perceive how others think and feel, and how that relates to oneself" (Autism Speaks, 2015, p. 1). Impaired Executive Function varies by degree and type across the individuals with ASD (Webb & Deitrich, 2005). Some may have trouble focusing on the big picture, while struggling

with immediate details. Others may not sequence easily as evidenced by reading comprehension challenges. Trouble organizing thoughts and actions may extend to poor impulse control or poor self-regulation (Attwood, 2007).

Additionally, children with ASD tend to be more immature than their chronological age peers. On average, these children will consistently display an emotional maturity level three years behind their chronological age (Attwood & Gray, 2010). Students with ASD might also present significant challenges in the classroom and other areas of the school environment due to the presence of significant sensory sensitivity issues (Rogers, 2007). Sensory issues are particularly challenging in physical education classes and the school's cafeteria (Attwood, 2007). Sensory sensitivity may present as a strong response to loud noise. Students with ASD may also find PE and school lunch time overstimulating due to a combination of the noise and general confusion (Atwood & Gray, 2016).

Ashburner, Ziviani, and Rodgers point out the importance of understanding, recognizing, and addressing the varied needs of those students with ASD. Their research warns that students with ASD are at increased risk for a range of problems. Those problems may include social deficits, anxiety, aggression, peer victimization, and underachievement (Ashburner, Ziviani, & Rodger, 2010).

Gifted and Talented

The history of the Gifted/talented movement in the United States began with a seminal study by Lewis Terman of Stanford University. Another pioneer in the field of Gifted education was Leta Hollingsworth. Hollingsworth and Terman (1942) were among the first to research topics such as intellect as an inheritable trait and what

constitutes a normal, sub-normal, or above-normal intelligence. Terman (1947) modified an intelligence scale promoted by Alfred Binet and created a test still in use today widely known as the Stanford-Benet Test of Intelligence. Together, they developed instruments to measure all three (Holllingsworth & Terman as cited in Gallagher, 1994).

One of the results of the Soviet launching of the Sputnik was the immediate shift and focus in the United States on identifying the best and brightest learners in an effort to increase competition. The swing in public attention would inadvertently lead to the insertion of the Federal government in the implementation and definition of Gifted and talented (Gallagher, 1994). The National Defense Education Act (1958) supplied one billion dollars to augment science, math, and technology in public education (Urban, 2010). The Gifted students identified by IQ tests at 130 or higher became the happy recipients of improved and often differentiated instruction.

The Marland Report commissioned by the United States Department of Education in 1969, urged adoption of a definition for Gifted/talented. This was the first official inclusion of other talents (highly creative, leadership ability, visual and performing arts, psychomotor skills) in addition to exclusively looking at the IQ scores of Gifted/talented candidates (Harrington, Harrington, & Karns, 1991). The 1983 report of an 18-month-long study known as *A Nation at Risk* (USDE, 1983), once again raised the alarm that the United States education system was not keeping up with the rest of the world. The implication for Gifted/talented programs was a recommendation that the Federal government create standards for the identification and servicing of the nation's best and brightest students. In 1988, Congress passed the Jacob Javits Gifted and Talented Students Education Act (NAGC, 2016). This act would provide grant funding to research

best practices for Gifted education, provide college funding for under-represented populations, and grant awards to colleges and school districts that develop innovative program implementation.

National Excellence: A Case for Developing America's Talent (Ross, 1993) brought new perspective to education for the Gifted. This report served to highlight a quiet crisis existing in the current educational climate. Some of the highlights of the report were that the United States was not using the talent of its brightest students fully. The report described the result that our Gifted students lag behind similar students in other countries. Another section of the report stated that Gifted students do not receive equal attention in the classroom. Often left to their own devices, Gifted students drift through the day. Moreover, alarmingly, the report states that in the elementary classrooms gifted students have already mastered much of the year's curriculum before the year ever starts. The result is a diminished population that views learning as unnecessary. Recommendations from the report include making sure that the curriculum is rigorous for all students, that all students are afforded equally the opportunity to optimize their education, that efforts are extended at the community level to provide rich and challenging experiences, and finally, that teachers receive extensive and ongoing training in the education of the Gifted and talented. The report makes it quite clear that Gifted education needs to undergo a massive transformation. Unfortunately, these reports, and others like it, have prompted little to no change at the national, state, or local levels.

The No Child Left Behind Act of 2001 (United States Congress, 2001) initiative highlighted the disparities in the United States educational system between best practices

and what was actually being done in U. S. schools. This initiative would fuel a 2004 report by the John Templeton Foundation (John Templeton Foundation, 2004) supporting the NCLB research and launch an international center for Gifted/talented research at the University of Iowa. Farkas and Duffet (members of the John Templeton Foundation) report that although the lowest tier of students shows a marked improvement in reading and math scores, the gains in the upper tiers are non-existent. Students in the lowest 10% made dramatic gains. These gains were as much as sixteen points in reading tests for fourth graders and thirteen points for eighth graders in math (FDR Research Group, 2008).

Another significant finding in the Farkas study (2008) was the teacher's frustration with the pressure to focus on the students in the bottom tier, with full knowledge and recognition that the brighter and Gifted student's potential was being wasted. In addition, teachers voiced tremendous concerns over the pressures felt by the school's failure rate brought about by NCLB. Teachers easily understood the problem making one wonder why our legislators could not.

Other issues in Gifted education center on defining Giftedness. These issues include no standard definition of Gifted/talented and no agreed upon standardized tests or even types of tests. Some see Giftedness only on the high end of the intelligence quotient scale, while others look for many different defining qualities such as Gardner's Multiple Intelligences (Gardner, 1993). For instance, in one school district in Central Texas early childhood teachers received rating scales that asked them to rate behaviors that the district had identified as "Gifted/talented". In addition, teachers passed sheets of paper to kindergarten students and asked the students to draw pictures based on certain themes.

An independent rater then assessed which children qualified for the next round of testing. The next round of testing was the administration of the Wechsler Intelligence Scale for Children (Pearson, 2003). Only those children who scored in the top percentage were considered for the Gifted/talented program. In a school with a high poverty/ESL (English as a Second Language) population, it was almost a certainty that bias was present and students lacking sufficient background knowledge were excluded (Wright, 2007).

Wright (2007) reports that, in contrast, another school district in Central Texas also gave early childhood teachers a rating scale for Gifted/talented identification. However, in this district parents also received a rating scale. They were asked to rate and identify behaviors in their own child.

The second school district had previously provided the early childhood staff with Gifted/talented characteristics training. This training ensured that teachers knew what to look for prior to completing the rating scales. Following the tabulation of both scales, (teacher and parent) students sat for a battery of tests. Because research supports the parent rating scale, this effort likely produced a better sampling of qualified students (McCoach, Kehle, Bray, & Siegle, 2001).

Several researchers have investigated the problems with identification in Gifted education (Robinson, 2003; Siegle, 2004; Silverman, 1992). A consensus of the research was that some children were under-estimated, norm-referenced tests were used minimally, and teachers favored students with good behavior. It was also found that teachers were reluctant to tap into parent knowledge of the child (Hodge & Kemp, 2006).

Common Characteristics Between ASD and Giftedness

Characteristics common to AS and Giftedness are: Verbal fluency or precocity (Winebrenner, 2003); excellent memories; a fascination with letters or numbers (Clark, 1992) ; memorizing factual information at an early age (Little, 2002; Atwood, 2016) ; demonstrating an absorbing interest in a specialized topic (Hodge & Kemp, 2006) ; endless questioning; and hypersensitivity to sensory stimuli (sensitivity to the way fabrics feel, food tastes, food texture, and noise) (Baum, 2016; Dabrowsi, 1967; Neihart, 2004). These Twice-exceptional students may present with sensory issues that result in sensory overload (Dabrowsi, 1967; Hyde, 2010).

From looking at these overlaps, their similarities might be confusing to parents as well as practitioners. ASD or GT may experience uneven (asynchronous) development when cognitive development is compared to social and emotional development (Altman, 1983; Little, 2002; Grandin, 2016). Gifted or Asperger's they may get heavily involved in a single object of devotion (Bianco, 2009). An example of this would be an intense interest in the Civil War that dominates the child's thinking and consumes their free time. They may wiggle and squirm, giving the impression of hyper-activity (Attwood, 2007; Horn, 2009). Gifted students may talk non-stop about their recent favorite passion and not even recognize that others are not listening; all also commonly found in Asperger's Syndrome (Atwood, 2016; Bianco, 2009). Emotionally, Asperger's and Gifted may appear identical (Neihart, 2000). In the early childhood setting, practitioners may highlight age appropriate struggles and may blow them out of proportion (Assouline, Foley, & Whitman, 2009; Winebrenner, 2003). Meltdowns are common and typically appear much more involved and intense than a temper tantrum (Amend, 2009; Atwood,

2016; Browder, 2004; Miles, B., 2005). Emotionally, those who are Gifted and Asperger's may look the same, but are different.

Students with ASD are characterized by high anxiety (Amend, 2009; Attwood, 2007; Ashburner, 2010). Gifted students may also experience high anxiety along with the other intensities that may create what appears to be hyperactivity (Horn, 2009; Little, 2002;). Challenging the status quo appears to be the norm with both ASD and Gifted students (Webb, 2000).

In addition, it is not uncommon for ASD and Gifted students to struggle with certain aspects of mathematics. Of particular note in this population, is a significant number of students who find abstract mathematical concepts challenging. These students may not have suffered academically in the area of math at the lower levels. However, the complexity and abstractness of the middle and high school math curriculums may highlight weaknesses that have been present all along (Zecker, 2016).

Another surprising commonality is poor handwriting. While the cause may be different between the ASD and Gifted student, the result can be almost illegible handwriting (Webb, 2000). One can easily see that serving the needs of the Twice-exceptional learner is difficult.

Differences Between Asperger's Syndrome and Gifted

One difference between Asperger's Syndrome and Gifted/talented lies in the area of speech. ASD children tend to be pedantic in their speech patterns whereas Gifted, children demonstrate a more fluid and seamless flow of conversation (Nipcon, Alimon, Sieck, & Stinson, 2011). Another distinction is the difference in the way they respond to disruptions in routines and schedules (Neihart, 2004). Gifted children may complain, but

generally will give-in. ASD children may have a complete meltdown over a simple change in plans (Attwood, 2007). The other difference to note is the typical eccentric GT learner is aware that others may view them as a little odd. While the ASD child is completely unaware of how others see him/her (Neihart, 2004). Amend also states that a child with Asperger's is not able to carry on a reciprocal conversation even if the topic is one they are obsessed by (Amend, 2003). Gifted students, however, can carry on a reciprocal conversation about a topic they are extremely interested in (Bianco, 2009). Gallagher also adds that ASD students are not likely to understand humor or understand how to use humor at the appropriate times (Gallagher & Gallagher, 2002).

History of Twice-Exceptional

The term Twice-exceptional broadly means children who are Gifted may also have disabilities such as attention deficit hyperactivity disorder (ADHD), a learning disability, or Asperger's Syndrome (Campanelli, 2014). Older literature (Brody, 1997; Whitmore & Maker, 1985) primarily focused on learners Twice-exceptional (Gifted with learning disabilities, physical difficulties, or sensory disabilities). Current literature also includes persons with Asperger's Syndrome, ADHD, and emotional disorders (Lovesky, 2004; Neihart, 2000; Webb, 2005).

