

AN INVESTIGATION OF CHARACTERISTICS OF PROGRAMS
AND SERVICES IN SCHOOLS SERVING INDIVIDUALS
WITH AUTISM SPECTRUM DISORDERS

A DISSERTATION
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TEXAS WOMAN'S UNIVERSITY
COLLEGE OF SPECIAL EDUCATION

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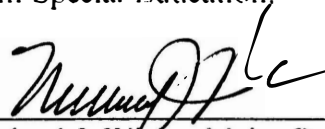
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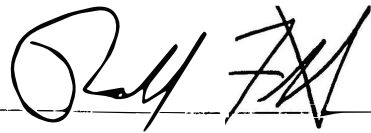
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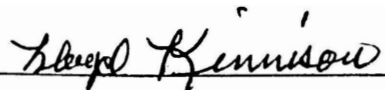
I am submitting herewith a dissertation written by Muna Bajunaid entitled "An Investigation of Characteristics of Programs and Services in Schools Serving Individuals with Autism Spectrum Disorders." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Special Education.

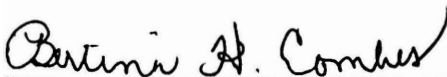


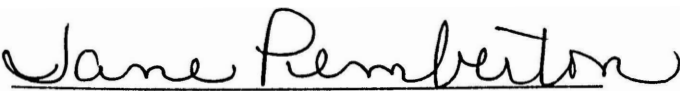
Michael J. Wiebe, Major Professor

We have read this dissertation and recommend its acceptance:









Department Chair

Accepted:

Dean of the Graduate School

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DEDICATION

I would like to dedicate this Doctoral dissertation to my parents. To the soul of Alshiekh Abdullah Alfgeeh bin Muhammad bin Omar Bajunaid, my late father. I have special feelings of gratitude to my loving father, whose words of encouragement and support are still ringing in my ears. Despite the passage of more than two decades of your death, your voice still rings in my ears and in my heart, calling me Dr. Muna. You believed in me even in my early ages. Dad, Allah the almighty fulfilled your dreams and mine; now they call me Dr. Muna Abdullah Bajunaid. I wish you were here. Dad, to attend my celebration and for me to see the happiness in your eyes. May your soul rest in peace in the paradise, Amen.

Also, I wish to express a very special gratitude, respect, and love to the one and only person whom I owe everything I am today to her. My Mom. Her encouragement, support, praying, and faith in my abilities, has shaped me to who I am now. Thank you Mom for everything, may Allah the almighty bless you with happiness all your life, Amen.

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Although my name appears on the cover of this dissertation, I could never have reached the depths of this knowledge without the aid, support, direction and efforts of a lot of great people. Without their help, this dissertation would not exist.

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ABSTRACT

MUNA ABDULLAH BAJUNAID

AN INVESTIGATION OF CHARACTERISTICS OF PROGRAMS AND SERVICES IN SCHOOLS SERVING INDIVIDUALS WITH AUTISM SPECTRUM DISORDERS

MAY 2010

The first purpose of this study was to identify the characteristics of specific programs that exist in public and/or private schools with a history in treating individuals with Autism Spectrum Disorders (ASD). A second purpose of this study was to assess the differences between actual and ideal levels of ancillary services as perceived by professionals working with individuals with ASD. The third purpose of the study was to assess the relationship between actual and ideal levels of interventions used with individuals with ASD. A survey with four sections was developed. Section I of the survey asked the participants to provide demographic information. Section II had two parts; Part A asked for the ancillary services used in the treatment of individuals with ASD; and Part B asked the participants to provide their point of view about the most effective ancillary services. Section III presented five interventions used in the treatment of ASD as currently defined in professional literature. This section examined the professionals' perceived level of importance and their perceived level of utilization. Section IV was a qualitative question asking the participants to provide their point of view about the most effective intervention used. The sample consisted of 50 participants of Texas Council of

Administrators of Special Education (TCASE) members currently employed in the Education Service Center (ESC) at regions 10 and 11 in Texas.

The TCASE members perceived speech and language therapy as the most important and the most frequently used. They also perceived technology therapy as the second most important and most frequently used. The responses indicated that the TCASE members perceived physical therapy as the least frequently used and the least important.

TCASE members agreed in their perceived level of importance and utilization only for the interventions' stereotyped patterns; however, there were some agreement and disagreement in their perceived level of importance and utilization of the interventions' social and communication dimensions.

The majority of the respondents preferred Applied Behavioral Analysis (ABA) and Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH). The least preferred interventions were Discrete Trail Training (DTT) and Early Intensive Behavioral Intervention (EIBI.) Research limitations and further research recommendations were also presented.

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CHAPTER I

INTRODUCTION

Autism Spectrum Disorders

Infants and young children with symptoms of autism need to have contact with others to thrive and grow. Most children smile, cuddle, laugh, and respond eagerly to games like "peek-a-boo" or hide-and-seek. However, children with symptoms of autism do not interact in this expected manner. Instead, they seem to exist in their own world, a place characterized by repetitive routines, odd and peculiar behavior, problems in communication, and a lack of social awareness or interest in others. These are the characteristics of a developmental disorder called autistic disorder or Autism Spectrum Disorder (ASD; National Institute of Mental Health, 2008).

The term autism was, for years, only used in some circles of psychiatrists and psychologists. It is believed to have been first introduced by noted Swiss psychiatrist Eugene Bleuler, who used the term to describe an individual's exclusion of the outside world and virtual withdrawal from social life. The words "autistic" and "autism" are from the Greek word "autos" meaning "self" (Bleuler, 1951).

Kanner described children in a 1943 paper titled *Autistic Disturbances of Affective Contact*. He described a distinct syndrome instead of previous depictions of such children as "feeble-minded, retarded, moronic, idiotic, or schizoid" (Kanner, 1943). His approach was to collect the variety of symptoms presented by the 11 children (8 boys, 3 girls) in

his study. Then Kanner described those children as unable to relate themselves in the ordinary way to their environments from the beginning of life. Also, he focused on deep descriptions of the family of many of his subjects (Kanner, 1968). So, Kanner was the first to describe autism as a specific condition.

In 1944, Asperger, published a paper that described a similar condition that later became known as Asperger Syndrome. These landmark papers featured the first theoretical attempts to explain complex disorders. Despite the papers published by Kanner and Asperger in the 1940s, autism as well as Asperger's Syndrome remains a mystery to the medical community (Whitman, 2004).

These two disorders, Autism and Asperger's Syndrome, are defined in the *Diagnostic Statistical Manual of Mental disorders, Fourth Edition* (DSM-IV, American Psychiatric Association [APA], 1994). According to the DSM-IV (APA, 1994), Pervasive Developmental Disorders (PDD) is the general category in which autism is a category with other subgroups including Autism Disorder (299.00), Asperger's Syndrome (299.80), Rett's Syndrome (299.80), Childhood Disintegrative Disorder (299.10), and Pervasive Development Disorder not Otherwise Specified (PDD-NOS; 299.80) .

According to the National Institute of Mental Health (NIMH, 2008), the term Autism Spectrum Disorders (ASD) now replaces Pervasive Developmental Disorders (PDD), which refer to a group of disorders characterized by delays in the development of basic functions including socialization and communication.

While there are many concerns about labeling an individual with an ASD, the earlier the diagnosis of ASD is made, the better chance for early intervention. Diagnosing professionals depend on behavioral characteristics to make a judgment. For the diagnosis, problems have to occur in at least one of the areas of communication, socialization, or restricted behavior, and must be present before the age of three. The diagnosis requires two-stages; the first stage involves developmental screening, and the second stage involves a comprehensive evaluation by a multidisciplinary team (NIMH, 2008).

Screening

Several screening instruments have been developed to gather information about a child's social and communicative development within medical settings such as: Checklist of Autism in Toddlers (CHAT; Baird et al., 2000), the Modified Checklist for Autism in Toddlers (M-CHAT; Barton, Fein, Green, & Robins, 2001), the Screening Tool for Autism in Two-Year-Olds (STAT; Coonrod, Ousley, & Stone, 2000), and the Social Communication Questionnaire (SCQ; for children 4 years of age and older; Bölte, Holtmann, Poustka, 2008).

Some of these instruments depend only on parent responses to a questionnaire, and some rely on a combination of parent report and observation. These screening instruments assist in differentiating children with autism from other groups before the age of two. Screening instruments do not provide individual diagnosis but may lead to more comprehensive diagnosis of ASD. These screening methods may not identify children with mild ASD with high-functioning autism or Asperger syndrome. Other screening

instruments have been developed to target symptoms of Asperger syndrome such as: the Autism Spectrum Screening Questionnaire (ASSQ; Ehlers, Gillberg, Wing, 1999), and the Childhood Asperger Syndrome Test (CAST): Sex Differences (Williams et al., 2008). These instruments concentrate on social and behavioral impairments in children without significant language delay (NIMH, 2008).

Comprehensive Diagnostic Evaluation

The second stage of diagnosis must be comprehensive in order to accurately identify ASD problems or other developmental issues. Usually this evaluation is conducted by a multidisciplinary team. This team may include a psychologist, a neurologist, a psychiatrist, a speech therapist, or other professionals who are familiar with and diagnose children with ASD. Sometimes the comprehensive examination involves neurologic and genetic assessment, cognitive and language testing, and measures developed specifically for diagnosing autism are often used. Examples of these measures include the Autism Diagnosis Interview-Revised (ADI-R), the Autism Diagnostic Observation Schedule (ADOS-G), and the Childhood Autism Rating Scale (CARS). The ADI-R is a structured interview that consists of four factors: the child's communication, social interaction, repetitive behaviors, and age-of-onset symptoms; it is conducted usually with a caregiver. The ADOS-G is an observational measure used for socio-communicative behaviors that are often delayed, abnormal, or absent in children with ASD. The Childhood Autism Rating Scale (CARS) is a tool that aids in evaluating the child's body movements, adaptation to change, listening response, verbal communication,

and relationship to people. It is suitable for use with children over two years of age, and experts also recommend a hearing evaluation (NIMH, 2008).

Autism Spectrum Disorders (ASD) may cause severe and pervasive impairments in thinking, feeling, language, and the ability to relate to others (NIMH, 2008). There are impairments in both social interaction and non-verbal communication. While grammatically accurate, children use speech that is peculiar due to abnormalities of inflection and a repetitive pattern. Clumsiness is prominent both in their articulation and gross motor behavior. They usually have a circumscribed area of interest which usually leaves no space for more age-appropriate, common interests (NIMH).

Symptoms of Autism Spectrum Disorders

Autism Spectrum Disorder is considered one of the most complex developmental disabilities. Although some of the earliest published descriptions of autism date back to the 18th century, scientists are still unsure as to its causes.

There are some indicators that might help the parents to suspect that there is something wrong with their child, like for example, the child does not babble, point, or make meaningful gestures by one year of age, does not speak one word by 16 months, does not combine two words by two years, does not respond to name, loses language or social skills, has poor eye contact, does not seem to know how to play with toys, is attached to one particular toy or object, or does not smile (NIMH, 2008).

Usually the differences in the way children with ASD react to people in their environment occur between 12 and 36 months. However, some parents report the changes

as gradual while others report symptoms that appear suddenly: they lose their language, lose their social skills, and act strangely. All children with ASD demonstrate deficits in 1) social interaction, 2) verbal and nonverbal communication, and 3) repetitive behaviors or interests, and unusual responses to sensory experiences, such as certain sounds or the way objects look. Each of these symptoms will manifest in each individual child differently (NIMH, 2008).

Social Symptoms

It is typical that infants gaze at people, turn toward voices, grasp a finger, and even smile. However, infants with ASD seem to have difficulty learning to engage in this kind of interaction. Even in the first few months of life they seem to prefer being alone, resist attention and hugs, and moreover, they do not seek comfort or respond to affection. Research has suggested that children with ASD have difficulty with the expression of attachment to their parents. Children with ASD have difficulty interpreting others thinking and feeling, are unable to interpret gestures and facial expressions, and the social world may seem strange to them. The individual with ASD might also be disruptive and physically aggressive, which makes social relationships more difficult. They also have a tendency to lose control when they are in a strange environment. Individuals with ASD may attack others, hurt themselves, bang their heads, pull their hair, or bite their arms (NIMH, 2008).

Communication Difficulties

Normally by the age of three, children are predicted to master the basic concepts of language, starting with babbling. Then by the first year, a typical toddler says words, response to his name, points to things that he wants, and refuses things that he/she dislikes by saying “no.”

However, some children with ASD remain mute throughout their lives. Some infants, who are diagnosed later with ASD, coo and babble during the first few months of their lives, but they soon stop. Other children with ASD may be delayed and develop language as late as age five to nine; however, they often are unable to combine words into meaningful sentences or speak only single words. Some children with ASD repeat the same words or phrase; this condition called echolalia.

Other children with ASD have language and rich vocabularies; however, they cannot sustain conversation. Another difficulty is often the inability to understand body language or tone of voice. However, some children may learn to use communication systems through pictures or sign language (NIMH, 2008).

On the other hand, it is hard for parents, teachers, or caregivers to understand what children with ASD want or try to say. It is also difficult to understand their body language, facial expressions, and movements. Their gestures rarely match what they are saying, as well as their tone of voice fails to reflect their feelings (NIMH, 2008).

Repetitive Behaviors

Children with ASD usually manifest odd and repetitive motions such as flapping their arms or walking on their toes. The child with ASD may become obsessed with certain things such as learning all about vacuum cleaners, train schedules, numbers, symbols, or science topics. Children with ASD prefer consistency in their environment; any change in any routine can be extremely disturbing (NIMH, 2008).

Problems that May Accompany ASD

Sensory Problems

Some ASD children are painfully sensitive to certain sounds, textures, tastes, and smells. One theory suggested that the brain of a child with ASD might be unable to balance the senses appropriately. For example, a light touch may make the child scream (NIMH, 2008).

Mental Retardation

Many children with ASD have some degree of mental impairment. When tested, some areas of ability may be normal; however, other areas may be very weak. For example, a child with ASD may do well on the parts of the test that measure visual skills, but score low on language (NIMH, 2008).

Individuals with ASD present significant educational challenges as they grow into adulthood. Children or adults with ASD do not easily adapt into society. Children and adults with ASD can remain highly resistant to changing self concepts that they have recently struggled so hard to carve out for themselves. Thus, possibilities for

transition success appear limited. If any progress is to be made in their lives, including a reasonable prospect of becoming independent and capable of managing complex adult relationships and responsibilities, children with ASD must complete structured programs (NIMH, 2008).

Statement of the Problem

The earlier a child with ASD starts treatment, the better. However, choosing or finding the right program or therapy for an individual with ASD is difficult. Programs are available, but specific information about program efficacy is difficult to find. From the review of the literature, it appears that there is a lack of available information about services and interventions of schools serving individuals with ASD. Thus, a need exists to compile a preliminary list of information and discipline of intervention strategies used in the treatment of individuals with ASD.

Purpose of the Study

The first purpose of this study was to identify the characteristics of specific programs that exist in public and/or private schools with a history in treating individuals with ASD. A second purpose of this study was to assess the differences between actual and ideal levels of ancillary services as perceived by professionals working with individuals with ASD. The third purpose of the study was to assess the relationship between actual and ideal levels of interventions used with individuals with ASD.

CHAPTER II

REVIEW OF THE LITERATURE

History of Autism

Throughout history, people have lived with what we know today as autism spectrum disorder. Some of the earliest published descriptions of behavior that resembles autism date back to the 18th century (Center for Disease Control and Prevention; CDC, 2008).

The term autism was, for years, only used in some circles of psychiatrists and psychologists. It is believed to have been first introduced by noted Swiss psychiatrist Eugene Bleuler who used the term to describe an individual's exclusion of the outside world and withdrawal from social life. The words "autistic" and "autism" are developed from the Greek word "autos" meaning "self" (Bleuler, 1951).

Kanner was the first to describe autism as a specific condition as we know it today. Kanner based his discovery from 11 children he observed between 1938 and 1943; he described a group of children as having severe language, behavior, and social interaction difficulties. These characteristics are what have come to be the core elements of autism today. Asperger (1944), published another paper that first described a similar condition that later became known as Asperger Syndrome. Kanner (1949) suggested that the children with autism were emotionally damaged. Although Kanner was instrumental in framing the rigid parents/*refrigerator mother* theory, it was

Bettelheim, a child development specialist, who facilitated the acceptance by the public, psychiatrists, professionals in contact with children with autism, and many parents in the 1950s and 1960s. The results affect both parents and children; many parents were overwhelmed with guilt and families were split, and the children with ASD suffered because they were not given the type of education and help they needed (Bettelheim, 1967).

However, research from both Rimland and Schopler in the early 1960s began to challenge Bettelheim's opinion. Rimland reviewed articles on autism, including foreign articles he had translated, and found no evidence to support the hypothesis of a “refrigerator mother” causing autism. However, he discovered powerful evidence that autism was a biological disorder and outlined this evidence in his book “Infantile Autism” and its premise of neural theory of behavior. The biological theory had largely dispelled Bettelheim’s ideas (Rimland, 1964).

Schopler proposed three approaches to autism: first; that it is a developmental disorder; second, that treatment should be educational rather than psychiatric; and third, that parents can be effective co-therapists. Schopler was convinced that autism is not a psychological disorder and parents of children with autism should not be blamed for the cause of their children’s condition. Thus, Schopler defined his thesis from empirical studies of children with autism. In his research, he showed that children with autism tend to depend more on the near-receptor systems of touch and smell than on the

distance-receptors of sight and sound. This was one of the first studies to establish the neurological basis of the disorder (Schopler, 1965).

For decades, generations of mothers of children with autism were believed to contribute to their child's disorder. Soon after autism was categorized as a biological condition, Rett first described the syndrome that carries his name as a specific condition in a paper published in 1966. It is a unique neurological disorder that is often misdiagnosed as ASD. Rett syndrome occurs from 1:10,000 to 1:23,000 female births. Girls with Rett syndrome develop normally until 6 to 18 months of age but at 18 months begin to lose acquired speech and fine motor skills, develop repetitive hand movements. Decrease in head circumference may be noted at two months (Olsson & Rett, 1987).

Rutter and Folstein (1977) published the first autism twin study, which suggested a genetic basis for autism. It was a study of 21 pairs of British twins, in which at least one twin showed the syndrome of infantile autism.

In the early to mid-1990s, researchers began to theorize a genetic autism link with abnormalities noted on chromosome 15. In 1998, researchers reported evidence of a link between autism and chromosome 15q and chromosome 7q. In 2001, several researchers completed genetic screens that claimed to identify several “genomic regions” containing genes that could be associated with autism (Veenstra-Vanderweele, Christian, & Cook, 2004). Gillberg (1998) reviewed the literature on chromosomal disorders in autism, autistic-like conditions/atypical autism, and Asperger syndrome. Gillberg’s literature review revealed that the interaction of several

malformed genes located on several different chromosomes might influence the appearance of autism. However, Chromosome 15, mainly the q-arm and the sex chromosomes, may hold keys to the understanding of autism pathogenesis.

The two disorders, Autism and Asperger's Syndrome, were described and listed in the DSM-IV (APA, 1994). According to the DSM-IV, Pervasive Developmental Disorders (PDD) is the general category in which autism is categorized; other subgroups of PDD include Autism Disorder, Asperger's Syndrome, Rett's Syndrome, Childhood disintegrative Disorder, and Pervasive Development Disorder not Otherwise Specified (PDD-NOS).

According to the National Institute of Mental Health (2008), the expression Autism Spectrum Disorders (ASD) now replaces Pervasive Developmental Disorders (PDD), which refers to a group of disorders characterized by delays in the development of basic functions including socialization and communication.

The qualitative impairments that define some of the disorders such as Autistic Disorders, Asperger's syndrome, and Pervasive Development Disorders-Not Otherwise Specified (PDD-NOS) are outlined below according to APA (2000):

Diagnostic Criteria for 299.00 Autistic Disorders

- I. "A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):
 - A. Qualitative impairment in social interaction, as manifested by at least two of the following:

1. Marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
 2. Failure to develop peer relationships appropriate to developmental level
 3. A lack of spontaneously seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
 4. A lack of social or emotional reciprocity
- B. Qualitative impairments in communication as manifested by at least one of the following:
1. Delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
 2. In individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
 3. Stereotyped and repetitive use of language or idiosyncratic language
 4. Lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level

C. Restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:

1. Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
2. Apparently inflexible adherence to specific, nonfunctional routines or rituals
3. Stereotyped and repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements)
4. Persistent preoccupation with parts of objects

II. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

III. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder (APA, 2000, p 75).

Diagnostic Criteria for 299.80 Asperger's Disorder

I. "Qualitative impairment in social interaction, as manifested by at least two of the following:

- A. Marked impairment in the use of multiple nonverbal behaviors such as eye-to eye gaze, facial expression, body postures, and gestures to regulate social interaction

- B. Failure to develop peer relationships appropriate to developmental level
 - C. A lack of spontaneously 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)
 - D. A lack of social or emotional reciprocity
- II. Restricted repetitive and stereotyped patterns of behavior, interests and activities, as manifested by at least one of the following:
- A. Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity of focus
 - B. Apparently inflexible adherence to specific, nonfunctional routines or rituals
 - C. Stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
 - D. Persistent preoccupation with parts of objects
- III. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.
- IV. There is no clinically significant general delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years).
- V. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behavior (other than in social interaction), and curiosity about the environment in childhood.

VI. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia. (p. 84)

For Pervasive Developmental Disorder Not Otherwise Specified (299.80; Including Atypical Autism),

this category should be used when there is a severe and pervasive impairment in the development of reciprocal social interaction associated with impairment in either verbal or nonverbal communication skills or with the presence of stereotyped behavior, interests, and activities, but the criteria are not met for a specific Pervasive Developmental Disorder, Schizophrenia, Schizotypal Personality Disorder, or Avoidant Personality Disorder. For example, this category includes "atypical autism" - presentations that do not meet the criteria for Autistic Disorder because of late age at onset, atypical symptomatology, or subthreshold symptomatology, or all of these. (APA, 2000, p. 84)

So, the pervasive developmental disorders, or autism spectrum disorders, represent a unique diagnosis category, and range from a severe form, called autistic disorder, to a milder form, Asperger syndrome. If a child has symptoms of either of these disorders, but does not meet the specific criteria for either autism or Asperger's disorder, the diagnosis is called pervasive developmental disorder not otherwise specified (PDD-NOS). There are many different theories about what causes autism and what can be done to treat it. This makes things very confusing for parents who are struggling to come to terms with what is best for their child. Autism spectrum disorder affects different people

in different ways, and no two children with ASD are exactly alike (Geschwind & Levitt, 2007).

Autistic Disorder

Autism is a developmental disorder that usually appears at some stage in the first three years of life and might be as a result of a neurological disorder that affects the brain. The symptoms that appear before the age of three include delayed or abnormality in language, social and behavioral skills (APA, 2000).

Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS)

Pervasive developmental disorder-not otherwise specified (PDD-NOS) is a subtype condition in which some but not all features of autism are identified. PDD-NOS should not be referred as PDD; it refers to group of conditions to which autism belongs. PDD-NOS is a general category in which autism is classified according to DSM-IV-TR (APA, 2000).

Asperger's Syndrome

Asperger's Syndrome (AS) is a pervasive developmental disorder characterized by deficits in social interaction and motor coordination, and unusual or restricted patterns of interest or behavior. In AS, motor deficits are more obvious, and social deficits are present without communication impairment. In DSM-IV (APA, 2000), a diagnosis of AS requires the absence of significant delay in language acquisition, cognitive development, and adaptive behavior with the exception of social interaction.

Rett's Disorder

An inherited disorder that affects only females. the syndrome causes mental retardation and developmental degeneration. In people with Rett's Disorder (first reported by Rett in 1966), very early development is normal. Head growth then slows down, usually in the first months of life, and loss of firm hand movements occurs. Motor involvement and profound mental retardation is typical. Characteristic hand-washing stereotypes develop (APA, 2000).

Childhood Disintegrative Disorder (CDD)

Childhood Disintegrative Disorder (CDD) is a rare disorder, children with CDD develop a condition similar to autism but after a period of at least two years of normal development; losing of skills occurs over time, and the onset of decline is prior to age 10 (Autism Society of America, 2008). The etiology is unknown but evidence suggests that it occur as a result of some form of central nervous system pathology. It differs from autism in the pattern of onset, course, and outcome; children with CDD start to loss their skills (cognitive, social, and language skills) at age 3 to 4 (APA, 2000).

Prevalence of ASD

The prevalence of autism has increased dramatically over the past 10 years. Figures released from the California Department of Development reported a 273% increase in autism from 1987 to 1998, a rate of six new children a day. In 1994, 28,813 students ages 6-21 were identified as having autism within the United States; increasing to 118,603 children in 1995-1996 (an annual increase of 18-26%). Such increases in

diagnosis rates of autism have increased world-wide over the past ten years. According to the Center for Disease Control and Prevention (CDC), it is difficult to estimate the accurate prevalence of ASD for different reasons such as: ASD is a behavior condition, the diagnoses of children are often applied in different ages, and many with ASD are not diagnosed until they start school. However, based upon an updated report from the CDC released in 2006, it is estimated that ASD affected approximately “6.7 per 1,000 children in 2000 (6 sites) and 6.6 per 1,000 in 2002 (14 sites).” This equates to approximately 1 in 150 children. Most sites identified between 5.2 to 7.6 per 1,000 8-year-old children with ASD in 2000 and 2002.” Also, the CDC mentioned that 17 percent of children have developmental disabilities that range from mild disabilities such as speech impairment to serious developmental disabilities such as mental retardation and cerebral palsy, to severe developmental disabilities, which occur in two percent of children. Recently, according to CDC (2009), the estimation of children with ASD in the United States of America is between 1 in 80 and 1 in 240 with an average of 1 in 110 children.

While it is obvious that more children are classified as having ASD, it is still unclear if this increase is due to the changes in identification and classification of ASD or due to a true increase in prevalence. By using the current ASD standard, ASD is considered as the second most common serious developmental disability after mental retardation. The effect of having this kind of disability is huge for the children, their families, and the community services that provide intervention and support for them.

Characteristics of ASD

Children with ASD develop normally up until the age of about 18 months, around this time, normal development seems to stop. They display poor speech and language skills. These children also exhibit difficulty interacting with others, often lacking eye-contact and the need for human touch. Smith, Polloway, Patton, and Dowdy (2004) list the following behavioral deficits: social interaction, verbal and non verbal deficit, and sensory processing deficits.

Social Interaction

Individuals with ASD have social interaction problems; they seem to have difficulty learning everyday human interaction. Many individuals with ASD do not interact and they avoid eye contact, they seem indifferent to other people, they often seem to prefer being alone, and they may resist attention or passively accept hugs. Later, individuals with ASD seldom seek comfort or respond to parents' displays of anger or affection in a typical way. Research has suggested that although children with ASD are attached to their parents, their expression of this attachment is unusual. Children with ASD also are slower in learning to interpret what others are thinking and feeling (smile, wink, or a grimace). Without the ability to interpret gestures and facial expressions, the social world may seem puzzling. This inability leaves them unable to predict or understand other people's actions (APA, 2000).

Verbal and Nonverbal Communication Deficit

Many children with ASD exhibit communication problems. Some children diagnosed with ASD remain mute throughout their lives. Some infants who later show signs of ASD coo and babble during the first 12 months of life, but they soon stop. Others may be delayed, developing language as late as age five to nine. Some children may learn to use communication systems such as pictures or sign language (APA, 2000).

Individuals with ASD who speak tend to use language in unusual ways. They seem unable to combine words into meaningful sentences, some speak only single words, while others repeat the same phrase over and over, and some individuals with ASD have *echolalia*. Although many children with no ASD go through a stage where they repeat what they hear, it normally passes by the time they are three.

However, some individuals with only mild symptoms may exhibit slight delays in language, or even seem to have talented language and unusually large vocabularies, but have great difficulty in sustaining a conversation. Another difficulty is often the inability to understand body language, tone of voice, or phrases of speech. In addition, their body language is difficult to understand, and facial expressions, movements, and gestures rarely match what they are saying. Also, their tone of voice fails to reflect their feelings. Failing to have meaningful gestures or the language to ask for things, individuals with ASD fail to let others know what they need. As a result, they may scream or grab what they want (APA, 2000).

Sensory Deficit

Individuals with ASD often have unusual responses to sensory experiences, such as certain sounds or the way objects look. They will be different in individuals with ASD. For instance, individuals with ASD vary in their responses to sensation; some may be hypersensitive to some things, and some may be hyposensitive to others. Any of the senses may be affected. Individuals with ASD who are hypersensitive may withdraw from being touched, react badly to high voices, or avoid a certain food because of its texture. On the other hand, individuals with ASD who are hyposensitive may not feel the cold, or may seem oblivious to pain (APA, 2000).

Interventions for Students with ASD

Programs for individuals with ASD vary widely. These methods are to assess and to provide intervention and support to individuals with ASD and to family members of those with ASD. Some of these programs include the following: Applied Behavior Analysis (ABA; Skinner & Holland, 1961), Early Intensive Behavioral Intervention (EIBI; Nanette & Shorten, 1996), Discrete Trial Training (DTT; DeBoer & Sonja, 2006.), Verbal Behavior Intervention (VBI; Lynch & Rasmussen; 1965), and Structured Teaching Program: TEACCH (Schopler et al., 1950). Here is further information for each one of previous interventions.

Applied Behavior Analysis (ABA)

Applied behavior analysis approach (ABA) teaches social, motor, and verbal behaviors as well as reasoning skills (Skinner & Holland, 1961). ABA uses antecedent

stimuli and consequences to produce behavioral change. ABA includes the following components:

1. Selection of behavioral skill deficit;
2. Establishment of goals and objectives;
3. Formation of a method of target behaviors;
4. Baseline of the current behavior;
5. Delineate interventions for new skills to decrease interfering behaviors and;
6. Evaluate the effectiveness of the intervention constantly; frequently make adjustments as necessary to preserve the effectiveness intervention (Skinner & Holland, 1961).