A literature review by McCoach, et al., (2001) found that there were primarily three different types of Twice-exceptional students. First, those who are Gifted and only experience difficulties as the difficulty of academic material increases with grade level. Second, those who may have severe disabilities and excel academically in one or more areas. The learners in this group may never have their gifts identified due to an overshadowing of the disability challenges. Finally, the gifts and disabilities of those

students may mask one another. All three types present a challenge to the proper identification of the Twice-exceptional learner.

The federally funded Neilsen study (2005) conducted research to identify Twice-exceptional learners. The study found that approximately 3.5 percent of students with learning disabilities also meet the requirements for Gifted (Neihart, 2002). In a well-noted study by Neilsen and his associates, substantive ideas were suggested to identify and serve the Twice-exceptional learner (Neilson, 2005). A report entitled *Ohio's Twice-Exceptional Students: A Status Study (2007)*, said that, "Children who are Twice-exceptional are not adequately recognized at the district level, and that a common understanding of the meaning of "Twice-exceptional" is lacking in our schools (Campanelli & Ericson, 2007).

Twice-Exceptional

The challenge is to accept that a disability can coexist with giftedness (Campanelli & Ericson, 2007). In 1997, Brody and Mills clearly stated the problem,

> Many more students may be learning disabled and gifted than anyone realizes. In spite of their high intellectual ability, such students remain unchallenged, suffer silently and do not achieve their potential because their educational needs are not recognized and addressed. To improve services for this population,we must move away from using rigid definitions and cut off scores to specify who receives special programming. Broader definitions of giftedness and learning disabilities are needed to allow for students with both exceptionalities. (Brody, 1997, p. 284)

It is hoped that once teachers have an understanding of the characteristics of children who are Twice-exceptional they will more readily identify these students from

their same age peers. One of the first signs is an inconsistency in their abilities, or asynchrony. Students who are Twice-exceptional may be able to perform very well in oral domains, but perform poorly when measured by written expression (Campanelli & Ericson, 2014).

The topic of Asperger's Syndrome and Giftedness presenting together as Twice-exceptional is a difficult one. An Asperger's diagnosis can easily be confused with Giftedness with the reverse being true. It can be confusing that the same set of behaviors can describe different conditions. This is especially true when one or both conditions are not understood. Amend (2009) reports that the difficulty in correctly diagnosing Asperger's Syndrome (or high functioning autism) is the lack of experience and knowledge held by the psychiatric, medical, and other health professionals. This lack can lead to misdiagnosis and failure to meet the needs of the students involved (Amend, Schuler, Beaver-Gavin, & Beights, 2009). "Gifted children possess a set of characteristics that separates them from typically developing children. So do children with Asperger's Syndrome. Put the two together and the characteristics combine and collide in complex ways" (Gallagher & Gallagher, 2016, p. 72).

Gifted children may be misidentified because they share the common characteristics of Asperger's Syndrome (Gallagher & Gallagher, 2016; Neihart, 2004). Educators need to be informed about the characteristics of the IIE learner (Gifted with Asperger's). As more and more students are diagnosed with Asperger's Syndrome, 1 in 68 learners (CDC, 2015), one would expect to see more students with ASD appear in Gifted classrooms.

Twice-exceptional: Social and Emotional Needs

"Recognizing and understanding the complexity of a dual exceptionality requires collaboration between regular education teachers and the intervention specialists in gifted and special education" (Campanelli & Ericson, 2014, p. 18). Teachers are not the only ones confused by the seeming contradictions present in the Twice-exceptional learner. The learners themselves are often conflicted and confused. "Sometimes the confusion of being twice exceptional becomes overwhelming and student may withdraw or develop behavioral challenges (p. 18).

While some may assume that the Gifted side of the equation yields a student who easily achieves, it is not uncommon for the Twice-exceptional student to experience frustration due to a number of issues (Altman, 1983; Amend, et al, 2009). A frequent issue is the failure to take things in stride. For the Twice-exceptional student (as well as Gifted/talented) failing is something they are not good at. Coaching and direct instruction using modeling or social stories has been found to yield many positive benefits (Assouline, Foley, & Whitman, 2009).

Socially, Twice-exceptional students face much the same pressures as their peers. However, Gifted students that fall under the Autism Spectrum Disorder umbrella may experience a higher degree of stress and anxiety. For example, students with Asperger's face mulitple challenges in the areas of social reprocity, mind blindness, and just knowing what to do, when (Atwood & Gray, 2016). It is debated as to whether Twice-exceptional learners have more or less emotional turmoil than their same age peers (Campanelli, 2014). What we have begun to realize and research is what part do our school programs play in helping or harming these young learners?

Twice-Exceptional Students Denied Help or Services

Gifted students with an added diagnosis of ASD may be denied services (Cline & Hegeman, 2001). Many educators fear that ASD students may interfere with or disrupt the Gifted programs (Grandin, 2010; Little, 2001). Baum reports that teachers find Gifted and Learning Disabled (LD) students more likely to be labeled as off-task, easily frustrated, and highly emotional (Baum, 1988). Little (2001) asserted that 12,000-18,000 Gifted students read two or more years below grade level (Little, 2001). A challenge to teachers of the Gifted is to design appropriate responses to meet the needs of these Twice-exceptional students. Gifted classrooms may or may not be structured to meet the needs of the ASD student (Corn & Henderson, 2001; Horn, 2009).

Often children who are Twice-exceptional do not stand out because their gifts mask their disability (Ashburner, Ziviani, & Rodger, 2010; Auger, 2015; (Campanelli & Ericson, 2014). Students might have problems in areas such as reasoning, organization, or motor skills development. "School personnel must know the characteristics of giftedness and disability to be able to recognize a student who is gifted with special needs" (Campanelli & Ericson, 2014, p. 15).

Strategies That Make a Difference

Asperger children think differently from neurotypical children. Students with ASD are highly visual. They are reputed to have strong rote memory skills and learn best through visual means. Current research supports teaching strategies that lean heavily on rote and direct teaching to maximize the ASD brain. In fact, they think best in concrete, literal pictures (Attwood, 2007; Klin & Bolkmar, 1995).

Four guidelines emerge from the literature: Focus attention on developing gifts; provide a nurturing environment that respects individuality; encourage compensation strategies; and encourage awareness of individual strengths and weaknesses (Baum, 1990; Campanelli & Ericson, 2014). Additionally, because IIE students are often stressed by the constant demands of complying with social pressures and expectations, allowing simple choices where possible can provide needed relief. Students may also find stress relief by having access to prearranged "safety" places within the classroom or school environment (Amend, et al., 2009; Kluth, 2004; Neilson, 2005).

Sometimes the answer that makes a difference is a change in the environment (Webb & Deitrich, 2005). Research to date (Campanelli, 2014; Webb, et al., 2005) has proposed a set of questions that problem-solving teams should consider for all students who exhibit challenging behaviors:

- Could the behaviors be responses to inappropriate placement, insufficient challenge or lack of intellectual peers?
- Is the child able to concentrate when interested in the activity?
- Have any curricular modifications been made in an attempt to change inappropriate behaviors?
- Has the child been interviewed/ What are his/her feelings about the behaviors?
- Does the child feel out of control? Do the parents perceive the child is out of control?
- Do the behaviors occur at certain times of the day, during certain activities, with certain teachers or in certain environments?

Managing the Crisis

Those who have extensive experience with IIE students will verify that there will be crisis moments when dealing with these students. It is better to develop a plan in advance of the crisis. In dealing with Asperger children, in particular, it is essential that the person in charge remain calm at all times. While this behavior is important with neurotypical children, children with ASD are very sensitive to the emotions of the adults around them (Sohn & Grayson, 2005). Providing a location within the classroom for the IIE student to retreat for regrouping purposes will increase the opportunity for success.

Another important consideration is that of preventing crisis when possible. Triggers may be as simple as a sudden noise, excessive lighting, or even certain smells. Keeping a log will help teachers examine what might have prompted a particular "meltdown" (Amend, et al., 2009; Baum, 1988). Some have experienced success by utilizing a pre-transition strategy. The teacher lets the student know that in five minutes they are going to be making a transition, and then offers another one-minute warning before the actual transition (Bauer, 1996; Campanelli & Ericson, 2014; Schilling, 2010).

The Teacher Makes the Difference

Dr. Bauer of the Genesee Hospital of Rochester, New York (2010) believes that the teacher probably makes the most difference in the success or failure of IIE students. School staff need to realize and understand the ASD side of the equation is a developmental disorder over which the student has no control. Bauer reports that practitioners and diagnosticians often label ASD children as "manipulative" or "spoiled" when, in fact, they respond differently to the world than other children do. He goes on to remind readers that AS children have an uncanny ability to read the emotions of their

caregivers. Authority figures should avoid power struggles as rigidity may lead to the IIE student spiraling out of control (Bauer, 1996).

Professional Development-History

Professional development (PD) has evolved from fixing problems to promoting teacher growth. According to the Consortium on Improving Chicago schools, teachers benefit from the new, more collaborative and interpersonal styles of workshop presenters (Smylie, et al., 2001). PD has come under fire for many years. As early as the mid-1800's teachers were reported to be in need of subject matter competence and academic maturity. Richey reports that teachers in that day had little more than a common education and probably suffered from little to no teacher training (Richey, 1957).

Through the 1920's and 1930's progress in PD continued to move away from correcting deficiencies (Richey, 1957) and instead moved towards promoting growth. However, Smylie et al., (2001) references a quote from a report given to the National Governors Association, "Professional development has maintained a long-standing reputation for poor quality and ineffective practice" (as cited in Corcoran, 1995, p. 24).

Professional development in the next two decades provided little to no relief from poorly designed workshops characterized as a waste of time. According to the National Commission on Teaching and America's Future (1996), "They criticized present practice as poorly designed, ill-conceived, and ineffective" (p. 12). By the year 2001, with the passage of the No Child Left Behind Act, efforts aimed at improving schools began to focus on improving teacher training to improve student outcomes (Guskey, 2002). Districts finally began implementing strategies to support new teachers and promote long-lasting effective teacher training (Ball & Forzani, 2009).

Professional Development

Schulman reports that effective professional development yields benefits in teacher performance and in teacher self-efficacy (Schulman & Armitage, 2005). According to the National Center for Educational Evaluation and Regional Assistance (2007) report on professional development effectiveness, a meta-analysis of research aimed at measuring professional development effectiveness shows significant gains in student achievement among those studies meeting the study inclusion criteria. Ball writes, "…it is time to lay down our resistance to acknowledging that teaching is hard work that many people need to learn to do well, and build a system of reliable professional development (Ball, 2009, p. 509).

Research shows that relevant professional development activities are a vital part of building a healthy campus culture. Campanelli (2014) suggests that campus administrators may want to delegate the planning for the professional development to on campus teacher leaders. She suggests forming small groups of teachers which consist of special education, Gifted education, and general education to form groups positioned to collaborate. Another suggestion is to have these groups assist with fund raisers to build a robust professional library. Research has contributed highly to the success of IIE learners. Campanelli goes on to suggest the formation of problem-solving groups that provide a context for sharing successes and failures.

History of Inclusion

In the past, the United States educational system has had a system of excluding those students who it deemed handicapped, mentally challenged, or extremely different (Allan & Schwartz, 2000). Two laws that combine to demand educational provisions for

students with disabilities are NCLB and the Individuals with Disabilities Education Improvement Act (IDEA, 2004; NCLB, 2001). These laws mandate that all students have full access with opportunities to participate fully, including those students on the autism spectrum. Educators expect them to participate in the general education curriculum and meet the academic goals in content area instruction with progress across all domains (Browder, et al., 2004). Teachers expect that participation extends to high stakes testing. Rigorous regulations require adequate yearly progress (AYP) in the content areas of reading, science, and math. Today's focus on inclusion represents the notion that the child has a right to participate and belong to the community of learners known as the general education classroom. This policy is directly opposed to the methods of the past where school officials segregated students from the general population and the focus was on preparing them to mainstream into regular classes (Browder, 2004).