ABA methods are frequently used for intervention strategies with persons with autism in at least six ways:

1. To increase behaviors by using reinforcement procedures, on-task behavior, or social interactions;
2. To teach new skills through systematic instruction and reinforcement procedures to teach functional life skills, communication skills, or social skills;
3. To maintain behaviors by teaching the child with ASD self control and self-monitoring procedures to maintain and generalize job-related social skills;
4. To generalize or to transfer behavior from one situation or response to another by performing well in the mainstream classroom and other places;

5. To restrict or narrow conditions under which interfering behaviors occur by modifying the learning environment;
6. Finally, to reduce interfering behaviors such as self injury or stereotypy (Skinner & Holland, 1961).

The efficacy of Applied Behavior Analysis (ABA) has been researched for more than 40 years, and it has been shown to be the most examined and scientifically proven treatment of all other programs. Other programs have not shown to be more effective or have the same amount of scientific evidence to support them as ABA has. ABA has been known as a behavioral method which is used in reducing inappropriate behavior, increasing communication, and increasing appropriate social behavior (Skinner & Holland, 1961).

Early Intensive Behavioral Intervention (EIBI)

EIBI is an educational program based on ABA methods. It teaches pre-academic skills such as; attending, imitation, matching, language, and social skills, in addition to reducing problem behavior. EIBI's instructional procedures include reinforcement, modeling, prompting, fading, shaping, and error correction (Shorten, 1996). Overall, EIBI is an extremely hopeful intervention with extensive scientific support. However, further meticulous research in clinical trials is needed (Smith, 1999).

Discrete Trial Training (DTT)

Discrete Trial Training (DTT) or The UCLA Young Autism Project (YAP) was developed by Dr. Lovaas (1987). It is a behavioral intervention project, and its goal is to

maximize behavioral treatment gains made by children with autism during most of their waking hours. DTT is an early intervention programs for children with ASD under the age of eight to learn communication and other essential skills. The individuals with ASD are rewarded for their successful performance or completion of tasks. It targets deficiencies in different areas such as: attention, motivation, cause-effect, and communication. DTT is a teaching tool for children with ASD through working directly with them in one-on-one tutoring. The DTT method has four distinct parts: (a) the trainer's presentation, (b) the child's response, (c) the consequence, and (d) a short pause between the consequence and the next instruction (between interval trials; DeBoer & Sonja, 2006).

Lovaas conducted an intensive Young Autism Project on 19 children with autism. Nine of the 19 children with autism who went through Lovaas's intensive Young Autism Project reached "normal functioning," measuring in the normal range of IQ and being able to complete the first grade unaided. Six years later, a follow-up study stated that these children were still functioning normally. Recently another follow-up indicated that these nine children with autism have maintained their developmental expands in their twenties to thirties (Gresham et al., 1999).

Gresham et al. (1999) reviewed the UCLA Yong Autism Project (YAP) or DDT. They concluded that there were a number of methodological concerns in the Lovaas (1987) study: for example, the absence of random assignment in all studies, also the original Lovaas study has never been replicated by independent researchers using the

same treatment intensity (40 hours or more per week for two or more years). Nonetheless, Gresham et al. still believe that DTT has an extensive and a strong base of empirical support in the Applied Behavioral Analysis (ABA). In addition, DTT was highly successful in teaching children discrimination among various stimuli; however, Gresham et al. questioned the evidence that DTT produced improvements in normative intellectual and social functioning.

Verbal Behavior Intervention (VBI)

Skinner published an approach called Verbal Behavior, which detailed a functional analysis of language. He explained that language could be grouped into a set of units, with each operant serving a different function. The Verbal Behavior approach focuses on teaching specific components of expressive language (Mand: requesting wants and needs; Tact: labeling or describing objects; Receptive repertoire: non-verbally following directions, discriminating between pictures and objects; Imitation: repeating, copying what was observed; Echoic: vocal imitation) first. The Verbal Behavior approach teaches each word or object across all functional relations to that word or object. VBI endeavors to capture a child's motivation to develop a connection between the value of a word and the word itself. Both ABA and VBI use similar systems to work with children (Barbera & Lynch, 1965).

Structured Teaching Program: TEACCH

In the early 1970s, *Treatment and Education of Autistic and Related Communication Handicapped Children* (TEACCH) was established by Schopler and

colleagues as a therapeutic tool to help individuals with autism understand their environments. The TEACCH method provides the individual with structured and organized environment; it is based on a structured teaching approach. This program allows for implementation of a variety of instructional methods; visual support strategies, Picture Exchange Communication System (PECS), sensory integration strategies, discrete trial, and music/rhythm intervention strategies. This method emphasizes five basic principles: (a) understanding the culture of autism; (b) using an individualized plan for each individual with ASD, rather than using a standard curriculum; (c) organizing the physical environment; (d) using visual cues for daily activities; (e) improving visual supports to facilitate individual tasks (Schopler et al., 1950).

There are only two studies to date that have investigated the effectiveness of TEACCH. Schopler and colleagues had conducted these studies in 1982 by collecting questionnaire data from 348 families whose children were currently or previously enrolled in the program. The majority of respondents indicated that the program was supportive. However, these studies included a highly heterogeneous sample (not all participants had autism), and it was marked by many severe methodological flaws (Schopler et al., 1950). Also, Gresham and colleagues (1999) indicated that TEACCH is not well established or an effective treatment for individuals with autism.

Comments on the Intervention Program for ASD

Children with ASD present exclusive and challenging requirements that need varied focus. There are common features of autism; however, there is also great variability in the disorder. Therefore, children with ASD need a comprehensive evaluation as well as specialized behavioral and educational programs. However, services for a person with ASD have been described as “limited, unavailable, and difficult to obtain, inappropriate, inaccessible, and costly” (Dymond, Gilson, & Myran, 2007).

Lack of accessibility of services, treatments, and professionals in this field (autism) has promoted growing alarm in the field about the services provided to ASD individuals. These factors and the growing number of individuals with ASD make the future of these individuals very unsure.

By law, any child with a disability at the age of three and older has the right to public education (Knoblauch & Sorenson, 2000). Nevertheless, there are multiple and different services and programs for children with ASD, such as Applied Behavior Analysis (ABA), Early Intensive Behavioral Intervention (EIBI), Discrete Trial Training (DTT), Verbal Behavior Intervention (VBI), Structured Teaching Program: TEACCH, and more. Mostly, each school, institution or even clinic uses different strategies or programs. Unfortunately, these services vary from one state to another, and the efficacy and safety of many of these interventions are based on individual beliefs rather than science or data. Struggling with the quality and quantity of services that are

provided for a child with ASD and falling short of making academic or social progress makes a person question the credibility of these programs.

Each school or agency that serves individuals with ASD needs a plan based on the individuals needs of the student incorporating everything from the professionals needed to work with the child to special programs with the appropriate physical resources for the therapies. A review of the literature offered few if any specific directions, or even suggested services to guide establishing a school or agency for individuals with ASD.

There are other factors affecting services for ASD children, from a lack of trained professionals, to limited specific training in ASD. While research-based treatment or services might be available for the individual with ASD, the professional who should deliver these services may not exist (Dymond, Gilson, & Myran, 2007).

Families of Children with Autism

Dymond, Gilson, and Myran (2007) studied parents' perspectives of school services through interviews, surveys, and focus groups. The results implied that many parents have difficulty accessing services. When rating their satisfaction with the services, parents had both positive and negative experiences, and indicated their concerns about the whole system.

Services offered for individuals with ASD vary from one state to another. So, a child may find exemplary services in one state, but may not find the same quality or quantity of the services in another state.

Although all children with disabilities must be offered a free and appropriate public education (National Information Center for Children and Youth with Disabilities, 1998), courts failed to have consistency specifying the meaning of the term “appropriate services.” Thus local governments often make their own decisions about the “appropriate type of services” (Dymond, Gilson, & Myran, 2007). This may explain the enormous variety and differences of services provided to children with ASD from one state to another, and maybe from one school to another.

All of these factors demand consideration from professional groups and networks who want to establish a program for children with ASD. A significant amount of information about children with ASD is available to private and public agencies. However, there is a little agreement in literature of best practices and services, leading to inconsistencies in delivery and gaps in program efficacy. So to avoid these gaps, professionals in the field have to work together as one group to help individuals with ASD. There are many ways to achieve that goal: through earlier diagnosis for children with ASD, providing training for all professionals involved with the individuals with ASD, increasing accessibility to services, raising funding for services, improving parents-professional cooperation, and providing policymakers services (Dymond, Gilson, & Myran, 2007).

Summary

Based on this literature review, there is evidence concerning the lack of available information about the range of specific services and interventions used by agencies

serving individuals with Autism Spectrum Disorders (ASD). Thus, a need exists to begin to explore the services and intervention strategies currently used in the treatment of children with ASD by agencies across the nation.

CHAPTER III

METHODOLOGY

Given the lack of available information about services and interventions of agencies serving individuals with ASD, a need exists to compile a preliminary list of information and discipline of intervention strategies used in the treatment of children with ASD. The first purpose of this study is to identify the characteristics of specific program elements that exist in public and/or private agencies with a history in treating individuals with ASD. The second purpose of this study is to assess the differences between actual and ideal levels of ancillary services offered to individuals with ASD. The third purpose of the study is to assess the relationship between actual and ideal levels of interventions used with individuals with ASD.

Research Questions

1. What are the characteristics of the programs used with individuals with ASD in schools or agencies with a history of serving individuals with ASD?
2. Are there significant differences in selected preferences for the use of ancillary services with students with ASD?
3. Are there significant differences in selected preferences for the use of interventions with students with ASD?

Instrumentation

A review of the literature suggested that there is a lack of available information about the services and interventions used by schools serving individuals with ASD. This survey was developed to collect more specific information.

A survey was developed with four sections. Section I of the survey presents demographic information. The demographic information reflected the school location (city and region), applicants' ages, approaches used by schools, estimated length of program, students' progress/change, the staff qualifications, the staff ethnicity and gender, the staff's years of teaching experience of students with ASD, teaching certificate(s) obtained, hours of ABA, EIBI, VBI, DTT, TEACCH training received/location, name of the training provided by schools, and communication with the families/ parents.

Section II included two parts. Part A describes specific ancillary services used in the treatment of individuals with ASD as currently defined in professional literature. The survey employed a 5 point Likert scale to determine the respondents' perceived level of utilization versus their perceived level of importance.

Part B posed one qualitative question, while the respondents asked to identify the most effective ancillary service(s) for the treatment of ASD students. As well, their justification for services was requested.

Section III was composed of five strategies for ASD students as currently defined in professional literature. These strategies included: Applied Behavior Analysis (ABA),

Early Intensive Behavioral Intervention (EIBI), Discrete Trial Training (DTT), Verbal Behavior Intervention (VBI), and Structured Teaching Program (TEACCH). Section III also consisted of 10 behavioral dimensions dealing with social, communication, and behavior developments for each of the previous five interventions. These three behavioral dimensions (social, communication, and stereotyped patterns) have been defined by APA for the diagnosis of ASD. The respondents were asked to use a 5 point Likert scale to rate each of these five interventions for their perceived level of utilization versus their perceived level of importance.

Section IV of the survey was a qualitative question asking the participants to identify the most effective intervention(s) for ASD students. As in Part B of the second section of the survey, the respondents' justification will be survived.

Content Validity

Content validity involves the systematic examination of an instrument to determine whether it covers a representative sample of the behavior domain to be measured (Anastasi & Urbina, 1997). To support the content validity of the survey instrument, higher education professors from the Department of Special Education at Texas Woman's University, the University of North Texas, and teachers for children with ASD reviewed the survey. After reviewing their feedback, the survey was modified. More specific instructions were added, and some formatting changes were made.

Sample and Procedure

Survey participants were the members of Texas Council of Administrators of Special Education (TCASE). TCASE provides training and technical assistance, facilitating communication among stakeholders, and shaping educational policies and practices in order to promote superior support services for students with special needs (TCASE, 2009). Data for this study was obtained from members of TCASE currently employed in Education Service Center (ESC) regions 10 and 11 in Texas. The sample cannot be defined as random, and participation in the study was voluntary. Prior to distributing the survey questions, higher education professors from the Department of Teacher Education at the Texas Woman's University, the University of North Texas, and teachers for children with ASD reviewed the survey. After the feedback from higher personal, the survey was modified.

A cover letter stating the purpose and the significance of the study, the importance of participants' responses, and an assurance of confidentiality was prepared. In addition, informed consent was explained on the survey and within the cover letter. All materials were distributed after the approval of the Texas Woman's University's Institutional Review Board (IRB).

The participants were asked to respond to demographic information, as well as qualitative and quantitative questions. After an initial response period of ten working days, reminder emails were sent to all participants.

Following the reminder emails, responses were counted. 50 responses were received. A descriptive analysis and Analysis of Variance (ANOVA) were utilized for this study.

Research Design

Survey research or a descriptive research design was utilized for the study. This design investigated phenomena as they are reported. The descriptive design allowed for data collection on a large number of variables in a single analysis, about the current problems or topic. This kind of descriptive design allowed for the examination of samples' characteristics when experimental manipulation was not possible (Gay & Airasian, 2003).

Data Analysis

A quantitative approach to data analysis was used for this study. Frequencies and measures of central tendency were used as the first level of data analysis for demographic information. For each program variable defined in the study, a One-Way Analysis of Variance (ANOVA) was used to determine the relationship between the perceived level of importance and the perceived level of utilization.

Qualitative items were analyzed to establish a major issue regarding the interventions and the ancillary services. Moreover, opinions regarding the strategies and ancillary services were discussed.

Limitations

The current study has the potential to provide useful information about services and programs for individuals with ASD. However, any survey has limitations that must be acknowledged.

1. Survey research has a low response rate of return which could affect the sample integrity to the target population.
2. Non-experimental research is limited because it is dependent on information obtained at a certain time and certain point.
3. This study is not a random study because schools, agencies, or centers were from regions 10 and 11 in Texas with a history of serving individuals with ASD.

Delimitation

The focus of this study was to obtain information regarding demographic, physical characteristics, and specific program interventions that existed in public or private agencies and were shared in common by programs with a history in treating individuals with ASD. This research was obtained from respondents who work with individuals with ASD in Texas regions 10 and 11. Depending on the response source and rates, this may affect the ability to generalize the information of trends to other populations.

CHAPTER IV

RESULTS

From the review of the literature, there appeared to be a lack of available information about services and interventions of schools serving individuals with ASD. Thus, a need existed to compile a preliminary list of information and discipline of intervention strategies used in the treatment of individuals with ASD.

The first purpose of this study was to identify the characteristics of specific program elements that existed in public and/or private schools with a history in treating individuals with ASD. A second purpose of this study was to assess the differences between actual and ideal levels of ancillary services offered to individuals with ASD. The third purpose of the study was to assess the relationship between actual and ideal levels of interventions used with ASD.