Inclusion is accomplished through full or part means. In full inclusion, the child participates throughout the day with minimal pull out, often with a full-time aide present to assist the general education teacher. In part inclusion, the child participates in those pieces of the day that teachers deem appropriate such as music, art, or physical education. Full inclusion is the preferred means to educate all students in the least restrictive environment necessary (Allan & Schwartz, 2000).

Quantitative Research

Quantitative research has its roots in positivism and more closely resembles the scientific method (Cohen, Lawrence, & Morrison, 2000). Quantitative researchers, "…place great value on outcomes and products" (Wiersma & Jurs, 2005, p. 14).

According to Creswell (2014) the characteristics of quantitative research lend themselves well to accomplishing these purposes: “Collecting scores that measure distinct groups, collecting and analyzing facts represented by numbers and comparing and relating those facts to individuals and groups using a survey” (p.45). Researchers in the quantitative field, “…focus on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon” (Babe, 2010, p. 36). Quantitative researchers employ a more objective approach to inquiry in that they do not inject themselves into the setting as qualitative researchers do. Also, the quantitative approach is deductive in nature, with conclusions following data collection as opposed to qualitative which is more inductive (Babe, 2010).

Cross Sectional Design

The cross sectional research design is one of the most popular forms of survey design used in education (Creswell, 2014, p. 389). This design allows the researcher to collect data at one point in time. The design has the ability to measure current attitudes or practices. One of the main benefits of the cross sectional design is the short amount of time required for survey administration and data collection.

Time required for data collection is often important for the researcher to gain access to current practices, needs, or opinions on relevant topics. Three main types of current cross sectional survey designs are those that, “examine current attitudes, beliefs, opinions or practices; those that are used to compare two or more educational groups in terms of beliefs, opinions, or practices, and lastly, the cross sectional research design can measure community needs of educational services” (p. 390).

An example of a study that employed a cross sectional survey method was done by Abel and Sewell in 1999. They compared 98 rural and urban secondary school teachers from 11 school systems in Georgia and North Carolina for their sources of stress and symptoms of burnout. 52 rural teachers and 46 urban teachers volunteered to participate in the study. The researchers used two instruments, the Sources of Stress Questionnaire and the Maslach Burnout Inventory. "The statistical analysis of the data showed significantly greater self-reported stress for urban teachers than rural teachers because of poor work conditions and poor staff relations" (p. 390).

Another study utilizing the cross sectional survey research design was conducted by Smoke (2009) through California State University, she surveyed for teacher's perceptions on the student who is Gifted and has learning disabilities. Smoke's study derived valuable information through using the cross-sectional design.

An additional study that utilized an online cross-sectional survey was Fisher. Fisher (2011) surveyed groups of teachers comparing groups of teachers' stress and burn out rates among rural and urban settings in Texas. The Fisher study replicated the previous study done by Abel and Sewell (except for the use of the online survey versus the prior paper survey). This cross sectional survey research found very similar results with rural teachers in the study self-reporting that they were highly stressed and close to burnout due to poor working conditions and poor staff relations.

The cross-sectional survey research design is ideal for studying a cross section of a population at a single point in time. Wiersma writes, "A cross sectional design cannot be used for measuring change in an individual, because an individual is measured only once. However, differences between the defined groups in the cross sectional study may

represent changes that take place in a larger defined population" (Wiersma & Jurs, 2005, p. 162). This cross sectional survey research design may well be the most effective means of using multiple groups and cross quantifying within those groups (Creswell, 2014, p. 390).

Survey Validation

According to Anthony Artino and his group of researchers from Harvard University and the Uniformed Services University of the Health Sciences, limited consensus exists within the educational research community regarding the appropriate steps in validating questionnaires (Artino, 2014). He goes on to say that problems with question wording, ambiguous meaning, and poor grammar may impact whether or not the survey measures what the researcher is trying to measure. "…poor question wording, confusing question layout and inadequate response options can all affect the reliability and validity of the data from the survey" (p. 463).

As a result, Artino sought to develop a systematic method for, "…developing and collecting reliability and validity evidence for survey instruments (p. 464). The systematic seven step process for survey scale design is described below:

- Conduct a literature review
- Carry out interviews and/or focus groups
- Synthesize the literature review and interviews/focus groups
- Develop items
- Collect feedback on the items through an expert validation
- Employ cognitive interviews to ensure that respondents understand the items as intended

- Conduct pilot testing

This seven step process, "…blends input from other experts in the field as well as potential participants. In addition, this process front loads the task of establishing validity by focusing heavily on careful item development" (p. 463).

Summary

Teachers may feel ill prepared for incorporating all students into their classrooms (Carroll, 2006). The implementation of IDEA demanded placement of all students in the classroom with their peers to the maximum amount possible. The average early childhood teacher in Texas may have twenty-two four or five-year-olds in one classroom (Texas Education Agency, 2016). A classroom may have students with ADHD, ADD, RADS, or a whole host of other diagnoses. Now, imagine adding a Gifted student to the mix. Temperamental by nature, needing a fast pace, not adjusting well to having the routine constantly interrupted (especially if it interferes with something they want to do), intellectually above their peers, and lacking some social skills. Next, imagine a young child with both Asperger's Syndrome and Gifted/talented. The main identifiable difference is the degree to which they are inflexible and entrenched in routines and the AS student's inability to understand what went wrong. All of this can happen, but the biggest issue is that teachers do not have the background and understanding to cope with the age appropriate behaviors of the typical four or five-year-old heightened and highlighted by the Gifted and Asperger picture. While inclusion has a wonderful purpose, not providing (arming) teachers with the weapons of knowledge seems cruel at best (Horn, 2009).

A working knowledge of ASD characteristics is essential in today's inclusion classrooms (Atwood & Gray, 2010). Teachers face ever-growing responsibilities and extreme demands on their time (Tomlinson, 2004). Serving students in the early childhood grades demands a unique skill set that teachers may or may not have from infrequent or inadequate professional development (Ball & Forzani, 2009). Students with Asperger Syndrome or Gifted/talented (combined in the IIE learner) may be present long before a specific diagnosis has been determined (Cash, 1999).

Twice-exceptionality is a phenomenon that demands teachers construct a plan (Corn & Henderson, 2001). The current emphasis on RTI (response to intervention) may confound the stress placed on the early childhood teaching professional (FDR Research Group, 2008).

Professional development can assist teachers with plan construction (Darling-Hammond & Richardson, 2009). Good professional development that is research based and taught by knowledgeable experts will yield a general knowledge of characteristics of learning disabilities that will enhance the early childhood teaching professional's ability to create strategies and interventions to augment the young learner's success. Meeting the needs of the IIE child is, after all, the law (Gallagher & Gallagher, 2002).

CHAPTER THREE: METHODS

Design

The researcher chose a cross sectional design for this study. This design allowed data collection from several different populations at a specific point in time. The researcher chose a quantitative approach to survey large numbers of teachers in an expedient manner.

The cross sectional design was the best fit because it most closely aligned with the research purpose. Gall, Gall, and Borg (2007) wrote in their book on educational research, "…researchers can simulate longitudinal research by doing cross-sectional research (p. 305). The Likert-type scale (Creswell, 2007) provided a means to collect and assess the level of knowledge that each teacher in the study possessed regarding the characteristics of Asperger's Syndrome and Gifted/talented, as represented in the Twice-exceptional learner.

The present study used this design to efficiently measure the degree of knowledge of AS and GT characteristics within the study groups. The results of the study may represent a larger population. The study groups (PK-2nd grade) were teachers with Generalist certifications, teachers with Generalist and Gifted/talented certifications, teachers with Generalist and Special Education certification, and teachers with Generalist and both Gifted/talented and Special Education certifications.

Research Question

Understanding how post-graduate certifications held increase teacher knowledge of Asperger's and Gifted/talented learner characteristics co-existing in the Twice-exceptional learner might yield positive results for principals, teachers, learners, and their

families. Advanced knowledge will enable early childhood teachers to more easily identify and meet the needs of a small, but impactful sub-set of learners. The researcher proposed the following question:

RQ1: Is there a positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics?

Null Hypothesis

The null hypothesis for this study is:

$H_0$1: There is no positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics.

Participants

The participants were certified, degreed teachers serving in the early childhood grades PK-second grade. The sample included general education teachers, teachers with Gifted/talented certifications, teachers with Special Education certifications, and teachers with both Gifted/talented and Special Education. Teachers in two large suburban school districts who responded to the online surveys had on average ten years of teaching experience, with 26.9 percent of the teachers having advanced degrees as measured on the demographic surveys. Additionally, the researcher invited teachers from private schools across the Central Texas area to complete the online surveys. The private school teachers had on average twelve years of teaching experience, with less than five percent holding advanced degrees as measured on the online demographic surveys.

The teachers participated by answering the items on three five point Likert-scale survey instruments respectively labeled: Teacher Knowledge of Gifted and Talented (GT) Characteristics and Teacher Knowledge of Asperger Syndrome Characteristics and a demographic survey. The responding group of teachers represented a sample size of 242 participants. Teachers who completed the online survey had the opportunity to enter a drawing for an Amazon gift card. Less than five percent of participating teachers chose to enter the drawing.

Setting

Initially, the researcher chose the closest local school district. Having obtained permission from their office of special programs to complete the permission process, a subsequent turn over in district personnel created an untenable delay. At this time, the researcher went back to the Institutional Review Board (IRB) to request permission to add an additional local school district. The IRB granted the request.

The researcher sent the original surveys by email and soon received a response that district policy prohibited paper surveys. The original intention to pass out the paper surveys during the weekly faculty meetings would not work. The district representative advised that an online survey was the only delivery option available.

The researcher decided to seek help from her school's webmaster to transfer the two paper surveys and the demographic survey into an online format. The survey was located and hosted on the school's website. It was accessible by clicking on a link that first took the respondent to the consent form. After the respondent indicated that he/she was in agreement, the respondent clicked on another link that took them to the demographic survey and then on to the two surveys: Teacher Knowledge of Gifted and

Talented (GT) Characteristics and Teacher Knowledge of Asperger Syndrome (AS) Characteristics.

After a trial run with the online format, the researcher sent the requested information to the second school district and once the IRB had stipulated permission to conduct the study, the school district granted permission to proceed. However, the district committee overseeing the research process added a stipulation that only teachers within the district that were Special Education certified could receive the online survey. Much consternation occurred, as this was not expected. However, two days later an administrator notified the researcher that the district was ready to proceed and was willing to send the online survey to all early childhood teachers within the preschool through second grades.

The two large suburban public school districts serve very diverse populations, both in ethnicity and socio-economic status. Both districts were adjacent to large metropolitan areas with high tech manufacturing, urban retail centers, suburban neighborhoods, and farm and ranchlands. Texas ranks second in the nation concerning numbers of children with autism (Statemaster, 2016). As the two school districts were located in suburban areas close to an area rich in high tech, they are more likely to serve a large number of children who are autistic (Retner, 2016). This eventuality makes the gathering of information about the early childhood teacher's preparation to serve this population all the more important.