A survey was developed with four sections. Section I of the survey presented demographic information. The demographic information reflected the school location (city and region), clients' ages, approaches used by schools, estimated length of program, students' progress/change, the staff qualifications, the staff ethnicity and gender, the staff's years of teaching experience of students' with ASD, teaching certificate(s) obtained, hours of Applied Behavior Analysis (ABA), Early Intensive

Behavioral Intervention (EIBI), Verbal Behavior Intervention (VBI), Discrete Trial Training (DTT), Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) training received/location, name of the training provided by schools, and communication with the families/ parents.

Section II included two parts. Part A described specific ancillary services used in the treatment of individuals with ASD as currently defined in professional literature. The survey employed a 5 point Likert scale to determine the respondents' perceived level of utilization versus their perceived level of importance. Part B presented one qualitative question, asking the respondents to identify the most effective ancillary service(s) for the treatment of ASD students.

Section III was composed of five major strategies for ASD students as currently defined in professional literature. These strategies included: Applied Behavior Analysis (ABA), Early Intensive Behavioral Intervention (EIBI), Discrete Trial Training (DTT), Verbal Behavior Intervention (VBI), and Structured Teaching Program (TEACCH). Ten behavioral dimensions dealing with social, communication, and behavioral developments as defined by APA for the diagnosis of ASD were used for each strategies. The respondents were asked to use a 5 point Likert scale to rate each of these behavioral dimensions for their perceived level of utilization as well as their perceived level of importance.

Section IV of the survey was an open-ended qualitative question asking the participants to identify the most effective intervention(s) for ASD students. As in Part B

of the second section of the survey, the respondents’ responses was analyzed, (See Appendix D).

Demographic Information

Demographic information was collected from all participants from regions 10 and 11 of the State of Texas. A total of 134 members of the Texas Council of Administrators of Special Education (TCASE) from Education Service Centers (ESC) were identified for this study. The results in Table 1 showed that only 50 responded. This group was composed of both mailed-in and electronic responses. Responses were obtained from 15 TCASE members from ESC region10, 24 TCASE members from ESC region 11, 1 from region 12, and 10 did not respond.

Table 1
TCASE Members Geographic Information

	N	%
Region 10	15	30.0
Region 11	24	48.0
Region 12	1	2.0
No Response	10	20.0

In Table 2, information regarding the ages of students served revealed that 52% of respondents provided services for the larger group of ages 3-21, and 2%-12% of the

respondents provided services for ages from preschool to secondary. One school from region 11 specified that they provided services for intermediate fifth and sixth grades, another school from region 10 reported that they served children from birth to 21, one school from region 12 provided services for a combination of ages 6-8, and 18% did not respond.

Table 2

Age Ranges of Students Served

	n	%
Preschool (K)	2	4.0
Grades 1-5	5	10.0
Grades 6-8	1	2.0
Grades 9-12	1	2.0
Combination of Ages	6	12.0
All ages (3-21 yrs)	26	52.0
No Response	9	18.0
Total	50	100.0

The respondents were asked about general intervention approaches, 80% of the respondents provided an individual design approach, 2% of the respondents provided a single approach with individual modifications, and 18% did not respond as showing in Table 3. Respondents were then asked to indicate if they advocated one intervention more

than another. Results in Table 4 indicated that 64% of the respondents answered no, 18 % of the respondents answered yes, with 3 of the respondents (from region 11) providing the approach name (ABA), and 18% did not respond.

Table 3

General Approaches to Interventions

	N	%
A Single Approach for all Clients	0	0.0
A Single Approach with Individual Modification	1	2.0
An Individually Designed Approach	40	80.0
No Response	9	18.0
Total	50	100.0

Table 4

Advocating Intervention Approaches

	n	%
Yes, One Approach Advocated	9	18.0
No Single Approach Advocated	32	64.0
No Response	9	18.0
Total	50	100.0

The duration of the treatment was another descriptive question with several forced choices. Results in Table 5 indicated 2% of the respondents provided treatment for 30 days or less, 78.0% of the respondents provided treatment for individuals with ASD for more than 90 days, and 22% did not respond.

Table 5

Estimated length of Treatment

	n	%
30 Days or Less	1	2.0
30-60 Days	0	0.0
60-90 Days	0	0.0
More than 90 Days	39	78.0
No Response	11	22.0
Total	50	100.0

Change in client behaviors was presented with choices of social, educational, or behavioral change as request of treatment. Table 6 indicated that only 35 respondents indicated that progress was made equally in all three areas, and 15 respondents did not answer this question of the survey.

Table 6

Social, Educational, & Behavioral Progress

	n	%
Social, Educational, & Behavioral Progress	35	70.0
No Response	15	30.0
Total	50	100.0

From Table 7, worker qualifications were determined as follows: 12% of the respondents indicated that their employees held a high-school diploma, 18% had a bachelor degrees, 16% had master degrees, 1% had doctoral degrees, 16% had other certifications, 24% of the workers had previous experience working with children with ASD, and 4% did not respond. Respondents were also asked to report the approximate percentage of the staff ethnicity working directly with students with ASD. Table 8 showed that the mean (average) of the percentages across all surveys were: 79.96 Caucasian, 14.1 African American, 8.68 Hispanic, 3 Asian, and 5 workers associated themselves with another ethnicity not mentioned in the survey. Staff gender as presented in participants in Table 9 indicated that 40% of the respondents reported only female employees, 40% reported both male and female workers, and 20% did not respond.

Table 10 lists staff teaching experience showed that 6.0% of the workers had between 0-3 years of experience, while 30% had 4- 6 years of experience. Additionally, 22 % had 7- 9 years of experience, 18% of the workers had more than 9 years of experience, and 24% of the respondents did not answer this item.

Table 7
Qualification Percentages of the Workers

	n	%
Respondents with High-School Diploma	6	12.0
Respondents with BS	9	18.0
Respondents with MS	8	16.0
Respondents with Ph.D.	5	1.0
Respondents with Other Certifications	8	16.0
Respondents with Previous Experience Working with Children with Autism	12	24.0
No Response	2	4.0
Total	50	100.0

Table 8

The Approximate Percentage of the Staff Ethnicity Working Directly with Students with ASD

	N	Mean	<i>SD</i>
Caucasian	28	79.96	17.15
African American	18	14.08	14.74
Hispanic	20	8.68	5.54
Asian	6	3.00	2.28
Other	1	5.00	.00

Table 9

Gender of Employees

	n	%
Male	0	0.0
Female	20	40.0
Both	20	40.0
No Response	10	20.0
Total	50	100.0

Table 10

Prior Teaching Experience

	n	%
0-3 years	3	6.0
4-6 years	15	30.0
7-9 years	11	22.0
More than 9 years	9	18.0
No Response	12	24.0
Total	50	100.0

Results in Table 11 showed that 18% of the workers had obtained a general education certificate, and 46% had obtained a special education certificate. Furthermore, 48% of the workers had obtained both special and general education certificates, and 10% had obtained other certificates (frequency exceeded 50 due to multiple selections from survey respondents).

Table 11

Teaching Certification(s) Obtained by Staff

	n	N	%
General Education	9	47	18.0
Special Education	23	47	46.0
Both	24	47	48.0
Other	5	45	10.0

Details for the types and length of staff training were collected. Table 12 indicated that the training hours ranged from 3-200 hours with a mean of 53 hours for ABA. Responses ranged from 1-200 hours with a mean of 48.6 hours of training for EIBI. VBI training ranged from 10-200 hours with a mean of 66.5 hours. Responses for DTT training ranged from 0-200 hours with a mean of 47.3 hours. Responses ranged from 0-400 hours with a mean of 41.6 hours of training for TEACCH.

In an open-ended question, 30% of the respondents indicated that they have received their training at a university and in their district workshops. Almost 70% of the respondents indicated that they had received their training in different workshops, district training, conferences, and at TCASE meetings.

Table 12

Hours of Specialized Training Received in any of the Following Interventions

	N	Mean	Min	Max
ABA Training Hours	27	53.00		200
EIBI Training Hours	13	48.60		200
VBI Training Hours	11	66.50	10	200
DTT Training Hours	15	47.30	0	200
TEACCH Training Hours	29	41.60	0	400

Table 13 presents information for staff training to enhance the professional skills, 6.0% of the workers had received formal academic courses, 74% of the workers had received in-service or staff development activities, 22.0 % of the workers had received other kinds of training, and 3% had Board Certified Behavior Analyst (BCBA) training (frequency exceeded 50 due to multiple selections from each survey respondents). Respondents were asked about the primary mode of communication used for family contact. Results presented in Table 14 indicated that 22% of the workers had used email to communicate with families, 29.6% had used phone, and 11% had used mail. Face to face communication was reported by 29.6% of the respondents, 3.7% involved families in the treatment, and 29.6% of the respondents had used all six areas (frequency exceeded 50 due to multiple selections from each survey respondents).

Table 13

Training to Enhance the Professionals’ Skills

	n	%
Formal Academic Courses	3	6.0
In-service or Staff Development Activities	37	74.0
Other	11	22.0

Table 14

Mode of Communication

	n	%
Email	23	46.0
Phone	28	56.0
Mail	22	44.0
Face to Face	27	54.0
Involve Families in Treatment	19	38.0
All of the Above	24	48.0

Research Question Analysis

All items of the survey were subjected to statistical analysis using the Statistical Package for Social Science (SPSS) version 15.0. Descriptive statistics were generated and a one-way analysis of variance was computed to address research questions. Additionally, staff responses were analyzed to find trends.

Therapy Services Time of Use and Importance

A one-way ANOVA between- groups analysis of variance was performed to investigate therapy services differences between the perceived level of importance and frequent use in each of the defined ancillary services. Ancillary services (Table 15) included: speech and language therapy, occupational therapy, physical therapy, psychological therapy, the use of technology, and peer-tutoring.

In Table 15, responses to the actual use of speech therapy resulted in a mean of 4.35. The response to the perceived level of importance of speech therapy resulted in a mean of 4.70. When comparing use and importance of speech therapy, there was a statistically significant difference between speech and language therapy on the actual use and the perceived level of importance (see Table 16). This suggested the perceived value of speech therapy was greater than the actual use. In Table 15, responses to the actual use of occupational therapy resulted in a mean of 3.57. The responses to the importance of occupational therapy resulted in a mean of 3.97. There was a statistically significant difference in occupational therapy on the actual use and perceived level of importance. This suggested that the perceived value of occupational therapy was greater than the reported actual use (see Table 17). Finally, in Table 15, responses to the actual use of

physical therapy resulted in a mean of 2.82. The response to the importance of physical therapy resulted in a mean of 3.40. There was a statistically significant difference in physical therapy on the actual use and on the perceived level of importance (see Table 18). This suggested that the perceived value of physical therapy was greater than the reported use.

Table 15

Perceived Level of Importance & Actual Use of Therapy Services

	N	Mean	SD
Actual Use			
Speech & Language Therapy	40	4.35	.48
Occupational Therapy	40	3.57	.71
Physical Therapy	40	2.82	.98
Psychology Therapy	40	3.20	1.04
Assistive Technology Therapy	39	3.71	.94
Peers Therapy	40	3.00	.81
Level of Importance			
Speech & Language Therapy	40	4.70	.46
Occupational Therapy	34	3.97	0.83
Physical Therapy	40	3.40	1.03
Psychological Therapy	40	3.75	1.08
Assistive Technology Therapy	40	4.00	.78
Peers Therapy	40	3.75	.80

Table 16

ANOVA for Actual Use and Perceived Importance of Speech & Language Pathology

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	2.10		2.10	11.40	.002
Within Groups	7.00	38	.18		
Total	9.10	39			

Table 17

ANOVA for Actual Use and Perceived Importance of Occupational Therapy Perceived

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	4.52	3	1.51	6.24	.002
Within Groups	7.25	30	.24		
Total	11.77	33			

Table 18

ANOVA for Actual Use and Perceived Importance of Physical Therapy Perceived

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	20.86	4	5.22	10.79	<.001
Within Groups	16.92	35	.48		
Total	37.78	39			

In Table 15, responses to the actual use of psychological therapy resulted in a mean of 3.20. The response to the importance of psychological therapy resulted in a mean 3.75. There was a statistically significant difference in psychological therapy on the actual use and the perceived level of importance (see Table19). This suggested that the perceived value of psychological therapy was greater than actual use. In Table 15, responses to the actual use of technology therapy resulted in a mean of 3.71. The responses to the importance of technology therapy resulted in a mean of 4.00. There was a statistically significant difference on the actual use of technology therapy and the perceived level of importance (see Table20). This suggested that the perceived value of the technology therapy greater than the reported use. Finally, in Table 15, responses to the actual use of peer-tutoring resulted in a mean of 3.00. The responses to the importance of peer-therapy resulted in a mean of 3.75(see Table 21). There was a

statistically significant difference on the use and the perceived level of importance of peers-tutoring. This suggested that the perceived value of peer-tutoring was greater than the reported use.

Table 19

ANOVA for Actual Use and Perceived Importance of Psychological Therapy Perceived

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	15.55	4	3.89	5.07	.002
Within Groups	26.85	35	.77		
Total	42.40	39			

Table 20

ANOVA for Actual Use and Perceived Importance of Assistive Technology

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	12.67	3	4.22	6.96	.001
Within Groups	21.23	35	.61		
Total	33.89	38			

Table 21

ANOVA for Actual Use and Perceived Importance of Peers Therapy

	Sum of <u>Squares</u>	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	6.86	3	2.29	4.29	.011
Within Groups	19.14	36	.53		
Total	26.00	39			

Therapy Services Perceived Level of Importance

Qualitative responses about the most effective ancillary service(s) concerning children with ASD showed that 7 out of 50 respondents indicated that speech and language therapy is the most effective ancillary service. The respondents considered it a way of teaching communication and pragmatic skills, which would increase the ability of an individual with ASD to be more successful and more productive in his /her environment or community. Six out of 50 respondents mentioned that involving parents, using social-skill training and parent-training would help families and their children with ASD. Five out of 50 respondents did not answer this question. Two out of 50 respondents specified that the use of peer-tutoring is the most effective ancillary service for individuals with ASD. Through modeling and contacting with their peers, they would learn a great amount of social skills.

Interventions Importance and Use for ABA

Descriptive statistics were generated and a one-way analysis of variance was performed to investigate interventions' service differences of the perceived level of importance and the actual use in programs utilizing an ABA approach. Three behavioral dimensions of ASD were included in Table 22: social interaction, communication, and stereotyped patterns. The social interactions consisted of four categories: development of nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; development of peer relationships; development of spontaneously seeking to share enjoyment, interests, or achievements with other people; and development of social or emotional reciprocity.

Communication consisted of four categories: development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime); increasing the ability to initiate or sustain a conversation with others for individual with ASD with adequate language; reducing stereotyped and repetitive use of language or idiosyncratic language; and building up spontaneous play or social imitative play appropriate to developmental level.

The stereotyped patterns of behavior, interests, and activities consisted of two categories: decreasing stereotyped patterns of interest that are abnormal either in intensity or focus and reducing repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).

Table 22

Perceived level of Importance & Actual Use of ABA Interventions

	N	Mean	SD
Actual Use			
Social Behavior			
Nonverbal Behavior	38	4.30	.72
Peer Relations	38	4.20	.95
Spontaneous Seeking	38	3.94	.93
Emotional Reciprocity	37	4.05	1.03
Communication Behavior			
Language Delay	38	4.13	1.09
Sustain Conversation	38	4.18	.93
Idiosyncratic Language	38	3.95	.96
Spontaneous Play	38	3.89	.92
Stereotyped Patterns			
Stereotypes Intensity Focus	38	3.87	.99
Stereotypes Whole Body Movements	17	3.94	.83
Level of Importance			
Social Behavior			
Nonverbal Behavior	38	4.37	.67
Peer Relations	38	4.42	1.00
Spontaneous Seeking	38	4.16	1.03
Emotional Reciprocity	37	4.41	1.01

(continued)

Table 22. continued

Perceived level of Importance & Actual Use of ABA Interventions

	N	Mean	SD
Communication Behavior			
Language Delay	38	4.47	.95
Sustain Conversation	38	4.34	.94
Idiosyncratic Language	37	4.23	.85
Spontaneous Play	38	4.08	1.05
Stereotyped Patterns			
Stereotypes Intensity Focus	37	4.14	.86
Stereotypes Whole Body Movements	15	3.93	.70

The ANOVA was run to evaluate the differences between the actual use and perceived value of the importance of ABA social interaction. The results in Table 22 were as follows: response to the actual use of the development of nonverbal behaviors consisting of eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction had a mean of 4.37, while the responses to the importance of the development of nonverbal behaviors had a mean of 4.4. There was a statistically significant difference between the development of nonverbal behaviors on the actual use and the perceived level of importance (see Table 23). This suggested that perceived value of the development of nonverbal behaviors was greater than the actual use.

Table 23

ANOVA for Actual Use and Perceived Importance of ABA Non --Verbal Behavior

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	5.15	2	2.58	6.34	.004
Within Groups	14.22	35	.41		
Total	19.37	37			

In Table 22, responses to the actual use of the development of peer relations had a mean of 4.20. The responses to the importance of the development of peer relationships had a mean of 4.42. There was a statistically significant difference between the development of peer relations on the actual use and on the perceived level of importance. This suggested that the perceived value of peer relations was greater than the actual use (see Table 24). In Table 22, responses to the actual use of the development of spontaneously seeking to share enjoyment, interests, or achievements with other people had a mean of 3.94. The response to the importance of the development of spontaneously seeking to share enjoyment with other people had a mean of 4.16. There was a statistically significant difference between the actual use and the perceived level of importance on the development of spontaneously seeking to share enjoyment with other people (see Table 25). This suggested that the perceived value of the development of

spontaneously seeking to share enjoyment with other people was greater than the actual use.

Table 24

ANOVA for Actual Use and Perceived Importance of ABA Peer Relationships

	<u>Sum of Squares</u>	df	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	19.98	3	6.66	16.49	<.001
Within Groups	13.73	34	.40		
Total	33.71	37			

Table 25

ANOVA for Actual Use and Perceived Importance of ABA Spontaneously Seeking to Share Interests

	<u>Sum of Squares</u>	df	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	16.36	3	5.45	11.94	<.001
Within Groups	15.53	34	.46		
Total	31.89	37			

In Table 22, responses to the actual use of the development of the social or emotional reciprocity had a mean of 4.05. The response to the importance of the development of social or emotional reciprocity had a mean of 4.41. There was a statistically significant difference between the actual use and the perceived level of importance of the development of social or emotional reciprocity (see Table 26). This suggested that the perceived value of the development of the social or emotional reciprocity was greater than the actual use.

Table 26

ANOVA for Actual Use and Perceived Importance of ABA Social Reciprocity

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	19.05	3	6.35	11.13	<.001
Within Groups	18.84	33	.57		
Total	37.89	36			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of ABA communication interaction. The results in Table 22 were as follows: response to the actual use of the development of spoken language for individual with ASD with a language delay (using alternative modes) had a mean of 4.13. The responses to the importance of development of spoken language for individuals with

ASD with a language delay (using alternative modes) had a mean of 4.47. There was a statistically significant difference between the actual use and the perceived levels of importance of the development of spoken language for individuals with ASD with a language delay (using alternative modes)(see Table 27). This suggested the perceived value of the development of spoken language for individuals with ASD with a language delay (using alternative modes) was greater than the actual use.

Table 27

ANOVA for Actual Use and Perceived Importance of ABA Development Spoken Language

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	24.57	4	6.14	10.25	<.001
Within Groups	19.78	33	.60		
Total	44.34	37			

In Table 22, response to the actual use of increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language had a mean of 4.18. The responses to the importance of increasing the ability to initiate conversation with others had a mean of 4.34. There was a statistically significant difference between the actual use and the perceived levels of importance of increasing the

ability to initiate a conversation with others (see Table28). This suggested that the perceived value of increasing the ability to initiate a conversation with others was greater than the actual use.

Table 28

ANOVA for Actual Use and Perceived Importance of ABA Ability to Sustain Conversation

	Sum of <u>Squares</u>	Df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	16.14	4	4.04	8.55	<.001
Within Groups	15.57	33	.47		
Total	31.71	37			

In Table 22, responses to the actual use of reducing stereotyped and repetitive use of language or idiosyncratic language had a mean of 3.95. The responses to the importance of reducing stereotyped or idiosyncratic language had a mean of 4.23. There was a statistically significant difference between the use and the perceived level of importance on reducing stereotyped and repetitive use of language or idiosyncratic language (see Table 29). This suggested that the perceived value of reducing stereotyped and or idiosyncratic language was greater than the actual use.

Table 29

ANOVA for Actual Use and Perceived Importance of ABA Reduce of Idiosyncratic Language

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	16.35	3	5.45	10.25	<.001
Within Groups	17.54	33	.53		
Total	33.89	36			

In Table 22, response to the actual use of building up spontaneous play or social imitative play appropriate to developmental level had a mean of 3.89. The response to the importance of building up spontaneous play had a mean of 4.08. There was a statistically significant difference between the actual use and the perceived level of importance of building up spontaneous play (see Table 30). This suggested that the perceived value of building up spontaneous play or social imitative play appropriate to developmental level was greater than the actual use.

An ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of ABA stereotyped patterns of behavior. The results in Table 22 were as follows: response to the actual use of decreasing stereotyped patterns of interest that are abnormal either in intensity or focus had a mean of 3.87. The responses to the importance of decreasing stereotyped patterns of interest had a mean of 4.14. There

was a statistically significant difference between the actual use and the perceived level of importance of decreasing stereotyped patterns of interest (see Table 31). This suggested that the perceived value of decreasing stereotyped patterns of interest was greater than the actual use.

Table 30

ANOVA for Actual Use and Perceived Importance of ABA Build Up Spontaneous Play

	Sum of Squares	Df	Mean Square	F	p
Between Groups	15.98	4	3.99	8.46	<.001
Within Groups	15.59	33	.47		
Total	31.58	37			

Table 31

ANOVA for Actual Use and Perceived Importance of ABA Decrease Stereotyped Patterns of Interests that is Abnormal Either in Intensity or Focus

	Sum of Squares	df	Mean Square	F	p
Between Groups	14.61	3	4.87	7.40	.001
Within Groups	21.71	33	.66		
Total	36.32	36			

In Table 22, response to the actual use of reducing repetitive motor manners had a mean of 3.94. The responses to the importance of reducing repetitive motor manners had a mean of 3.93. There was no statistically significant difference between the actual use and the perceived level of importance of reducing repetitive motor manners (see Table 32). This suggested that the perceived value of reducing repetitive motor manners and the actual use are same or equal.

Table 32

ANOVA for Actual Use and Perceived Importance of ABA Reduced Repetitive Motor Manners Stereotyped Patterns of Interests

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	5.48	2	2.74	7.74	.007
Within Groups	4.25	12	.35		
Total	9.73	14			

Interventions Importance and Use for EIBI

Descriptive statistics were generated and a one-way analysis of variance was performed to investigate interventions' service differences of the perceived level of importance and the actual use in programs utilizing an EIBI approach. In Table 33, three behavioral dimensions of ASD were included: social interaction, communication, and stereotyped patterns. The social interactions consisted of four categories: development of

nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; development of peer relationships; development of spontaneously seeking to share enjoyment, interests, or achievements with other people; and development of social or emotional reciprocity.

Table 33

Perceived level of Importance & Actual Use of EIBI Intervention

	N	Mean	SD
Actual Use			
Social Behavior			
Nonverbal Behavior	29	4.10	.88
Peer Relations	29	4.10	.98
Spontaneous Seeking	30	4.10	.88
Emotional Reciprocity	28	4.10	1.05
Communication Behavior			
Language Delay	30	4.20	1.04
Sustain Conversation	30	4.10	.97
Idiosyncratic Language	30	3.90	.96
Spontaneous Play	30	4.10	.88
Stereotyped Patterns			
Stereotypes Intensity Focus	29	4.10	.92
Stereotypes Whole Body Movements	13	3.80	1.01
Level of Importance			
Social Behavior			
Nonverbal Behavior	29	4.10	.84
Peer Relations	29	4.00	1.04
Spontaneous Seeking	29	3.90	1.05
Emotional Reciprocity	28	4.00	.92

(continued)

Table 33. continued

Perceived level of Importance & Actual Use of EIBI Intervention

	N	Mean	SD
Communication Behavior			
Language Delay	28	4.30	.89
Sustain Conversation	29	4.00	.88
Idiosyncratic Language	29	4.10	.88
Spontaneous Play	30	4.00	.93
Stereotyped Patterns			
Stereotypes Intensity Focus	30	4.10	.84
Stereotypes Whole Body Movements	14	3.80	.97

Communication consisted of four categories: development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime); increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language; reducing stereotyped and repetitive use of language or idiosyncratic language; and building up spontaneous play or social imitative play appropriate to developmental level.

The stereotyped patterns of behavior, interests, and activities consisted of two categories: decreasing stereotyped patterns of interest that is abnormal either in intensity or focus; and reducing repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of EIBI social interaction. The results in Table 33 were as follows: response to the actual use of the development of nonverbal behaviors consisting of eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction had a mean of 4.10. Responses to the importance of the development of nonverbal behaviors had a mean of 4.10. There was a statically significant difference between the actual use and the perceived level of importance of non-verbal behavioral (see Table 34); even though the means were the same the difference arose from the variability of the variables.

Table 34

ANOVA for Actual Use and Perceived Importance of EIBI Non –Verbal Behaviors

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	15.14	3	5.05	21.85	<.001
Within Groups	5.54	24	.23		
Total	20.68	27			

In Table 33, responses to the actual use of the development of peer relations had a mean of 4.10. The responses to the importance of the development of peer relationships had a mean of 4.00. There was a statistically significant difference between the actual use

and the perceived level of importance of peer relationships (see Table 35). This suggested that actual use value of peer relations was greater than the perceived level of importance.

Table 35

ANOVA for Actual Use and Perceived Importance of EIBI Peers Relationship

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	12.44	3	4.15	7.67	.001
Within Groups	12.98	24	.54		
Total	25.43	27			

In Table 33, responses to the actual use of the development of spontaneously seeking to share enjoyment, interests, or achievements with other people had a mean of 4.10. The response to the importance of the development of spontaneously seeking to share enjoyment had a mean of 3.90. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spontaneously seeking to share enjoyment (see Table 36). This suggested that the actual use of the development of spontaneously seeking to share enjoyment was greater than the perceived level of importance.

Table 36

ANOVA for Actual Use and Perceived Importance of EIBI Spontaneously Seeking to Share Interests

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	10.68	3	3.56	8.26	.001
Within Groups	10.77	25	.43		
Total	21.45	28			

In Table 33, responses to the actual use of the development of the social or emotional reciprocity had a mean of 4.10. The response to the importance of the development of social or emotional reciprocity had a mean of 4.00. There was a statistically significant difference between the actual use and the perceived levels of importance of the development of social or emotional reciprocity (see Table 37). This suggested that the actual use of the development of the social or emotional reciprocity was greater than the perceived level of importance.

Table 37

ANOVA for Actual Use and Perceived Importance of EIBI Social Reciprocity

	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	23.00		7.67	31.12	<.001
Within Groups	5.67	23	.25		
Total	28.67	26			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of EIBI communication interaction. The results in Table 33 were as follows: response to the actual use of development of spoken language for individuals with ASD with a language delay had a mean 4.20. The responses to the importance of development of spoken language for individuals with ASD with a language delay had a mean of 4.30. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spoken language for individual with ASD with a language delay (see Table 38). This suggested that the perceived value of the development of spoken language for individual with ASD with a language delay was greater than the actual use.

Table 38

ANOVA for Actual Use and Perceived Importance of EIBI of Development Spoken Language

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	21.71	3	7.24	21.71	<.001
Within Groups	8.00	24	.33		
Total	29.71	27			

In Table 33, response to the actual use of increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language had a mean of 4.10. The responses to the importance of increasing the ability to initiate or sustain a conversation with others had a mean of 4.00. There was a statistically significant difference between the actual use and the perceived level of importance of increasing the ability to initiate or sustain a conversation with others (see Table 39). This suggested that the actual use value of increasing the ability to initiate or sustain a conversation with others was greater than the perceived level of importance.

Table 39

ANOVA for Actual Use and Perceived Importance of EIBI Ability to Sustain Conversation

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	16.52	3	5.51	14.30	<.001
Within Groups	9.62	25	.39		
Total	26.14	28			

In Table 33, responses to the actual use of reducing stereotyped and repetitive use of language or idiosyncratic language had a mean of 3.90. The responses to the importance of reducing stereotyped or idiosyncratic language had a mean of 4.10. There was a statistically significant difference between the actual use and the perceived level of importance of reducing stereotyped or idiosyncratic language (see Table 40). This suggested that the perceived value of reducing stereotyped or idiosyncratic language was greater than the actual use.

Table 40

ANOVA for Actual Use and Perceived Importance of EIBI Reduce of Idiosyncratic Language

	<u>Sum of Squares</u>	<u>Df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	19.13	3	6.38	23.18	<.001
Within Groups	6.88	25	.28		
Total	26.00	28			

In Table 33, response to the actual use of building up spontaneous play or social imitative play appropriate to developmental level had a mean of 4.10. The response to the importance of building up spontaneous play had a mean of 4.00. There was a statistically significant difference between the actual use and the perceived levels of importance of building up spontaneous play (see Table 41). This suggested that the perceived level of importance of building up spontaneous play was greater than the actual use.