After the cut off for the online survey completion from both school districts had passed, the researcher noted only one hundred-fifty respondents had participated. The researcher had set a target at a minimum of two hundred online survey takers.

Meanwhile, a curriculum publisher invited Christian educators to a teacher conference of private Christian schools. The researcher contacted the IRB for permission to invite attendees of this conference to participate. The IRB granted permission to invite conference attendees to sign up if they were interested. Fifty teachers serving in the early childhood grades prekindergarten through second grade agreed and received the online survey. Most of the teachers attending the conference were from small schools situated within churches and/or operating with non-profit, church related/integrated school settings.

Instrumentation

The purpose of the study was to measure the level of early childhood teacher's knowledge in Asperger's and Gifted/talented learner characteristics. The researcher was unable to obtain a suitable instrument for the present study. Therefore, the researcher developed the three surveys using sources listed in Appendix B. To conduct this study, the researcher first needed to validate the survey. According to the Standards for Educational and Psychological Testing, "validity refers to the degree to which evidence and theory support a measure's intended use" (AERA, 1999).

The first step in the validation process is to conduct a thorough review of the literature (Artino, 2014). The review ensures that the construct is clearly defined and determines if a similar construct already exists. Research determined that a similar construct was not available.

The second step in the survey validation process involved consulting with specialists in the field of Autism and Gifted/talented as subject matter experts (p. 463). Enlisting the help of subject matter experts ensured that the development of the questions

aligned with the present knowledge base. Care was taken to draw on the expertise of those serving in both the K-12 environment and higher education. See Table 1.

Table 1
Subject Matter Experts
Texas

Subject	Gender	Race	Specialty	Region	Affiliation	Published	Presenter
001	Female	Black	GT	South Central	University	Yes	Yes
002	Male	White	Sp. Ed	South Central	Public School	No	Yes
003	Female	White	GT	South Central	Public School	Yes	Yes
004	Female	White	Sp. Ed	South Central	Public School	No	Yes
005	Female	White	Autism	South Central	Presenter	Yes	Yes

The third step in the survey validation process was to synthesize the literature review and feedback obtained from the subject matter experts (p. 463). Telephone and face-to-face interviews allowed for collaboration among the experts. The consensus of the group was to refer to the characteristics documented in current literature.

The fourth step in the survey validation process was to carefully write the initial survey items and draft the demographic survey. The initial survey comprised 70 questions (35 Asperger's learner characteristics and 35 Gifted/talented learner characteristics). A seven point Likert scale was initially chosen but after subsequent collaboration, a five-point scale was agreed upon. The scale included the following choices: (1) Not agree, (2) Somewhat agree, (3) Mostly agree, (4) Agree, and (5) Don't know. The researcher included reverse questions where the numeric scale ranked opposite scores for negatively-worded questions. In addition, a demographic survey was designed to solicit information that would be used to sort the early childhood teachers into convenience groups. Information was gathered about gender, years of teaching experience, degrees, certifications, personal knowledge of Gifted/talented students, personal knowledge of students with Asperger's Syndrome, number of in-service/workshop hours in Gifted/talented education, number of in-service hours in Autism/Asperger Syndrome education.

The fifth and sixth steps in the survey validation process were combined to collect feedback from the subject matter experts regarding the survey items (p. 463) and ensure consensus. First, the researcher addressed content validity by having the experts rate each item's relevance. Each expert rated the individual questions on the survey draft using a scale of 1 to 10. The researcher tallied the scores of the experts. Only those

items deemed relevant by the experts with a quartile ranking of 70% or better were included in the final version of the paper surveys.

Next, the experts were sent the revised questions. This time the researcher tallied the individual item scores of the raters. Next, the researcher compared scores for each separate item to determine the consistency of the raters. The group then discussed each question that had a high inconsistency occurrence to determine whether rewording would return a more consistent result among experts in the field. The researcher then reworded questions originally worded in a confusing way according to the suggestions of the experts. Finally, the researcher rewrote or eliminated items on the paper surveys that indicated a wide variance between the expert raters due to opinion or professional experience. The Likert scale was also redrafted to the final form (in Procedures). The final draft of the survey had 40 questions plus demographic information.

The seventh step in the survey validation process was to conduct a pilot test (p. 463). The researcher chose fifteen early childhood teachers to take the survey. Additionally, teachers were asked to note any questions that were difficult to understand or to make suggestions about wording.

Upon completion of the pilot survey, the researcher loaded the responses into SPSS in order to analyze the survey scale's internal consistency for the pilot group. Table 2 reports the Reliability Statistics.

Table 2

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.974	.975	40

Cronbach's alpha coefficient for the forty-item pilot survey was .974, which indicates a high level of internal consistency for the scale of the present sample. An inspection of the data analysis indicated that scale reliability could not be significantly improved by eliminating any of the items from the survey. Thus, the final scale used to measure early childhood teacher knowledge of Asperger Syndrome, Gifted/talented, and Twice-exceptional characteristics remained: 1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly agree. See Table 3.

Table 3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
DemonstrateExcellentfluency	101.60	1152.686	.654	.	.973
typicallyshowconcernandempathyforothrev	102.73	1250.352	-.494	.	.977
aresignificantlydelayedrev	101.40	1126.114	.792	.	.972
Demonstrateinappropriateimmatureemotions	101.40	1142.114	.736	.	.973
easilyrecallnamesoffriendsrev	102.20	1151.457	.576	.	.973
benefitthemostfromworkingingroupsrev	101.53	1129.410	.870	.	.972
functionbestinunstructuredsettingsrev	101.93	1163.067	.394	.	.974
Demonstrateadvancedvocabulary	101.40	1139.400	.904	.	.972
enjoynewactivitiesrev	101.80	1126.171	.866	.	.972
makeandkeepfriendseasilyrev	101.73	1123.495	.829	.	.972
Troublereadingsocialcues	101.33	1156.238	.733	.	.973
understandjokeseasilyrev	101.67	1173.524	.514	.	.973
Oftenchoosesolitaryactivities	101.27	1141.352	.920	.	.972
maytalknonstopampunwareanyoneislisrev	103.27	1235.352	-.439	.	.976
demonstratenormalcoordinationrev	102.13	1145.981	.753	.	.973
Replaceoneobsessiveinterestwithanother	101.33	1150.810	.816	.	.973
Needhelpwithtransitions	101.20	1145.457	.829	.	.972
Dominateconversationswithothers	101.27	1147.210	.834	.	.972
Troublekeepingupwiththings	101.27	1147.638	.827	.	.973
Troublemanagingtime	101.40	1136.114	.895	.	.972
struggletoremembernamesofclassrev	101.87	1119.124	.824	.	.972
Excellentmemoryforfacts	101.00	1158.000	.745	.	.973
Intensefocusontopicofinterest	101.07	1136.352	.818	.	.972
Concernedforneedsofsociety	101.13	1146.124	.751	.	.973
stronginallacademicsubjectsrev	102.73	1155.067	.466	.	.974
Unusuallydeepemotionssensitivities	101.33	1135.810	.867	.	.972
difficultyunderstandingdifferentviewrev	102.07	1144.352	.687	.	.973
Keensenseofhumorcomical	101.33	1153.238	.644	.	.973
Mayhavelearningdisabilities	101.40	1155.829	.674	.	.973
Awaretheyaredifferentfrompeers	101.33	1135.810	.867	.	.972
Understandfollowunwrittenrulesofsocial	101.27	1141.495	.860	.	.972

Tendtobefollowersrev	101.67	1119.810	.788	.	.973
Maynotlikechangebutwillgowithit	101.47	1154.124	.686	.	.973
Highdegreeofenergy	101.13	1147.124	.782	.	.973
irresponsibleandconnotbecountedonrev	101.87	1111.838	.871	.	.972
Questionsauthorityuninhibitedingivingopion	101.07	1153.352	.777	.	.973
Demonstrateasynchronousdevelopment	101.27	1166.352	.520	.	.973
Easilyseparaterelevantampirrelevantinformation	101.33	1162.095	.600	.	.973
donotshowempathyconcernforotherrev	101.80	1113.886	.873	.	.972
identifiedbyhighIQscoreonlyrev	101.80	1118.314	.804	.	.972

Procedures

The researcher obtained IRB approval to conduct the study. See Appendix C for IRB approval. Prekindergarten through second grade teachers received two online surveys developed by the researcher TKCAG (Teacher Knowledge of Characteristics of Asperger Syndrome) and TKCGT (Teacher Knowledge of Characteristics of Gifted/talented). See Appendix A for instrument. The purpose of the instrument was to measure early childhood teachers' knowledge of Asperger's Syndrome and Gifted/talented learner characteristics.

The researcher solicited participants from two local school districts by contacting the administration by telephone. Then, the administration of the districts and schools contacted, provided a link to the informed consent page of the online survey via email to the early childhood teachers of those organizations. The small, private Christian school teachers were personally contacted during a curriculum publisher's conference. These teachers were given a card with the link to the website where the survey was hosted.

Based upon the resources contained in Appendix B, the researcher created an original survey draft with permission from Liberty University. The final draft of 40 questions was used to determine whether a participant had knowledge of Asperger Syndrome, Gifted/talented, and Twice-exceptional characteristics. The survey used a five point Likert scale for participant responses: 1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly agree.

The first public school district took almost three months to consider the researcher's request to conduct the study. Upon finally getting the committee's approval, the researcher noted that only teachers with special education or Gifted/talented certifications would receive the survey. It was felt that the inability to include all of the early childhood teachers would skew the results. However, a short time later the school district changed their mind and decided to allow all of the early childhood teachers to participate.

The second public school district responded rather quickly and was anxious to help get the word out. Additional responses followed the distribution of the online survey links. At one point, it became obvious that the researcher was not going to receive adequate response to the online surveys. The IRB granted permission to send the online survey out to Christian schoolteachers who attended a nearby conference. The resulting responses allowed the researcher to garner over two hundred replies.

Data Analysis

After downloading the online surveys to paper copies, the researcher created a spreadsheet in Excel. Next, the data from the surveys was entered into the spreadsheet. After the data was complete in the spreadsheet, the spreadsheet was imported into SPSS. Third, the researcher recoded some of the variables to give them the correct power.

After recoding, the researcher used descriptive statistics to provide frequency, mean, and standard deviation of each variable. Then, the researcher performed a Welch one-way ANOVA to determine whether a positive and significant difference existed between groups of teachers who held Generalist, Gifted/talented, and/or Special Education Certifications.

CHAPTER FOUR: FINDINGS

Research Question

Understanding how teacher knowledge of Asperger's (Autism) and Gifted/talented co-existing in the Twice-exceptional learner affects the early childhood classroom environment might yield positive results for principals, teachers, learners, and their families. The study looked at the requisite knowledge that early childhood teachers needed to identify and meet the needs of a small, but impactful sub-set of learners. The researcher proposed the following question:

RQ1: Is there a positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics?

Null Hypothesis

The null hypothesis for this study is:

$H_0$1: There is no positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics.

Descriptive Statistics

There were 242 participants in the present study. Certifications ranged from Generalist only to those with both Gifted/talented and Special Education, with the majority having only the generalist certification. See Table 4.

Table 4 *Certifications*		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Gen.	110	45.5	45.5	45.5
	G/T	63	26.0	26.0	71.5
	Sp.Ed.	69	28.5	28.5	100.0
	Total	242	100.0	100.0	100.0

Results

In this section, the researcher discussed the statistical analyses pertaining to the research question **(RQ1)** and the null hypothesis **($H_0$1).** The researcher used a Welch one-way ANOVA to analyze the data. These statistical analyses were useful in deciding whether to support or reject the null hypothesis.