Table 41

ANOVA for Actual Use and Perceived Importance of EIBI Build Up Spontaneous Play

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	15.53	4	3.88	15.75	<.001
Within Groups	5.92	24	.25		
Total	21.45	28			

In Table 33, response to the actual use of decreasing stereotyped patterns of interest that are abnormal either in intensity or focus had a mean of 4.10. The responses to the importance of decreasing stereotyped patterns had a mean of 4.10. There was a statistically significant difference between the actual use and the perceived level of importance of decreasing stereotyped patterns (see Table 42). Even though the means were the same, the difference arose from the variability of the variables (actual use $M=4.10$, $SD=.92$ perceived level $M=4.10$, $SD=.84$).

No valid cases were found to the actual use and the perceived level of importance of reducing repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements). So no statistics were computed.

Table 42

ANOVA for Actual Use and Perceived Importance of EIBI Decrease Stereotyped Patterns of Interests that is Abnormal Either in Intensity or Focus

	Sum of <u>Squares</u>	Df	Mean <u>Square</u>	<i>F</i>	<u><i>p</i></u>
Between Groups	10.31	3	3.44	15.46	.001
Within Groups	2.00	9	.22		
Total	12.31	12			

Interventions Importance and Use for DTT

Descriptive statistics were generated and a one-way analysis of variance was performed to investigate interventions' service differences of the perceived level of importance and the actual use in programs utilizing a DTT approach. From Table 43, three behavioral dimensions of ASD were included: social interaction, communication, and stereotyped patterns. The social interactions consisted of four categories: development of nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; development of peer relationships; development of spontaneously seeking to share enjoyment, interests, or achievements with other people; and development of social or emotional reciprocity.

Communication consisted of four categories: development of spoken language for individuals with ASD with a language delay (using alternative modes of communication

such as gesture or mime); increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language; reducing stereotyped and repetitive use of language or idiosyncratic language; and building up spontaneous play or social imitative play appropriate to developmental level.

The stereotyped patterns of behavior, interests, and activities consisted of two categories: decreasing stereotyped patterns of interest that are abnormal either in intensity or focus and reducing repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).

Table 43

Perceived Level of Importance & Actual Use of DTT Intervention

	N	Mean	SD
Actual Use			
Social Behavior			
Nonverbal Behavior	34	3.53	1.26
Peer Relations	34	3.29	1.27
Spontaneous Seeking	34	3.27	1.29
Emotional Reciprocity	32	3.28	1.35
Communication Behavior			
Language Delay	34	3.88	1.25
Sustain Conversation	34	3.53	1.16
Idiosyncratic Language	34	3.74	1.24
Spontaneous Play	34	3.47	1.26

(continued)

Table 43, continued

Perceived Level of Importance & Actual Use of DTT Intervention

	N	Mean	SD
Stereotyped Patterns			
Stereotypes Intensity Focus	34	3.62	1.28
Stereotypes Whole Body Movements	13	3.46	1.39
Level of Importance			
Social Behavior			
Nonverbal Behavior	33	3.94	1.06
Peer Relations	33	3.79	1.11
Spontaneous Seeking	33	3.88	1.17
Emotional Reciprocity	31	3.84	1.13
Communication Behavior			
Language Delay	33	4.24	1.00
Sustain Conversation	33	3.94	1.03
Idiosyncratic Language	33	4.09	.95
Spontaneous Play	33	3.91	1.01
Stereotyped Patterns			
Stereotypes Intensity Focus	33	4.00	1.00
Stereotypes Whole Body Movements	13	4.00	.71

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of DTT social interaction. The results in Table 43 were as follows: response to the actual use of the development of nonverbal behaviors consisting

of eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction had a mean of 3.53, while the responses to importance of the development of nonverbal behaviors had a mean of 3.94. There was a statistically significant difference between the actual use and the perceived level of importance of the development of nonverbal behaviors (see Table44). This suggested that the perceived value of the development of nonverbal behaviors were greater than the actual use value.

Table 44

ANOVA for Actual Use and Perceived Importance of DTT Non -Verbal Behaviors

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	17.61	4	4.40	4.36	.007
Within Groups	28.27	28	1.01		
Total	45.88	32			

In Table 43, responses to the actual use of the development of peer relations had a mean of 3.29. The responses to the importance of the development of peer relationships had a mean of 3.79. There was a statistically significant difference between the actual use and the perceived level of importance of development of peer

relations (see Table 45). This suggested that the perceived value of peer relations was greater than the actual use.

Table 45

ANOVA for Actual Use and Perceived Importance of DTT Peers Relationship

	<u>Sum of Squares</u>	df	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	21.95	4	5.49	5.98	.001
Within Groups	25.69	28	.92		
Total	47.64	32			

In Table 43, responses to the actual use of the development of spontaneously seeking to share enjoyment, interests, or achievements with other people had a mean of 3.27. The response to the importance of the development of spontaneously seeking to share enjoyment had a mean of 3.88. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spontaneously seeking to share enjoyment (see Table 46). This suggested that the perceived value of the development of spontaneously seeking to share enjoyment was greater than the actual use.

Table 46

ANOVA for Actual Use and Perceived Importance of DTT Spontaneously Seeking to Share Interests

	<u>Sum of Squares</u>	df	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	21.77	4	5.44	5.53	.002
Within Groups	27.56	28	.98		
Total	49.33	32			

In Table 43, responses to the actual use of the development of the social or emotional reciprocity had a mean of 3.28. The response to the importance of the development of social or emotional reciprocity had a mean of 3.84. There was a statistically significant difference between the actual use and the perceived level of importance of the development of social or emotional reciprocity (see Table 47). This suggested that the perceived value of the development of the social or emotional reciprocity was greater than the actual use.

Table 47

ANOVA for Actual Use and Perceived Importance of DTT Social Reciprocity

	Sum of <u>Squares</u>	Df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	22.03	4	5.51	4.93	.004
Within Groups	29.07	26	1.12		
Total	51.09	30			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of DTT communication interaction. The results in Table 43 were as follows: response to the actual use of the development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime) for individuals with ASD had a mean of 3.88. The responses to the importance of development of spoken language for individuals with ASD with a language delay had a mean of 4.24. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spoken language for individuals with ASD with a language delay (see Table 48). This suggested that the perceived value of the development of spoken language for individuals with ASD with a language delay was greater than the actual use.

Table 48

ANOVA for Actual Use and Perceived Importance of DTT of Development Spoken Language

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	19.20	4	4.80	5.66	.002
Within Groups	23.77	28	.85		
Total	42.97	32			

In Table 43, response to the actual use of increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language had a mean of 3.53. The responses to the importance of the increasing the ability to initiate or sustain a conversation with others had a mean of 3.94. There was a statistically significant difference between the actual use and the perceived level of importance of increasing the ability to initiate or sustain a conversation with others (see Table 49). This suggested that the perceived level of importance of increasing the ability to initiate or sustain a conversation with others was greater than the actual use.

Table 49

ANOVA for Actual Use and Perceived Importance of DTT Ability to Sustain Conversation

	<u>Sum of Squares</u>	df	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	14.44	4	3.61	4.31	.008
Within Groups	23.44	28	.84		
Total	37.88	32			

In Table 43, responses to the actual use of reducing stereotyped and repetitive use of language or idiosyncratic language had a mean of 3.74. The responses to the importance of reducing stereotyped or idiosyncratic language had a mean of 4.09. There was a statistically significant difference between the actual use and the perceived level of importance of reducing stereotyped or idiosyncratic language (see Table 50). This suggested that the perceived value of reducing stereotyped and repetitive use of language or idiosyncratic language was greater than actual use.

Table 50

ANOVA for Actual Use and Perceived Importance of DTT Reduce of Idiosyncratic Language

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	20.06	4	5.02	6.15	.001
Within Groups	22.85	28	.82		
Total	42.91	32			

In Table 43, response to the actual use of building up spontaneous play or social imitative play appropriate to developmental level had a mean of 3.47. The response to the importance of building up spontaneous play had a mean of 3.91. There was a statistically significant difference between the actual use and the perceived level of importance of building up spontaneous play or social imitative play (see Table 51). This suggested that the perceived value of building up spontaneous play was greater than the actual use.

Table 51

ANOVA for Actual Use and Perceived Importance of DTT Build Up Spontaneous Play

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	18.73	4	4.68	4.78	.005
Within Groups	27.45	28	.98		
Total	46.18	32			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of DTT stereotyped patterns. The results in Table 43 were as follows: response to the actual use of decreasing stereotyped patterns of interest that are abnormal either in intensity or focus had a mean of 3.62. The responses to the importance of decreasing stereotyped patterns had a mean of 4. There was a statistically significant difference between the actual use and the perceived level of importance of decreasing stereotyped patterns (see Table 52). This suggested that the perceived value of decreasing stereotyped patterns was greater than the actual use.

Table 52

ANOVA for Actual Use and Perceived Importance of DTT Decrease Stereotyped Patterns of Interests that is Abnormal Either in Intensity or Focus

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	23.71	4	5.93	7.13	<.001
Within Groups	23.26	28	.83		
Total	46.97	32			

In Table 43, response to the actual use of reducing repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements) had a mean of 3.46. The responses to the importance of reducing repetitive motor manners had a mean of 4. There was no statistical significant difference between the actual use and the perceived level of importance of reducing repetitive motor manners (see Table 53). This suggested that the perceived value of decreasing stereotyped patterns and the actual use were considered to be the same.

Table 53

ANOVA for Actual Use and Perceived Importance of DTT Reduce Repetitive Motor Manners

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	4.50	2	2.25	1.66	.243
Within Groups	12.17	9	1.35		
Total	16.67	11			

Interventions Importance and Use for VBI

Descriptive statistics were generated and a one-way analysis of variance was performed to investigate interventions' service differences of the perceived level of importance and the actual use in programs utilizing a VBI approach. In Table 54, three behavioral dimensions of ASD were included: social interaction, communication, and stereotyped patterns. The social interactions consisted of four categories: development of nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; development of peer relationships; development of spontaneously seeking to share enjoyment, interests, or achievements with other people; and development of social or emotional reciprocity.

Communication consisted of four categories: development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime); increasing the ability to initiate or sustain a conversation with others for individual with ASD with adequate language; reducing stereotyped and repetitive use of language or idiosyncratic language; and building up spontaneous play or social imitative play appropriate to developmental level.

The stereotyped patterns of behavior, interests, and activities consisted of two categories: decreasing stereotyped patterns of interest that are abnormal either in intensity or focus and reducing repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).

Table 54

Perceived level of Importance & Actual Use of VBI Interventions

	N	Mean	SD
Actual Use			
Social Behavior			
Nonverbal Behavior	29	3.55	1.27
Peer Relations	29	3.38	1.27
Spontaneous Seeking	29	3.45	1.29
Emotional Reciprocity	27	3.48	1.25

(continued.)

Table 54. continued

Perceived level of Importance & Actual Use of VBI Interventions

	N	Mean	SD
Communication Behavior			
Language Delay	29	3.83	1.19
Sustain Conversation	29	3.62	1.18
Idiosyncratic Language	29	3.66	1.17
Spontaneous Play	29	3.48	1.15
Stereotyped Patterns			
Stereotypes Intensity Focus	29	3.45	1.29
Stereotypes Whole Body Movements	13	3.23	1.01
Level of Importance			
Social Behavior			
Nonverbal Behavior	28	3.96	.99
Peer Relations	28	3.75	1.00
Spontaneous Seeking	27	3.70	1.10
Emotional Reciprocity	25	3.76	1.01
Communication Behavior			
Language Delay	27	4.11	.85
Sustain Conversation	27	4.00	.83
Idiosyncratic Language	27	3.96	.76
Spontaneous Play	27	3.63	1.04
Stereotyped Patterns			
Stereotypes Intensity Focus	27	3.63	1.00
Stereotypes Whole Body Movements	11	3.55	.69

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of VBI social interaction. The results in Table 54 were as follows: response to the actual use of the development of nonverbal behaviors consisting of eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction had a mean of 3.55. The responses of importance of the development of nonverbal behaviors had a mean of 3.96. There was a statistically significant difference between the actual use and the perceived level of importance of development of nonverbal behaviors (see Table 55). This suggested that the perceived value of the development of nonverbal behaviors was greater than the actual use.

Table 55

ANOVA for Actual Use and Perceived Importance of VBI Non –Verbal Behaviors

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	17.71	3	5.90	6.84	.002
Within Groups	20.72	24	.86		
Total	38.43	27			

In Table 54, responses to the actual use of development of peer relations had a mean of 3.38. The responses to the importance of the development of peer relationships had a mean of 3.75. There was a statistically significant difference between the actual use and the perceived level of importance of the development of peer relationships(see Table 56). This suggested that the perceived value of peer relations was greater than the actual use.

Table 56

ANOVA for Actual Use and Perceived Importance of VBI Peers Relationship

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	21.48	4	5.37	7.06	.001
Within Groups	17.48	23	.76		
Total	38.96	27			

In Table 54, responses to the actual use of the development of spontaneously seeking to share enjoyment, interests, or achievements with other people had a mean of 3.45. The response to the importance of the development of spontaneously seeking to share enjoyment had a mean of 3.70. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spontaneously seeking to share enjoyment (see Table 57). This suggested that the

perceived value of the development of spontaneously seeking to share enjoyment was greater than the actual use.

Table 57

ANOVA for Actual Use and Perceived Importance of VBI Spontaneous Seeking to Share Interests

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	24.20	3	8.08	12.76	<.001
Within Groups	14.54	23	.63		
Total	38.74	26			

In Table 54, responses to the actual use of the development of the social or emotional reciprocity had a mean of 3.48. The response to the importance of the development of social or emotional reciprocity had a mean of 3.76. There was a statistically significant difference between the actual use and the perceived level of importance of social or emotional reciprocity (see Table 58). This suggested that the perceived value of the development of social or emotional reciprocity was greater than the actual use.

Table 58

ANOVA for Actual Use and Perceived Importance of VBI Social Reciprocity

	Sum of <u>Squares</u>	df	Mean Square	<i>F</i>	<u><i>p</i></u>
Between Groups	18.48	3	6.16	9.41	<.001
Within Groups	13.76	21	.66		
Total	32.24	24			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of VBI communication interaction. The results in Table 54 were as follows: response to the actual use of the development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime) for individuals with ASD had a mean of 3.83. The responses to the importance of the development of spoken language for individuals with ASD with a language delay had a mean of 4.11. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spoken language for individuals with ASD with a language delay (see Table 59). This suggested that the perceived value of the development of spoken language for individuals with ASD with a language delay was greater than the actual use.

Table 59

ANOVA for Actual Use and Perceived Importance of VBI of Development of Spoken Language

	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	14.61	2	7.31	10.92	<.001
Within Groups	16.06	24	.67		
Total	30.67	26			

In Table 54, response to the actual use of increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language had a mean of 3.62. The responses to the importance of increasing the ability to initiate or sustain a conversation with others had a mean of 4. There was a statistically significant difference between the actual use and the perceived level of importance of increasing the ability to initiate or sustain a conversation with others (see Table 60). This suggested that the perceived value of increasing the ability to initiate or sustain a conversation with others was greater than the actual use.

Table 60

ANOVA for Actual Use and Perceived Importance of VBI Ability to Sustain Conversation

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	9.08	2	4.54	5.21	.013
Within Groups	20.92	24	.87		
Total	30.00	26			

In Table 54, responses to the actual use of reducing stereotyped and repetitive use of language or idiosyncratic language had a mean of 3.66. The responses to the importance of reducing stereotyped and repetitive use of language or idiosyncratic language had a mean 3.96. There was a statistically significant difference between the actual use and the perceived level of importance of reducing stereotyped and repetitive use of language or idiosyncratic language (see Table 61). This suggested that the perceived value of reducing stereotyped and repetitive use of language or idiosyncratic language was greater than the actual use.

Table 61

ANOVA for Actual Use and Perceived Importance of VBI Reduce of Idiosyncratic Language

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	8.29	2	4.15	4.67	.019
Within Groups	21.33	24	.89		
Total	29.63	26			

In Table 54, response to the actual use of building up spontaneous play or social imitative play appropriate to developmental level had a mean of 3.48. The responses to the importance of building up spontaneous play had a mean of 3.63. There was a statistically significant difference between the actual use and the perceived level of importance of building up spontaneous play (see Table 62). This suggested that the perceived value of building up spontaneous play was greater than the actual use.

Table 62

ANOVA for Actual Use and Perceived Importance of VBI Build Up Spontaneous Play

	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	13.42	3	4.47	6.72	.002
Within Groups	15.32	23	.67		
Total	28.74	26			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of VBI stereotyped patterns. The results in Table 54 were as follows: response to the actual use of decreasing stereotyped patterns of interest that are abnormal either in intensity or focus had a mean of 3.45. The responses to the importance of decreasing stereotyped patterns had a mean of 3.63. There was a statistically significant difference between the actual use and the perceived level of importance of decreasing stereotyped patterns (see Table 63). This suggested that the perceived value of decreasing stereotyped patterns was greater than the actual use. Table 54 shows the response to the actual use of reducing repetitive motor manners had a mean of 3.23. The responses to the importance of reducing repetitive motor manners had a mean of 3.55. There was no statistically significant difference between the actual use and

the perceived level of importance of reducing repetitive motor manners (see Table 64).

This suggested that the perceived value and the actual use of reducing repetitive motor manners were the same.

Table 63

ANOVA for Actual Use and Perceived Importance of VBI Decrease Stereotyped Patterns of Interests that is Abnormal Either in Intensity or Focus

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	23.14	4	5.79	8.16	<.001
Within Groups	15.60	22	.71		
Total	38.74	26			

Table 64

ANOVA for Actual Use and Perceived Importance of VBI Reduced Repetitive Motor Manners Stereotyped Patterns of Interests that is Abnormal Either in Intensity or Focus

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	1.48		.74	.63	.558
Within Groups	9.43	8	1.18		
Total	10.91	10			

Interventions Importance and Use for TEACCH

Descriptive statistics were generated and a one-way analysis of variance was performed to investigate interventions' service differences of the perceived level of importance and the actual use in programs utilizing a TEACCH approach. In Table 65, three behavioral dimensions of ASD were included: social interaction, communication, and stereotyped patterns. The social interactions consisted of four categories: development of nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; development of peer relationships; development of spontaneously seeking to share enjoyment, interests, or achievements with other people; and development of social or emotional reciprocity.

Communication consisted of four categories: development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime); increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language; reducing stereotyped and repetitive use of language or idiosyncratic language; and building up spontaneous play or social imitative play appropriate to developmental level.

The stereotyped patterns of behavior, interests, and activities consisted of two categories: decreasing stereotyped patterns of interest that are abnormal either in intensity or focus and reducing repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).

Table 65

Perceived Level of Importance & actual Use of TEACCH Interventions

	N	Mean	SD
Actual Use			
Social Behavior			
Nonverbal Behavior	32	3.72	1.05
Peer Relations	32	3.42	1.01
Spontaneous Seeking	32	3.50	1.05
Emotional Reciprocity	29	3.52	.99
Communication Behavior			
Language Delay	32	3.88	1.13
Sustain Conversation	32	3.75	1.05
Idiosyncratic Language	32	3.72	1.05
Spontaneous Play	31	3.81	1.14
Stereotyped Patterns			
Stereotypes Intensity Focus	33	3.94	1.09
Stereotypes Whole Body Movements	13	3.46	1.13
Level of Importance			
Social Behavior			
Nonverbal Behavior	33	3.73	1.13
Peer Relations	33	3.79	1.14
Spontaneous Seeking	33	3.73	1.15
Emotional Reciprocity	31	3.74	1.18

(continued)

Table 65. continued

Perceived Level of Importance & actual Use of TEACCH Interventions

	N	Mean	SD
Communication Behavior			
Language Delay	33	3.91	1.13
Sustain Conversation	33	3.85	1.18
Idiosyncratic Language	33	3.91	1.16
Spontaneous Play	32	4.00	1.14
Stereotyped Patterns			
Stereotypes Intensity Focus	31	4.09	1.14
Stereotypes Whole Body Movements	13	3.54	1.27

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of TEACCH social interaction. The results in Table 65 were as follows: response to the actual use of the development of nonverbal behaviors consisting of eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction had a mean of 3.72. The responses to the importance of development of nonverbal behaviors had a mean of 3.73. There was a statistically significant difference between the actual use and the perceived level of importance of the development of nonverbal behaviors (see Table 66). This suggested that the perceived value of the development of nonverbal behaviors was greater than the actual use.

Table 66

ANOVA for Actual Use and Perceived Importance of TEACCH Non - Verbal Behaviors

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	24.02	4	6.01	15.52	<.001
Within Groups	10.45	27	.39		
Total	34.47	31			

In able 65, responses to the actual use of the development of peer relations had a mean of 3.42. The responses to the importance of the development of peer relations had a mean of 3.79. There was a statistically significant difference between the actual use and the perceived level of importance of the development of peer relationships (see Table 67). This suggested that the perceived value of peer relations was greater than the actual use.

Table 67

ANOVA for Actual Use and Perceived Importance of TEACCH Peers Relationship

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	18.85	4	4.71	9.76	<.001
Within Groups	13.03	27	.48		
Total	31.88	31			

In Table 65, responses to the actual use of the development of spontaneously seeking to share enjoyment, interests, or achievements with other people had a mean of 3.50. The response to the importance of the development of spontaneously seeking to share enjoyment had a mean of 3.73. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spontaneously seeking to share enjoyment (see Table 68). This suggested that the perceived value of the development of spontaneously seeking to share enjoyment was greater than the actual use.

Table 68

ANOVA for Actual Use and Perceived Importance of TEACCH Spontaneously Seeking to Share Interests

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i> _____
Between Groups	21.39	4	5.35	11.44	<.001
Within Groups	12.61	27	.47		
Total	34.00	31			

In Table 65, responses to the actual use of the development of social or emotional reciprocity had a mean of 3.52. The response to the importance of the development of social or emotional reciprocity had a mean of 3.74. There was a statistically significant difference between the actual use and the perceived level of importance of the development of social or emotional reciprocity (see Table 69). This suggested that the perceived value of the development of the social or emotional reciprocity was greater than the actual use.

Table 69

ANOVA for Actual Use and Perceived Importance of TEACCH Social Reciprocity

	Sum of <u>Squares</u>	df	Mean <u>Square</u>	<i>F</i>	<i>p</i>
Between Groups	14.37	4	3.59	6.70	.001
Within Groups	12.87	24	.54		
Total	27.24	28			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of a TEACCH communication interaction. The results in Table 65 were as follows: response to the actual use of the development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime) for individuals with ASD had a mean of 3.88.

The responses to the importance of development of spoken language for individuals with ASD with a language delay had a mean of 3.91. There was a statistically significant difference between the actual use and the perceived level of importance of the development of spoken language for individuals with ASD with a language delay (see Table 70). This suggested that the perceived level of importance of the development of spoken language for individuals with ASD with a language delay was greater than actual use.

Table 70

ANOVA for Actual Use and Perceived Importance of TEACCH of Development

Spoken Language

	<u>Sum of Squares</u>	df	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	29.85	4	7.46	20.88	<.001
Within Groups	9.65	27	.36		
Total	39.50	31			

In Table 65, response to the actual use of increasing the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language had a mean of 3.75. The responses to the importance of increasing the ability to initiate or sustain a conversation with others had a mean of 3.85. There was a statistically

significant difference between the actual use and the perceived level of importance of increasing the ability to initiate or sustain a conversation with others (see Table 71). This suggested that the perceived level of importance of increasing the ability to initiate or sustain a conversation with others was greater than the actual use.

Table 71

ANOVA for Actual Use and Perceived Importance of TEACCH Ability to Sustain Conversation

	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	26.91	4	6.73	25.59	<.001
Within Groups	7.09	27	.26		
Total	34.00	31			

In Table 65, responses to the actual use of reducing stereotyped and repetitive use of language or idiosyncratic language had a mean of 3.72. The responses to the importance of reducing stereotyped and repetitive use of language or idiosyncratic language had a mean of 3.91. There was a statistically significant difference between the actual use and the perceived level of importance of reducing stereotyped and repetitive use of language or idiosyncratic language (see Table 72). This suggested that the perceived value of reducing stereotyped and repetitive use of language or idiosyncratic language was greater than the actual use.

Table 72

ANOVA for Actual Use and Perceived Importance of TEACCH Reduce of Idiosyncratic Language

	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	26.40	4	6.60	22.09	<.001
Within Groups	8.07	27	.30		
Total	34.47	31			

In Table 65, response to the actual use of building up spontaneous play or social imitative play appropriate to developmental level had a mean of 3.81. The response to the importance of building up spontaneous play had a mean of 4. There was a statistically significant difference between the actual use and the perceived level of importance of building up spontaneous play(see Table 73). This suggested that the perceived value of building up spontaneous play was greater than the actual use.

Table 73

ANOVA for Actual Use and Perceived Importance of TEACCH Build Up

Spontaneous Play

	<u>Sum of Squares</u>	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	30.13	4	7.53	21.73	<.001
Within Groups	8.67	25	.35		
Total	38.80	29			

The ANOVA was run to evaluate the differences between the actual use and the perceived value of importance of TEACCH stereotyped patterns. The results in Table 65 were as follows: response to the actual use of decreasing stereotyped patterns of interest that are abnormal either in intensity or focus had a mean of 3.94. The responses to the importance of decreasing stereotyped patterns had a mean of 4.09. There was a statistically significant difference between the use and the perceived level of importance of decreasing stereotyped patterns of interest that are abnormal either in intensity or focus(see Table 74). This suggested that the perceived value of decreasing stereotyped patterns was greater than the actual use.

Table 74

ANOVA for Actual Use and Perceived Importance of TEACCH Decrease Stereotyped Patterns of Interests that is Abnormal Either in Intensity or Focus

	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<i>F</i>	<i>p</i>
Between Groups	26.03	4	6.51	21.88	<.001
Within Groups	7.44	25	.30		
Total	33.47	29			

In Table 65, response to the actual use of reducing repetitive motor manners had a mean of 3.46. The responses to the importance of reducing repetitive motor manners had a mean of 3.54. There was no statistically significant difference between the use and the perceived level of importance of reducing repetitive motor manners (see Table 75). This suggested that the perceived value of reducing repetitive motor manners and the actual use were considered to be the same.

Table 75

ANOVA for Actual Use and Perceived Importance of TEACCH Reduced Repetitive Motor Manners Stereotyped Patterns of Interests

	Sum of Squares	df	Mean Square	<i>F</i>	<i>p</i>
Between Groups	9.76	4	2.44	3.57	.059
Within Groups	5.47	8	.68		
Total	15.23	12			

Part IV of the survey consisted of one qualitative question for TCASE members. Answers to this question consisted of reporting trends in responses. The respondents were asked to provide their point of view about the most effective intervention(s) for certain age groups of children with ASD. The majority of the respondents had a tendency of using ABA and TEACCH; the respondents mentioned that ABA and TEACCH can be applicable for all ages. Also, they said that TEACCH is considered as a support for individuals with ASD or severe disabilities to help them generalize skills and function independently at school and in the community. The second in preference was VBI; the respondents mentioned that it is essential in early ages for teaching the foundation of language for children with ASD. The last in preference were DTT and EIBI; the respondents mentioned that these interventions are most important for ages 3-7 years for

students with the most significant ASD and Mental Retardation (MR). Other respondents believed in the combination of different interventions such as ABA and TEACCH, ABA and DTT, or EIBI and TEACCH. Moreover, in some schools, one campus focuses heavily on ABA while the other campuses use a variety of strategies.

Summary

There were three purposes for this study: the first purpose of this study was to identify the characteristics of specific programs that exist in public and/or private schools with a history in treating individuals with Autism Spectrum Disorders (ASD), the second purpose of this study was to assess the differences between actual and ideal levels of ancillary services as perceived by professionals working with individuals with ASD, and the third purpose of the study was to assess the relationship between actual and ideal levels of interventions used with individuals with ASD. There were significant differences found between the professionals' perceived levels of importance and their perceived levels of utilization of the ancillary services used in the treatment of individuals with ASD.

In addition, there were significant differences between professionals' perceived levels of importance and their perceived levels of utilization of the interventions used with individuals with ASD. The TCASE members perceived speech and language therapy as the most important and the most frequently used. They also perceived technology therapy as the second most important and most frequently used. The responses indicated that the TCASE members perceived physical therapy as the least frequently used and the least important.

TCASE members agreed in their perceived level of importance and utilization only for the interventions' stereotyped patterns; however, there were some agreement and disagreement in their perceived level of importance and utilization of the interventions' social and communication dimensions.

The majority of the respondents preferred ABA and TEACCH. The least preferred interventions were DTT and EIBI. A summary of the results of the research questions presented in this study are found in Table 76.