A Welch one-way ANOVA showed that the difference in Asperger scores between the Generalist Certification group (n = 110, M = 45.08, SD = 10.114), the G/T Certification group (n = 63, M = 53.86, SD = 13.624), and the Sp. Ed. Certification group (n = 69, M = 111.57, SD = 24.426) were positively and statistically significant, F (2, 239) = 19.624, p = .000. Likewise, the difference in G/T scores between the Generalist, G/T, and Sp. Ed. Certification groups were positively and statistically significant F (2, 239) = 13.508, p = .000. Finally, the difference in IIE scores between Generalist, G/T, and Sp. Ed. Certification groups were positively and statistically significant F (2, 239) = 18.553, p = .000. Tukey's HSD tests showed that both G/T and Sp. Ed. Certification groups scored significantly higher than the Generalist Certification group. However, the G/T and the Sp. Ed. Certification groups did not differ significantly. See Table 5.

Table 5
Group Statistics Certifications

		Sum of Squares	df	Mean Square	F	Sig.
Asperger Score	Between Groups	5391.450	2	2695.725	19.624	.000
	Within Groups	32831.050	239	137.368		
	Total	38222.500	241			
GT Score	Between Groups	4280.387	2	2140.193	13.508	.000
	Within Groups	37866.692	239	158.438		
	Total	42147.079	241			
IIE Score	Between Groups	19277.430	2	9638.715	18.553	.000
	Within Groups	124167.876	239	519.531		
	Total	143445.306	241			

Post Hoc Tests						95% Confidence Interval	
Dependent Variable	(I) Certifications	(J) Certifications	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Asperger Score	Generalist	G/T	-8.775*	1.852	.000	-13.14	-4.41
		Sp. Ed.	-10.034*	1.800	.000	-14.28	-5.79
	G/T	Generalist	8.775*	1.852	.000	4.41	13.14
		Sp. Ed.	-1.259	2.042	.811	-6.08	3.56
	Sp. Ed.	Generalist	10.034*	1.800	.000	5.79	14.28
		G/T	1.259	2.042	.811	-3.56	6.08
GT Score	Generalist	G/T	-7.962*	1.989	.000	-12.65	-3.27
		Sp. Ed.	-8.840*	1.933	.000	-13.40	-4.28
	G/T	Generalist	7.962*	1.989	.000	3.27	12.65
		Sp. Ed.	-.878	2.193	.916	-6.05	4.30
	Sp. Ed.	Generalist	8.840*	1.933	.000	4.28	13.40
		G/T	.878	2.193	.916	-4.30	6.05
IIE Score	Generalist	G/T	-16.738*	3.601	.000	-25.23	-8.24
		Sp. Ed.	-18.874*	3.500	.000	-27.13	-10.62
	G/T	Generalist	16.738*	3.601	.000	8.24	25.23
		Sp. Ed.	-2.137	3.972	.853	-11.50	7.23
	Sp. Ed.	Generalist	18.874*	3.500	.000	10.62	27.13
		G/T	2.137	3.972	.853	-7.23	11.50

*. The mean difference is significant at the 0.05 level.

Therefore, based upon the results of the Welch one-way ANOVA, the researcher rejected the null hypothesis **$H_0$1:** There is no positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics. There is a statistically significant and positive difference between the mean knowledge scores of teachers with Gifted and talented certifications and/or Special education certifications and teachers with only Generalist certifications.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

The purpose of this cross sectional research was to test how different teacher certifications held (dependent variables) affected the early childhood teacher's knowledge (independent variable) of Asperger's and Gifted/talented learner characteristics. The question that guided the research follows:

RQ1: Is there a positive and statistically significant difference between type of certification held and the early childhood teacher's knowledge of Twice-exceptional learner characteristics?

The research question examined whether or not additional certifications held (Special Education and/or Gifted/talented) resulted in teachers having a greater amount of knowledge regarding learner characteristics of Asperger's Syndrome and/or Gifted/talented. The resulting data clearly indicated that there was a positive and significant difference between additional certifications and the level of a teacher's knowledge regarding Asperger's Syndrome and Gifted/talented learner characteristics presenting in the Twice-exceptional learner. The research of Bashe and Bartak (2004) and others supported the premise that teachers who understand and know how to support Twice-exceptional learners experienced more success and were less stressed (Bashe & Kirby, 2005).

The study was situated in Age and Stage Theory and Adult Learning Theory (Kearsley, 2015; Slavin, 1988). In the Age and Stage Theory (application of Piagetian Theory) adult learners continue to gain knowledge after completing their formal training. Data from the study clearly aligned with Slavin's perspective.

Teachers with Gifted/talented or Special education certification were more knowledgable about the characteristics of Twice-exceptional learners. Data from the study provided evidence that as little as thirty professional development hours (hours required for Gifted/talented certification) yielded significant benefits. Additional time, money, and attention must be directed at providing resources for all of the stakeholders: parents, teachers, and the valued Twice-exceptional learner.

Twice-exceptionality is a topic that deserves a more robust research emphasis. One of the most comprehensive guides, complete with action research, is the large scale study compiled by Campanelli and Ericson created to assist Ohio schools with meeting the needs of Twice-exceptional learners (Campanelli & Ericson, 2014). Attwood and Gray (2014) also have begun to delve into the various facets of meeting the needs of these diverse learners. The time has come for additional research to commence. Although previous research reflects some insight into what works with these learners, little to no research has focused on the knowledge base of the early childhood teacher.

Table 5 showed that on the Teacher Knowledge of Gifted and Talented Characteristics Survey, teachers with Special Education certification had a moderately higher mean score than teachers with Gifted and Talented certification do. It also shows that teachers with Special Education certification and those with Gifted and talented certification had statistically significant higher mean scores than teachers with only a Generalist certification.

This study adds to the current literature with regards to how background knowledge, experience, and education converge to add to or detract from a teacher's ability to recognize the characteristics of Asperger's Syndrome or Gifted/talented (or

both as presented in the IIE learner). In most Texas districts, teachers are rewarded for graduate degrees with a token difference in salary. Additionally, certifications beyond the initial early childhood to sixth grade are considered optional. Surprisingly, based on the results of this study, there is evidence that teachers positioned to serve Twice-exceptional learners should have advanced training through the Gifted/talented and/or Special Education Certificate.

In addition, school districts should require, at a minimum, Gifted/talented certification for all teachers serving in the early childhood setting. Leadership, of course, should place a priority on additional graduate training leading to Special Education certification. Offering financial incentives for teachers to attend graduate school beyond an additional five hundred dollars a year might increase teacher buy-in. Teachers in early childhood serve a demanding school population. As the data in this study indicated, certifications in Gifted/talented and/or Special Education increase teacher knowledge of learner characteristics in those who are ASD and Gifted (Twice exceptional).

Early childhood teachers across our nation face multiple challenges in the classroom. In many areas, budget cuts have eliminated classroom aides (White House, 2012), inflated classroom teacher-to-pupil ratios (Center for Public Education, 2016) and reduced recess to less than twenty minutes a day (Stupiansky, 2002). Educators are asked to educate all learners in an inclusive environment (including children with exceptional learning needs). The Center for Disease Control reports that there are a significant number of learners on the autism spectrum (as many as one in sixty-eight learners) (CDC, 2015). The CDC also states that the rate of growth for autism is continuing to grow each year. Teachers need resources, training, and support at the classroom level. Additional

research is needed to explore how best to assimilate these learners in the early childhood classroom.

Teachers in Texas enter their first teaching assignment with nine to eighteen weeks of experience in the classroom via the student teaching field experience during the final semester in college (Texas Education Agency, 2016). Following a competency test, certification levels are awarded early childhood to grade six for those interested in teaching the early childhood grades. Interestingly, the field teaching experience is structured so that the student teacher spends one nine weeks in the earlier grades pre-K to second grade and one nine weeks somewhere in grades three to six (TEA, 2016). A new kindergarten teacher may have only nine weeks experience in the classroom. This experience may or may not have been in a kindergarten class. It is not difficult to see how a first year kindergarten teacher with only a generalist certification might be ill prepared to deal with a Twice-exceptional learner.

Teachers in Texas may earn initial certification through one of three different processes: a teacher education program at the university level (University of Mary Hardin-Baylor, 2016), reciprocal certification with other states (TEA, 2016), and the alternative certification program (TEA, 2016). Teacher education programs offer initial certification programs at the university level. Licensure is awarded following successful completion of the student teaching experience and successful completion of the state certification exam for early childhood through grade 6.

Teachers may obtain Gifted and talented certification following completion of the Foundations of Gifted Training (30 hours) (TEA, 2016) and successfully challenging the Gifted/talented Supplemental Certificate test (TEA, 2016). Teachers may obtain Special

Education certification by challenging and passing the Special Education Early Childhood to Grade 12 certification exam (requires graduate hours to gain admittance to the test) (TEA, 2016).

A severe shortage of teachers in Texas led to the development of an alternative route to teacher certification. Those following this path to certification find a sponsoring school district, begin running a classroom, and gain the requisite academic background by attending night classes and an occasional weekend workshop (TEA, 2016).

Those with significant experience in the field of Giftedness and/or those experienced in working with learners on the Autism spectrum stipulate that often the best teacher is experience (Baum, 2016). The question remains as to how to provide those new to the field of education with access to this fountain of information and how best to prepare our newest initiates with a stronger background of knowledge from which to serve.

Teachers in Texas are required to have a minimum of 150 hours of professional development within a five-year period (TEA, 2016). In spite of much research that demonstrates that teachers learn best through choice or mentor-teacher coaching, many districts still use the old model of direct teaching through lecture (Ball & Forzani, 2009). This passive means of transmitting knowledge is not effective and produces teachers who are disenfranchised from the entire staff development process (Corcoran, 1995).

Some minimal research is emerging on how to go about meeting the specific needs of Twice-exceptional learners (Campanelli, 2014). One of the challenges that educators face is the inability to generalize to such a diverse group of learners. Each Twice-exceptional learner can look different from another. However, as Atwood (2007)

points out, teachers who take the time to get to know the IIE learner are often times very successful. A basic understanding of what works with Gifted kids and what does not work with kids on the spectrum, is a great place to start.

Conclusions

Based on the results of this cross-sectional research study, school districts need to take a hard look at equipping teachers serving in the field of early childhood education with the requisite knowledge to identify the basic characteristics of these IIE learners. In addition, colleges and universities need to examine the preservice training that they deliver in the undergraduate education departments. It is recognized that undergraduate students have an immense amount of knowledge to absorb before graduating. However, equipping the early childhood preservice teachers with a tool bag of strategies may improve teacher retention.

Implications

Several implications for the Texas Education Agency, university-led teacher preparation programs, and local school districts emerged from this study. Initial teacher certification is not sufficient to prepare teachers to meet the needs of Twice-exceptional (IIE) learners. In addition, the study found that Gifted/talented certification improves the teacher's general knowledge base of IIE learner characteristics. Moreover, those holding a Special education certificate are best at identifying IIE learner characteristics. Perhaps IIE students would be more successful when placed in classrooms with teachers who hold additional training and education in exceptional populations.

All professionals need on-going training in order to stay abreast of what is happening in their respective fields. Teaching is a field that continually morphs and

changes over time. The study results imply that school districts and others are producing some results concerning the amount of knowledge teachers have regarding IIE learner characteristics. However, the results also imply that more effective training needs to take place to improve student outcomes. It is essential that districts begin to focus on explicit training that gives teachers the background and understanding they need to serve IIE learners and other exceptionalities.

The study results demonstrated a deficit of knowledge concerning IIE learner characteristics. More research into causality is warranted. It is hoped that the results from this study will promote professional interest and research. School districts need to invest in additional workshop offerings. All early childhood teachers in the various settings (daycare, pre-k, kindergarten to second grade) need to know and recognize the characteristics of Asperger's Syndrome and Gifted/talented.

Major implications from the research findings are as follows:

- Teachers in early childhood would benefit strongly from additional training and knowledge gained from seeking the Gifted and talented certification.
- Teachers in early childhood would benefit strongly from the additional training and knowledge gained from completing Special education certification.
- School administration should assign ASD-identified learners and/or Gifted learners to teachers who have demonstrated an aptitude for these special learners.

- Screening for these young IIE learners at kindergarten round-ups might give campuses an opportunity to make classroom teacher assignments that increase student and teacher success.
- School districts need to increase the amount of professional development with a focus on strategies that work at the classroom level.
- Teachers who serve these young learners need additional support from administrative staff as well as counselors and other knowledgeable professionals.
- Perhaps most importantly, because the potential disruptive behavior of these young IIE learners impacts the class, if not the entire grade level, teachers need to have the requisite classroom management skills to properly meet the needs of all of the students.

Limitations

Research sample size and quantitative methodology present limitations in this study. First, this study is limited to two hundred and forty-two participants. The calculated margin of error for this number of participants at the 95% confidence level is 2.5%. A larger sample size may be more generalizable to the world at large.

Second, the choice of quantitative study design limits the results to statistical and numerical descriptions. The nature of the quantitative study yielded numerical data that, although easily quantifiable, represents a controlled environment not normally obtained in the real world. Teachers may participate more freely when interfacing with an interviewer versus the sterility of an on-line survey.

Researchers might obtain richer and more informative data through a well-designed qualitative study. The qualitative approach may well derive more rich data than can be accomplished with a survey that restricts participants to choosing a set answer. A few participants who took the survey remarked that it was somewhat difficult to choose attributes because not all learners present with the same characteristics. A complementary qualitative study might solicit more rich data than can be obtained with a five-point survey.

Recommendations for Future Research

The results of this study add to the body of knowledge regarding a teacher's preparedness to serve students who are both Gifted and Asperger's as present in the IIE learner. Current research is beginning to trickle in, but one can easily say that substantive research on the topic of Twice-exceptionality does not exist. It is important for the professional education community to become more aware of the need for equipping teachers in early childhood to serve these challenging learners. Future recommendations include the following:

- The study should be repeated with a larger sample size, making the results more generalizable.
- The study should include looking at the relationship between years in service and the teacher's knowledge of IIE characteristics
- The study should include looking at the relationship between graduate degrees in education and the teacher's knowledge of IIE characteristics
- The repeated study should also include a qualitative component that would mine for more data like, "What works with IIE learners?", "What type of

professional development seems to yield more knowledgeable teachers?", "Why are some teachers more successful with IIE learners?"

- Researchers might interview successful teachers of IIE learners to see if their success lies in classroom management styles.
- Another study might examine and measure the amount of home-school collaboration to see if this improves student outcomes.
- A study that looks at teacher attitudes might well provide districts with information on how to match teachers and IIE learners more successfully.
- Future researchers may want to interview IIE learners to seek their perspective on what helps them to function or not function.
- Colleges and universities should take a hard look at the pre-service teacher's curriculum. Teachers entering the field of teaching require specific and intentional courses on Autism and Exceptionality.
- State education agencies should mandate (and include in general certification testing) a level of knowledge regarding exceptionality.

The data in this study shows that teachers with certification in Gifted/talented and/or Special education demonstrate a positive and significant difference in the amount of knowledge about the characteristics of Twice-exceptional learners. As the incidence of IIE learners increases, so must the necessary training to equip teachers to serve these students in the inclusion setting. It is very important that knowledgeable teachers serve our Gifted learners with ASD.

Teachers in the early childhood setting face increasing challenges every day. Perhaps the time has come for the academic world to lend credence and support to those who work with our greatest potential. There may well be a future Einstein hidden inside a five-year-old Twice-exceptional learner: Gifted with Asperger's Syndrome.

REFERENCES

Abel, M., & Sewell, J. (1999). Stress and burnout in rural and secondary school teachers. *Journal of Educational Research, 92*(5), 287.

AERA, A. &. (1999). Standards for education and psychological testing. *American Educational Research Association*.

Allan, K., & Schwartz, I. (2000). *The exceptional child: Inclusion in early childhood education* (4th ed.). Delmar: Delmar Cengage Learning.

Altman, R. (1983). Social-emotional development of gifted children and adolescents: A research model. *Roeper Review, 6*, 65-67.

Amend, E. (2003). *Misdiagnosis of Asperer's Disorder in Gifted Youth: An Addendum to Mis-diagnoses and Dual Diagnosis of Gifted Children by James Webb, Ph.D.* Retrieved from Supporting Emotional Needs of the Gifted: http://sengifted.org

Amend, E., Schuler, P., Beaver-Gavin, K., & Beights, R. (2009). A unique challenge: Sorting out the differences between giftedness and Asperger's Disorder. *Gifted Child Today, 32*(4), 57-83.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders.* Washington: American Psychiatric Association.

American Psychiatric Association. (2014). *Diagnostic and statistical manual of mental disorders.* Washington: American Psychiatric Association.

Artino, A. e. (2014). Developing questionnaires for educational research. *Med Teach, 36*(6), 463-467.

Ashburner, J., Ziviani, J., & Rodger, S. (2010). Surviving the mainstream: Capacity of children with autism spectrum disorders to perform academically and regulate

their emotions and behaviors at school. *Research in Autism Spectrum Disorders*, 18-27.

Asperger, H. (1991 [1944]). *Autistic psycopathy in childhood.* New York, NY: Cambridge University Press.

Asperger-syndrome.ME.UK. (2016, February 27). *Famous People with Asperger Syndrome or Similar Autistic Traits*. Retrieved from Asperger Syndrome.ME.UK: http://asperger-syndrome.me.uk

Assouline, S., Foley, N., & Whitman, C. (2009). Cognitive and psychosocial characteristics of gifted students with specific learning disabilities. *Gifted Child Quarterly, 54*, 102-115.

Attwood, T. (2007). *The complete guide to Asperger's Syndrome.* New York: The Guilford Press.

Attwood, T., & Gray, C. (2010). *Higher functioning adolescents and young adults with autism: A teacher's guide.* Austin: Pro Ed.

Atwood, T., & Gray, C. (2016, February 23). *The discovery of "Aspie" criteria.* Retrieved from Tony Atwood: http://www.tonyatwood.com.au/pdfs/attwood10.pdf

Auger, R. (2015). Autism spectrum disorders: A research review for school counselors. *ASCA*, 256-268.

Autism Speaks. (2015, October October 24). *Autism Tool Kit*. Retrieved from Autism Speaks: Autismspeaks.org

Babe, E. (2010). The practice of social research. In D. Mujis, *Doing quantitative research in education with SPSS* (2nd ed., pp. 33-43). London, England: Sage.

Ball, D., & Forzani, F. (2009). The work of teaching and the challenge of teacher education. *Journal of Teacher Education*, 497-511.

Baron-Cohen, S., Leslie, A., & Frith, U. (1985). Does the autistic child have a "theory of mind". *Cognition, 21*, 37-46.

Bartak, L., & Fry, J. (2004). Are students with special needs in mainstream classes adequately supported? *Australian Journal of Learning Disabilities*, 15-21.

Bashe, P., & Kirby, B. (2005, July 22). *Asperger's Syndrome.* Retrieved from OASIS@MAAP: http://www.aspergersyndrome.org

Bauer, J. (1996). *Asperger Syndrome.* Genesee Hospital-Rochester, NY, The Developmental Unit. Rochester: The Genesee Hospital.

Baum, S. (1988). An enrichment program for gifted learning disabled children. *Gifted Child Quarterly, 32,* 226-230.

Baum, S. (1990). Gifted but learning disabled: A puzzling paradox. *Eric Digest, E*, 479.

Baum, S. (2016, February 23). *Gifted but learning disabled: A puzzling paradox.* Retrieved from Kidsource: http://www.kidsource.com//kidsource/

Bianco, M. C. (2009). Gifted students with Asperger Syndrome: Strategies for strength-based programming. *Intervention in School and Clinic, 44*(4), 206-215.

Brody, L., & Mills, C. (1997). Gifted children with learning disabilities: A review of the issues. *Journal of Learning Disabilities,* 282-286.

Browder, D., Flowers, C., Ahlgrim-Delzell, L., Karvonen, M., Spooner, F., & Algozzine, R. (2004). The alignment of alternate assessment content with academic and functional curricula. *Journal of Special Education,* 211-223.

Campanelli, J., & Ericson, C. (2007). *Ohio's Twice-Exceptional students: A status study.* Columbus: Ohio State University.

Campanelli, J., & Ericson, C. (2014, February 21). Twice Exceptional guide. Columbus, Ohio, United States: Ohio Department of Education. Retrieved February 21, 2016, from http://ode.state.oh.us

Campanelli, J., & Ericson, C. (2014). *Twice exceptional guide: Preparing Ohio schools to close the achievement gap for gifted students with disabilities.* Ohio Department of Education. Columbus: Ohio Department of Education.

Carroll, D. (2006). Transformation ahead for special education. *Roeper Review*, *21*, 12-18.

Cash, A. (1999). A profile of gifted individuals with Autism: The twice-exceptional learner. *Roeper Review*, *22*(1), 22.

Cavagnaro, A. (2007). *Autistic Spectrum Disorders.* Retrieved from State of California: http://www.dds.ca.gov

Center for Public Education. (2016). *Class size and student achievement: Research review.* Retrieved March 16, 2016, from Center for Public Education: http://www.centerforpubliceducation.org/Main-Menu/Organizing-a-School/Class-size-student-achievement-At-a-glance

Centers for Disease Control and Prevention. (2015). *Prevalence of Autism Spectrum Disorders among children aged 8 years - autism and developmental disabilites monitoring network, 11 sites, United States, 2010.* Autism and Developmental Disabilities Monitoring Network. Atlanta: CDC. Retrieved March 6, 2016, from http://www.cdc.gov/mmwr/review/mmwrhtml/ss6302a1.htm?s_cid=ss6302a1_w

Centers for Disease Control and Prevention. (2015). *Prevalence rate for autism.* Atlanta: U. S. Dept. of Health and Human Services.

Clark, B. (1992). *Growing up Gifted.* New York: MacMillan.

Cline, S., & Hegeman, K. (2001). Gifted children with disabilities. *Gifted Child Today, 24*(3), 1-6.

Cohen, L., Lawrence, M., & Morrison, K. (2000). *Research methods in education.* London: Rutledge.

Compart, P. (2002, May 17). Understanding the new DSMV-V. Chicago, Illinois, USA.

Corcoran, T. (1995). *Helping teachers teach well: Transforming professional development for teachers: A guide for state policymakers.* Washington: National Governors Association.

Corn, A., & Henderson, L. (2001). Twice-exceptional students. *Gifted Child Today, 24*(3), 1-5.

Creswell, J. (2014). *Research design* (4th ed.). Thousand Oaks: Sage Publications.

Dahle, K., & Gargiulo, R. (2004). Understanding Asperger disorder: A primer for early childhood educators. *Early Childhood Education Journal, 32*(3), 100-203.

Darling-Hammond, L. (2012). Teacher quality and student achievement. *Center for Public Education,* 1-6.

Darling-Hammond, L., & Richardson, N. (2009). Teacher learning: What matters? *Educational Leadership, 66*(5), 46-53.

Delisle, J. (1992). *Guiding the social and emotional development of gifted youth: A practical guide for educators and counselors.* New York: Longman.

Diezmann, C., & Watters, J. (2006). Early entry to school in Australia: Rhetoric, research and reality. *Australian Journal for Gifted Education, 5*(1), 3-5.

FDR Research Group. (2008). *Results from a national teacher survey.* Chicago: FDR Research Group.

Fisher, M. (2011). Factors influencing stress, burnout, and retention of secondary teachers. *Current Issues in Education, 14*(1), 1-37.

Gallagher, J. (1994). *Current and historical thinking on education for gifted and talented students.* Washington: Office of Educational Research and Improvement.

Gallagher, S., & Gallagher, J. (2002). Giftedess and Asperger Syndrome: A new agenda for education. *Open Space Communications, 14*(2), 1-9.

Gallagher, S., & Gallagher, J. (2002, July 1). *Giftedness and Asperger Syndrome: A New Agenda for Education.* Retrieved July 22, 2014, from Open Space Communications: http://www.manta.com

Gallagher, S., & Gallagher, J. (2016, February 23). *Giftedness and Asperger Syndrome: A new agenda for education.* Retrieved from Open Space Communications: http://www.manta.com

Ganser, T. (2000). An ambitious vision of professional development for teachers. *NASSP Bulletin, 84*, 6-12.

Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences* (6th ed.). New York: BasicBooks.

Georgetown Independent School District. (2016, February 23). *Fall 2014 demographic update*. Retrieved from Georgetown Independent School District: http://georgetownisd.org

Gifted & LD. (2016, February 23). *Gifted & LD*. Retrieved from LDonline: http://www.ldonline.org/.indepth.gifted

Goodnough, K. (2001). Changing teacher beliefs about giftedness and differentiation practices. *Gifted and Talented International, 16*(2), 115-121.

Grandin, T. (1995). *Thinking in Pictures.* Novato: Doubleday.

Grandin, T. (2010, February 23). *Genius may be an abnormality: Educating students with Asperger's Syndrome.* Retrieved from Autism Research Institute: http://www.legacy.autism.com/individuals/.genius.htm

Greenwald, R., Hedges, L., & Laine, R. (1996). The effect of school resources on student achievement. *Review of Educational Research*, 361.

Gross, M. (1994). Changing teacher attitudes to gifted students through inservice training. *Gifted and Talented International, 9*(1), 15-21.

Guskey, T. (2002). Professional development and teacher change. *Teachers and teaching: Theory and Practice,* 381-391.

Halvorsen, A., & Neary, T. (2001). *Building inclusive schools: Tools and strategies for success.* Needham, MA: Allyn & Bacon.

Hansen, J., & Feldhusen, J. (1994). Comparison of trained and untrained teachers of gifted students. *Gifted Child Quarterly, 38*(3), 115-121.

Harrington, J., Harrington, C., & Karns, E. (1991). The Marland report: Twenty years later. *Journal of the Education of the Gifted, 15*(1), 31-43.

Hodge, K., & Kemp, C. (2006). Recognition of Giftedness in the early years of school: Perspectives of teachers, parents, and children. *Journal for the Education of the Gifted, 30*(2), 164-204.

Holdheide, L., & Reschly, D. (2008). *Teacher preparation to deliver inclusion services to students with disabilities.* Washington D. C.: NAGC.

Horn, B. (2009). Gifted students with Asperger's Syndrome. *Gifted Education International, 25*, 165-171.

Individuals with Disabilities Education Act. (2004). *Individuals with disabilities education act.* Washington: U. S. C.

John Templeton Foundation. (2004). *High achieving students in the era of NCLB.* West Conshohocken: Templeton Press.

Kearsley, G. (2015, September 25). *Elearningindustry.com/the-adult-learning-theory-adragogy-of-malcolm-knowles.* Retrieved from e Learning Industry: http://elearningindustry.com

Klin, A., & Bolkmar, F. (1995). *Guidelines for parents: Assessment, diagnosis, and intervention of Asperger Syndrome.* Pittsburgh, Pennsylvania: Learning Disabilities of America.

Kluth, P. (2004). Autism, autobiography, and adaptations. *Teaching Exceptional Chidlren, 36*(4), 42-47.

Kohn, A. (1999). *The schools our children deserve.* Boston: Houghton-Mifflin.

Konza, D. (2005/2006). Providing behavorial support for young children with Asperger's Syndrome in inclusive settings. *International Journal of Learning*, 1447-1475.

Kowalski, T. (2010). *Social-Pragmatic success.* Orlando: Professional Communication Services, Inc.

Liberty University. (2015, November 22). *Office of Graudate Education.* Retrieved from Liberty University: http://www.liberty.edu

Little, C. (2002). Which it it? Asperger's Syndrome or Giftedness? Defining the differences. *Gifted Child Today, 25*(1), 58.

Lovesky, D. (2004). *Different minds: Gifted children with ADD/ADHD, Asperger's Syndrome, and other learning deficits.* New york: Jessica Kingsley.

Mayo Clinic. (2016, February 23). *Mayo Clinic*. Retrieved from Mayo Clinic: http://www.mayoclinic.com/health/aspergers-syndrome/DS00551

McCoach, D., Kehle, T., Bray, M., & Siegle, D. (2001). Best practices in the identification of gifted students with learning disabilities. *Psychology in the Schools,* 403-411.

Miles, B., & Simpson, R. (2001). Effective practices for students with Asperger Syndrome. *Focus on Exceptional Children*, 1-14.

Miles, B., & Southwick, J. (2005). *Asperger Syndrome and difficult moments: Practical solutions for tantrums, rage, and meltdowns* (3rd ed.). Shawnee Mission, Kansas: Autism Asperger Publishing Company.

National Association for Gifted Children. (2016, February 27). *Asynchronous Development*. Retrieved from National Association for Gifted Children: http://www.nagc.org

National Association for Gifted Children. (2016, March 14). *Gifted Education in the U. S.* Retrieved from National Association for Gifted Children: http://www.nagc.org

National Association for Gifted Children. (2016, February 23). *Jacob Javits Gifted and Talented Students Education Act*. Retrieved from National Association for Gifted Children: http://www.nagc.org

National Commission on Teaching & America's Future. (1996). *What matters most: Teaching for America's future.* New York: U. S. Govt. Printing Office.

National Education Association. (2012, July 10). The twice exceptional dilemma. Retrieved from http://nea.org/assets/docs/twiceexceptional.pdf

Neihart, M. (2000). Gifted children with Asperger's Syndrome. *Gifted Child Quarterly, 44*(4), 222-230.

Neihart, M. (2002). *The social and emotional development of gifted children.* Waco: Pruf Publishing.

Neihart, M. (2004). Gifted with Aspergers not identified. *Gifted Child Quarterly, 44*(4), 222-230.

Neilson, M. (2005). The eye of the storm services and programs for twice-exceptional learners. *Teaching Exceptional Children, 38*(1), 8-15.

Nevada Partnership for Inclusive Education. (2015, November 9). *NVPIE*. Retrieved from Nevada Partnership for Inclusive Education: http://www.NVPIE.org

Nipcon, M., Alimon, A., Sieck, B., & Stinson, R. (2011). Empirical investigation of twice-exceptionality: Where have we been and where are we going? *Gifted Child Quarterly, 55*(3), 1-17.

Organization for Economic Cooperation and Development. (2016, February 23). *OECD*. Retrieved from OECD: http://www.oecd.org

Pearson. (2003, July 1). Weschsler Intelligence Scale for Children. San Antonio, Texas, United States: Pearson.

Reynolds, C., & Shaywitz, S. (2009). Response to intervention: Ready or not? Or from wait-to-fail to watch-them-fail. *School Psychology Quarterly: The Official Journal of the Division of School Psychology*, *24*(2), 130.

Richey, H. (1957). *Growth of the modern conception of in-service education.* Chicago: University of Chicago Press.

Rimland, B. (1995). Reaching the gifted student with autism. *Autism Research Review, 9*(2), 2.

Robinson, N. (2003). Two wrongs do not make a right: Sacrificing the needs of gifted students does not solve society's unsolved problems. *Journal for the Education of the Gifted, 26*, 251-273.

Rogers, C. (2007). Experiencing an inclusive education: Parents and their children with special educational needs. *British Journal of sociology of Education, 28*(1), 55-68.

Ross, P. (1993). *National excellence: A case for developing america's talent.* Washington: U. S. Government Printing Office.

Round Rock Independent School District. (2016, February 23). *Demographics*. Retrieved from Round Rock Independent School District: http://www.rrisd.org

RTI Network. (2016, February 27). *What is Response to Intervention*. Retrieved from RTI Action Network: http://www.rtinetwork.org/learn/what/whatisrti

Rutter, M., & Schopler, E. (1987). Autism and pervasive devlopmental disorders: Concepts and diagnositic issues. *Journal of Autism and Developmental Disorders, 63*(4), 159-186.

Safran, S. (2008). Why youngsters with autism spectrum disorder remain underrepresented in special education. *Remedial and Special Education, 29,* 2008.

Sage . (2016, February 23). *Behavior Management Models*. Retrieved from Sage Publications: http://www.sagepub.com/upm/-data/30397_1.pdf

Scheuerman, B., Webber, J., Boutot, A., & Goodwin, M. (2003). Problems with personnel preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 18*(3), 197-206.

Schilling, S. (2010). *The best kind of different.* Medfield: HarperCollins.

Schulman, V., & Armitage, D. (2005). Project discovery: An urban middle school reform effort. *Education and Urban Society, 37*(4), 371-397.

Siegle, D., & Powell, T. (2004). Exploring teacher biases when nominating students for gifted programs. *Gifted Child Quarterly, 48*, 21-29.

Silverman, L. (1992). The importance of early identification of the gifted. *Highly Gifted Children, 8*(1), 16-17.

Silverman, L. (1993). *A developmental model for counseling the gifted.* Denver, CO: Love Publishing.

Slavin, R. (1988). *Educational psychology theory into practice* (2nd ed.). Englewood: Prentice Hall.

Smoke, T. (2009). *Teachers perceptions on the student who is gifted and has learning disabilities.* Fullerton: California State University.

Smylie, M., Allensworth, E., Greensber, R., Harris, R., & Luppescu, S. (2001). *Teacher professional development in Chicago: Supporting effective practice.* Chicago, IL: Chicago Public Schools.

Statemaster. (2016, February 23). *Number of Children with Autism (per capita) (most recent) by state* . Retrieved from Statemaster: http://www.Statemaster.com/graph

Stupiansky, J., & Stupiansky, W. (2009). Is recess really important? *Young Children*, 66-69. Retrieved from Young Children: http://www.naeyc.org

Terman, I., & Oden, M. (1947). Generic studies of genius: The gifted child grows up. *The Gifted Child, 4*, 37-54.

Texas Education Agency. (2016, February 23). *Staff to Pupil Ratios*. Retrieved from Texas Education Agency: http://www.tea.tx.gov/texas

Texas Education Agency. (2016, February 23). *TEA*. Retrieved from Texas Education Agency: http://www.tea.org

Texas Education Agency. (2016, February 24). *Texas Education Agency*. Retrieved from Texas Education Agency: http://texas.education.agency.gov/curriculum_and_Instructional_Programs/Special_Education/Programs_and_Services/Response_to_Intervention

Tomlinson, C. (2004). Differentiation in diverse settings. *School Administrator, 61*(7), 28-33.

United States Congress. (2001). No Child Left Behind Act of 2001. *20 U.S.C. Section 6319*. Washington, DC, USA.

United States Department of Education. (1983). *A nation at risk: The imperative for educational reform: A report to the nation, the Secretary of Education, United States Department of Education.* Education. Washington: U. S. Dept. of Education.

United States Department of Education. (2016, February 23). *Giftedness Defined*. Retrieved from National Society of Gifted and Talented: http://www.nsgt.org/articles/index.asp

United States Government. (2001). *No Child Left Behind Act 2001*. Washington: United States Bureau of Printing.

University of Mary Hardin-Baylor. (2015, November 22). *Office of Graduate Admissions Education*. Retrieved from UMHB.edu: http://www.umhb.edu

Urban, W. (2010). *More than science and Sputnik: The National Defense Education Act of 1958.* Birmingham: University of Birmingham Press.

Webb, N., & Deitrich, A. (2005). Gifted and learning disabled: A neuropsychologist perspective. *Gifted Education Communicator, 36*(3 & 4), 1-4.

White House. (2012). *Investing in our future: Returning teachers to the classroom.* Washington: United States Government Publishing Office.

Whitmore, J., & Maker, C. (1985). *Intellectual giftedness in disabled persons.* Rockville: Aspen Publications.

Wiersma, W., & Jurs, J. (2005). *Research methods in education* (8th ed.). Boston: Allyn & Bacon.

Winebrenner, S. (2003). Teaching strategies for Twice-Exceptional students. *Intervention in School and Clinic, 38*(3), 131-137.

Wright, T. (2007, July 15). Gifted/talented children on a high poverty campus. *University paper*. Belton, Texas, United States: private.

Zecker, S. (2016, February 23). *Underachievement and learning disabilities in children who are gifted.* Retrieved from Northwestern University: http://www.nldline.com/gifted_and_ld.htm

APPENDIX A: SURVEY

Teacher Knowledge of Exceptional Characteristics in Early Childhood

Step 1 of 4 - Informed Consent

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study. *

- ○ Disagree
- ◉ **Agree**

The Gifted with Asperger's Syndrome (Twice Exceptional): A study of the relationship of teacher effects on early childhood teachers' knowledge

Terry L. Wright
Liberty University
Education Department

You are invited to be in a research study of student characteristics in those Gifted and those with Asperger's Syndrome. You were selected as a possible participant because you are a teacher in an early childhood classroom. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Terry L. Wright with the education department from Liberty University.

Background Information:

The purpose of this study is to survey the level of knowledge that early childhood teachers have regarding the characteristics of those students Gifted/talented and those with Asperger's Syndrome.

Procedures:

If you agree to be in this study, I would ask you to complete the following survey: Teacher Knowledge of Exceptional Characteristics. The whole process should take approximately 15-20 minutes.

Risks and Benefits of being in the Study:

The risks to participating in this study are minimal and are no more than you would encounter is everyday life.

The benefits to participation are contributions to the body of knowledge about the level of knowledge that teachers have regarding gifted/talented characteristics and Asperger's Syndrome characteristics as they present themselves in the early childhood classroom.

Compensation:

Upon completion of the survey, you will be given the opportunity to submit your email address, which will enter you into a drawing for a $50.00 Amazon gift card.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. Research records will be stored in a password-protected database accessible only by the researcher. Data will be used to complete the dissertation study and may be used to publish findings to professional journals. As no identifying information is collected about participants, there is no potential for breach of confidentiality.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision to participate will not affect your current or future relations with Liberty University or with Georgetown Independent School District. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Terry L. Wright. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at 512-868-7986 or tlwright@liberty.edu. You may also contact her faculty advisor, Kathie Morgan, at 434-582-2469, kcjohn@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

You may print a copy of this information to keep for your records.

IRB Code Number: 1799

IRB Expiration Date: April 25, 2015

Next

Teacher Knowledge of Exceptional Characteristics in Early Childhood

Step 2 of 4 - Background Information

25%

1. Years of Teaching Experience: *

- ☐ 0-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16+

2. Degrees *

- ☐ Bachelor's Degree
- ☐ Master's Degree in Education
- ☐ Master's Degree in Special Education

3. Certifications *

- ☐ Generalist
- ☐ Special Education
- ☐ Gifted and Talented

4. Do you personally know any children with Asperger's Syndrome? *

- ☐ Yes
- ☐ No

5. Do you personally know any children who are Gifted/Talented? *

- ☐ Yes
- ☐ No

6. Estimate the number of articles/papers you have read about Asperger's Syndrome: *

- ☐ 0
- ☐

1-2

- [ ] 3-4
- [ ] 5+

7. Estimate the number of articles/papers you have read about Gifted/Talented: *

- [ ] 0
- [ ] 1-2
- [ ] 3-4
- [ ] 5+

8. Estimate the number of in-service or workshop hours you have attended on the topic of Autism/Aspberger's Syndrome: *

- [ ] 0
- [ ] 1-2
- [ ] 3-4
- [ ] 5+

9. Estimate the number of in-service or workshop hours you have attended on the topic of Gifted and Talented: *

- [ ] 0
- [ ] 1-2
- [ ] 3-4
- [ ] 5+

Previous Next

Teacher Knowledge of Exceptional Characteristics in Early Childhood

Step 3 of 4 - Knowledge of Children with Aspberger's Syndrome

50%

Children with Asperger's Syndrome often demonstrate excellent fluency. *

Strongly disagree Disagree Neutral Agree Strongly agree

0 1 2 3 4

Children with Asperger's Syndrome typically show concern and empathy for others. *

Strongly disagree Disagree Neutral Agree Strongly agree

Children with Asperger's Syndrome are significantly delayed academically. *

Strongly disagree Disagree Neutral Agree Strongly agree

Children with Asperger's Syndrome demonstrate inappropriate or immature emotions. *

Strongly disagree Disagree Neutral Agree Strongly agree

Children with Asperger's Syndrome easily recall the names of friends in their classes. *

Strongly disagree Disagree Neutral Agree Strongly agree

Children with Asperger's Syndrome benefit the most from working in groups. *

Strongly disagree Disagree Neutral Agree Strongly agree

Children with Asperger's Syndrome function best in unstructured settings. *

Strongly disagree Disagree Neutral Agree Strongly agree

Children with Asperger's Syndrome often demonstrate an advanced vocabulary. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome enjoy new activities. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome make and keep friends easily. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome have trouble reading social cues. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome understand jokes easily. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome often choose solitary activities. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome may talk nonstop and seem unaware whether anyone is listening. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome demonstrate normal physical coordination. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome may replace one obsessive interest with another over time. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome need help with transitions. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome often dominate conversations with others. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome may have trouble keeping up with their things. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Children with Asperger's Syndrome may have trouble managing time. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Previous Next

Teacher Knowledge of Exceptional Characteristics in Early Childhood

Step 4 of 4 - Knowledge of Gifted/Talented Children

75%

Gifted/talented children struggle to remember the names of their classmates. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children have an excellent memory for facts about a variety of topics. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children may have an intense focus on topics of interest. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children are often concerned about the needs of society. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children are strong in all academic subjects. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children display unusually deep emotions and sensitivities. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children have difficulty understanding the other person's point of view. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children have a keen sense of humor; comical. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children may have learning disabilities. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children are aware that they are different from their peers. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children understand and follow unwritten rules of social interaction. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children tend to be followers. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children may not like change, but will often go along with it. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children have a high degree of energy. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children are irresponsible and cannot be counted on. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children tend to question authority; are uninhibited in giving opinions. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children typically do not show empathy or concern for others. *

Strongly disagree Disagree Neutral Agree Strongly agree

Gifted/talented children demonstrate asynchronous development. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children are identified only by high IQ scores. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Gifted/talented children easily separate relevant from irrelevant information. *

Strongly disagree Disagree Neutral Agree Strongly agree

○ ○ ○ ○ ○

Additional Comments:

250 Character Limit

0 of 250 max characters

Click the Submit button to complete the survey.

Previous Submit

APPENDIX B: SURVEY REFERENCES

Amend, E. R., Schuler, P., Beaver-Gavin, K., & Beights, R. (2009). A unique challenge: Sorting out the differences between Giftedness and Asperger's Disorder. Gifted Child Today, 32(4), 57-83.

Attwood, T. (2007). The complete guide to Asperger's Syndrome. New York: The Guilford Press.

Atwood, T., & Gray, C. (2012, July 20). The discovery of "Aspie" criteria. Retrieved from TonyAttwood.com Web site: http://tonyatwood.com.au/pdfs/attwood10.pdf

Bashe, P., & Kirby, B. (2005). The Oasis guide to Asperger's Syndrome. New York: Crown Publishing Group. Bauer, S. (1996). Asperger Syndrome [Symposium Paper]. Retrieved from OASIS@MAAP Web site: http://aspergersyndrome.org

Bianco, M., Carothers, D. E., & Smiley, L. R. (2009). Gifted students with Asperger Syndrome: Strategies for strength-based programming. Intervention in School and Clinic, 44(4), 206-215.

Dahle, K., & Gargiulo, R. M. (2004). Understanding Asperger Disorder: A primer for early childhood educators. Early Childhood Education Journal, 32(3), 100-203.

Neihart, M. (2004). Gifted children with Asperger's Syndrome. Gifted Child Quarterly, 44(4), 222-230. Retrieved from Davidson Institute for Talent Development Web site: http://www.davidsonGifted.org

APPENDIX C: LIBERTY UNIVERSITY INSTITUTIONAL REVIEW BOARD

April 23, 2014

Terry L. Wright IRB Exemption 1799.042314: The Gifted with Asperger's Syndrome (Twice Exceptional): A Study of the Relationship of Teacher Effects on Early Childhood Teacher's Knowledge

Dear Terry,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and that no further IRB oversight is required.

Your study falls under exemption category 46.101 (b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) 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.

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of

continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Name and signature on file

APPENDIX D: PERMISSION LETTER

TO: Institutional Review Board

FROM: Executive Director of Elementary Education

DATE: April 14, 2014

I grant Terry L. Wright, Liberty University Doctoral student, permission to provide an online survey of our teachers on early childhood teacher knowledge of Asperger's Syndrome and Gifted and Talented.

Name and Signature on file

APPENDIX E: PERMISSION TO CONDUCT STUDY

Hello Terry,

The survey looks fine. I can forward the information to staff. Would you send me an email that I can pretty much just forward on to staff the explains the reason for the survey along with the password and any other relevant information.

Thanks,

Name and signature on file

APPENDIX F: PERMISSION TO ADD ADDITIONAL TEACHERS

Good Morning Terry,

This email is to inform you that your request to recruit an additional group of early childhood teachers on an individual basis who will be in attendance at an upcoming conference and with whom you are already acquainted has been approved.

Thank you for complying with the IRB's requirements for making changes to your approved study. Please do not hesitate to contact us with any questions. We wish you well as you continue with your research.

Best,

G. Michele Baker, MA, CIP
Institutional Review Board Coordinator
The Graduate School