Table 76

Summary of the Findings

Research Questions	Results
2.A. Are there significant differences in selected preferences for the use of ancillary services with students with ASD?	Most Important: Speech & Language Therapy Most Used: Speech & Language Therapy 2nd Most Important: Technology Therapy 2nd Most Used: Technology Therapy Least Important: Physical Therapy Least Used: Physical Therapy

(continued)

Table 76. continued

Summary of the Findings

Research Questions	Results
3.B. Are there significant differences between the perceived levels of utilization of ABA defined for the study and the respondents' perceived level of importance of the interventions defined for the study for each behavioral dimensions of ASD?	<p>1.Social interaction: Most Important: Development of peer relationships, and development of social or emotional reciprocity Most use: Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction</p> <p>2.Communication: Most Important: Development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime) Most use: Increase the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language</p> <p>3.Stereotyped patterns: Most Important: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus Most use: Reduce repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements)</p>

(continued)

Table 76, continued

Summary of the Findings

Research Questions	Results
3.C. Are there significant differences between the perceived levels of utilization of EIBI defined for the study and the respondents' perceived level of importance of the interventions defined for the study for each behavioral dimensions of ASD?	<p>1.Social Interaction: Most Important: Development of nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction Most Use: Development of peer relationships, develop spontaneously seeking to share enjoyment, interests, or achievements with other people, development of social or emotional reciprocity</p> <p>2. Communication: Most Important: Development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime) Most Use: Development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime)</p> <p>3. Stereotyped patterns of behavior, interests, and activities: Most Important: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus Most Use: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus</p>

(continued)

Table 76, continued

Summary of the Findings

Research Questions	Results
3.D. Are there significant differences between the perceived levels of utilization of DTT defined for the study and the respondents' perceived level of importance of the interventions defined for the study for each behavioral dimensions of ASD?	<p>Social Interaction: Most Important: Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction Most Use: Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction</p> <p>Communication: Most Important: Increase the ability to initiate or sustain a conversation with others for individuals with ASD with adequate language Most Use: Development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime)</p> <p>Stereotyped Patterns: Most Important: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus Most Use: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus</p>

(continued)

Table 76, continued

Summary of the Findings

Research Questions	Results
3.E. Are there significant differences between the perceived levels of utilization of VBI defined for the study and the respondents' perceived level of importance of the interventions defined for the study for each behavioral dimensions of ASD?	<p>Social Interaction: Most Important: Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction Most Use: Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction</p> <p>Communication: Most Important: Development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime) Most Use: Development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime)</p> <p>Stereotyped Patterns: Most Important: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus Most Use: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus.</p>

(continued)

Table 76, continued

Summary of the Findings

Research Questions	Results
3.F. Are there significant differences between the perceived levels of utilization of TEACCH defined for the study and the respondents' perceived level of importance of the interventions defined for the study for each behavioral dimensions of ASD?	<p>Social Interaction: Most Important: Develop peer relationships Most Use: Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction Develop social or emotional reciprocity</p> <p>Communication: Most Important: Build up spontaneous play or social imitative play appropriate to developmental level Most Use: Development of spoken language for individuals with ASD with a language delay (using alternative modes of communication such as gesture or mime)</p> <p>Stereotyped Patterns: Most Important: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus Most Use: Decrease stereotyped patterns of interest that are abnormal either in intensity or focus</p>

CHAPTER V

DISCUSSION

Autism Spectrum Disorders (ASD) may cause severe and pervasive impairments in thinking, feeling, language, and the ability to relate to others (NIMH, 2008). People with ASD are impaired in social, verbal, and non-verbal interactions.

Programs to assist with these ASD impairments are available and widely varied. These programs are to assess and to provide interventions and support to individuals with ASD and their family members. Some of the more widely recognized interventions include: Applied Behavior Analysis (ABA), Early Intensive Behavioral Intervention (EIBI), Discrete Trial Training (DTT), Verbal Behavior Intervention (VBI), and Structured Teaching Program: TEACCH. However, choosing or finding the right program or therapy for an individual with ASD is difficult.

Choosing right program can be difficult because information about programs or services provided in schools serving individuals with ASD are “limited, unavailable, and difficult to obtain, inappropriate, inaccessible, and costly” (Dymond, Gilson, & Myran, 2007). Lack of accessible services, treatments, and professionals in this field (autism) has led to concern about the adequacy of services provided to individuals with ASD. These factors cause concern, especially since the number of individuals with ASD is increasing. There is little agreement in literature of the best practices and services which leads to inconsistencies in delivery and gaps in program efficacy. None of the

reviewed studies attempted to find which intervention was used more in schools or centers serving individuals with autism, and none of the studies had shown which intervention was effectively used with individuals with autism. Moreover, none of these studies attempted to investigate participants' specific perceived level of importance and level of use of interventions' strategies and ancillary services. It appears that there is a lack of available information about school services and interventions used in the treatment of individuals with ASD.

The first purpose of this study was to identify the characteristics of specific programs that exist in public and/or private schools with a history in treating individuals with ASD. The second purpose of this study was to assess the differences between actual and ideal levels of ancillary services as perceived by professionals working with individuals with ASD. The third purpose of the study was to assess the relationship between actual and ideal levels of interventions used with individuals with ASD.

A survey with four sections was developed for this study. Section I of the survey presented demographic information. The demographic information reflected the school location (city and region), applicants' ages, approaches used by schools, estimated length of program, and students' progress/change. Staff demographics included: qualifications, ethnicity gender, the years of teaching experience with students' with ASD, teaching certificate(s) obtained, clock hours of specific training received, inservice training provided, and forms of communication with the families/ or parents.

Section II included two parts. Part A described specific ancillary services used in the treatment of individuals with ASD as currently defined in professional literature. The

survey employed a 5 point Likert scale to determine the respondents' perceived level of utilization versus their perceived level of importance.

Part B was a qualitative question, which asked the respondents to identify the most effective ancillary service(s) for the treatment of ASD students. As well, their justification for services was requested.

Section III relied on five strategies for students with ASD as currently defined in professional literature. These strategies included: Applied Behavior Analysis (ABA), Early Intensive Behavioral Intervention (EIBI), Discrete Trial Training (DTT), Verbal Behavior Intervention (VBI), and Structured Teaching Program (TEACCH). Section III also consisted of 10 behavioral dimensions dealing with social, communication, and behavior developments for each of the previous five interventions. These three dimensions (social, communication, and stereotyped patterns) have been defined by the APA for the diagnosis of ASD. The respondents were asked to use a 5 point Likert scale to rate each of these five interventions for their perceived level of utilization versus their perceived level of importance.

Section IV of the survey was a qualitative question asking the participants to identify the most effective intervention(s) for ASD students. As in Part B of the first section of the survey, the respondents' answers were analyzed.

A total of 135 members of Texas Council of Administrators of Special Education (TCASE) were identified for this study, and 50 responded.

Discussion of Findings

It is important to understand that early intervention for a child with ASD is very essential, and it may be the core of a child's progress. However, it is necessary to understand that finding an effective intervention and service is crucial. From literature review, there is a lack of information about the services and interventions provided for individuals with ASD, in schools with a history of serving individuals with ASD. Therefore, a need exists to compile a preliminary list of information about the characteristics of programs provided for individuals with ASD in schools serving individuals with ASD.

There were three purposes for this study: the first purpose of this study was to identify the characteristics of specific programs that exist in public and/or private schools with a history in treating individuals with ASD. Most of the research findings in demographic information were combined for discussion purposes. The research findings showed that majority of schools in regions 10 and 11 shared many of the characteristics. For example: most of the schools provided services for large group of ages 3-21. Also, most of the schools in regions 10 and 11 provided treatment for individuals with ASD for more than 90 days. A small number of the respondents indicated that progress in individuals with ASD was made equally in all three areas (social, education, and behavior). The majority of the respondents provided an individual design approach for each child with ASD. A great number of these schools did not advocate for one intervention more than another; however, a small number of schools from region 11 advocated for ABA.

About the qualifications of the professionals who work with individuals with ASD, findings showed that, the highest percentage of the employees who worked with individuals with ASD had previous experience on working with individuals with ASD, the majority of the workers had between 4-6 years of experience on working with individuals with ASD, and they did not mentioned any formal education, followed by workers with bachelor's degrees. The lowest percentage of the employees who work with individuals with ASD had a doctorate or master's degrees. Results for staff training to enhance the professional skills showed that 3% of workers had Board Certified Behavior Analyst (BCBA) training, 6% of the workers had received formal academic courses. On the other hand, the highest percentage(around 70%) of the workers had received training to enhance their professional skills through in-service, staff development activities, different workshops, district training, conferences, and at TCASE meeting. These results indicated that there is a lack of academically trained professionals in the field of ASD. While research-based treatment or services might be available for the individual with ASD, the professional who should deliver these services, may not exist (Dymond, Gilson, & Myran, 2007). Nevertheless, the professionals do exist, but not as qualified as might be desired.

Details for the types and length of staff clock hour training were collected. Results indicated that the highest training hours with a mean of 66.5 hours were for VBI, followed by ABA as the second highest training hours with a mean of 53 hours, then a mean of 48.6 hours of training for EIBI, DTT training hours with a mean of 47.3 hours, and the least number of training hours with a mean of 41.6 hours were for TEACCH.

When participants were asked about the most effective intervention, the majority had tendency of using TEACCH as the most effective intervention (as well as ABA), although the training hours for TEACCH was the least in this study. It is interesting that TEACCH, with the least number of formal training hours, was chosen as the most effective intervention.

The results showed that a high percentage of the respondents used different modes of communication for family contact such as: email, phone, mail, face to face communication, and involved families in the treatment. This result contrasts with another study's result conducted by Dymond, Gilson, and Myran (2007) which implied that many parents have difficulty accessing services provided for individuals with ASD. It is possible that schools and agencies believe that their communication with parents is effective, but Dymond and colleagues (2007) implied that communication with families or parents was not effective according to their study. It is possible that the content of information that is sent to parents was not sufficient, and it did not achieve parents' satisfaction.

The second purpose of this study was to assess the differences between actual and ideal levels of ancillary services as perceived by professionals working with individuals with ASD.

The two questions of ancillary services were combined for purposes of discussion. The first question asked whether there were any significant differences between professionals' perceived levels of importance and utilization of the ancillary services used in the treatment of individuals with ASD, and the second question asked

respondents to explain which ancillary service is perceived as the most effective service and why. The TCASE members perceived speech and language therapy as the most important and the most frequently used ancillary service. The mean scores also indicated that they perceived technology therapy as the second most important and most frequently used ancillary service. Furthermore, the mean scores indicated that the TCASE members perceived physical therapy as the least frequently used and the least important ancillary service. The TCASE members reported that speech and language therapy is the most effective ancillary services. They considered it a way of teaching communication and pragmatic skills, which would increase the ability of an individual with ASD to be more successful and more productive in his /her environment or community. A small number of the respondents specified that the use of peer-tutoring is the most effective ancillary service for individuals with ASD; through modeling and contacting with their peers, they would learn a great amount of social skills.

The third purpose of the study was to assess the relationship between actual and ideal levels of interventions used with individuals with ASD.

The two questions of interventions were combined for purposes of discussion. The first question asked if there were significant differences between professionals' perceived levels of importance and utilization of the interventions used with individuals with ASD, and the second question asked respondents to explain which intervention was perceived as the most effective intervention and why.

ABA & TEACCH/Social Interaction: the TCASE members perceived development of peer relationships as the most important, and they perceived development of nonverbal behaviors such as body postures as the most utilized.

EIBI/Social Interaction: the TCASE members perceived development of nonverbal behaviors such as body postures as the most important, and they perceived peer relationships as the most frequently used. When ABA and TEACCH social interaction were compared with EIBI social interaction, the results were reversed.

DTT and VBI/Social Interaction: the TCASE members perceived development of nonverbal behaviors such as body postures as the most important and the most utilized interaction.

EIBI and VBI/ Communication Interaction: the TCASE members perceived development of spoken language for individuals with ASD with a language delay as the most important and the most utilized interaction.

ABA / Communication Interaction: the TCASE members perceived development of spoken language for individuals with ASD with a language delay as the most important interaction, and they perceived increasing the ability to initiate or sustain a conversation with others as the most utilized interaction.

DTT/ Communication Interaction: the TCASE members perceived development of spoken language for individuals with ASD with a language delay as the most utilized interaction, and they perceived increasing the ability to initiate or sustain a conversation with others as the most important interaction. Again, results were reversed when comparing ABA communication interaction and DTT communication interaction.

TEACCH/ Communication Interaction: the TCASE members perceived development of spontaneously seeking to share enjoyment, interests, or achievements with other people as the most important, and they perceived development of spoken language for individuals with ASD with a language delay as the most utilized.

ABA, EIBI, DTT, VBI, &TEACCH/ Stereotyped Patterns: the TCASE members perceived decreasing stereotyped patterns of interest that are abnormal either in intensity or focus as the most important and the most utilized interaction in all five interventions ABA, EIBI, DTT, VBI, &TEACCH.

These results indicated that the TCASE members from regions 10 and 11 agreed in their perceived level of importance and their perceived level of utilization only on the interventions' stereotyped patterns; however, there was some agreement and disagreement in their perceived levels of importance and utilization of the interventions' social and communication dimensions.

Furthermore, the respondents were asked to provide their point of view about the most effective intervention(s) for certain age groups of individuals with ASD. The majority of the respondents had a tendency of using ABA and TEACCH; they reported that ABA and TEACCH can be applicable for all ages. In addition, TEACCH was considered as a support for individuals with ASD or severe disabilities to help them to generalize their skills and function independently at school and in their community. The second in the preference was VBI; the respondents mentioned that it was essential in the early ages for teaching the foundation of language for children with ASD. The last in preference were DTT and EIBI; the respondents reported that these two interventions

were most important for age 3-7 years for students with the most significant ASD and Mental Retardation (MR). Other respondents believed in the combination of different interventions such as ABA and TEACCH, ABA and DTT, or EIBI and TEACCH. Moreover, one of the respondents reported that in some public school settings they can combine any interventions that could help in the development of a child with ASD, without considering age as a factor. Other respondents reported that in some schools, one campus focuses heavily on ABA while the other campuses use a variety of strategies. There remains a concern about the collective definition of these five interventions.

So, these results showed that the respondents still disagreed in their selectivity of the most effective intervention(s) which can be used in the treatment of individuals with ASD. In their review, the National Information Center for Children and Youth with Disabilities (1998), reported that all children with disabilities must be offered a free and appropriate public education; however, courts failed to have consistency in specifying the meaning of the term “appropriate services.” Thus local governments often make their own decisions about the “appropriate type of services” (Dymond, Gilson, & Myran, 2007). This may explain the enormous variety and differences of services provided for individuals with ASD from one state to another and maybe from one school to another in the same state. So a child who may find exemplary services in one school or state may not find the same quality or quantity of services in another state or school.

This issue demands consideration from professional groups and networks who want to establish a program for children with ASD. A significant amount of information

about individuals with ASD is available for private and public agencies. However, there is a lack of agreement in the literature of the best practices and services that can be used in the treatment of individuals with ASD, which may lead to differences on how the services should be delivered. So to avoid these gaps, professionals in the field have to work together and develop a systematic definition for the strategies used with individuals with ASD.

Further Research Recommendations

This research was limited to schools and centers in regions 10 and 11 in Texas. The sample size of this research was small. A nationwide sample of participants is recommended for future research. In addition, further research should examine families' perceived level of importance and utilization of interventions strategies and services provided for individuals with ASD. Psych Data is recommended to be used (within professional groups) for collecting data for future studies.

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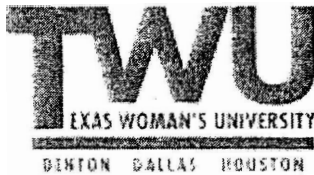
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APPENDIX A

INSTITUTION REVIEW BOARD (IRB) APPROVAL LETTER



Institutional Review Board
Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-698-3378 Fax 940-698-3416
IRB@twu.edu

May 4, 2009

Ms. Mana Abdulla Bajunaid

Dear Ms. Bajunaid:

Re: A Survey of Interventions and Services with Autism Spectrum Disorders

The above referenced study has been reviewed by the TWU Institutional Review Board (IRB) and was determined to be exempt from further review.

If applicable, agency approval letters must be submitted to the IRB upon receipt PRIOR to any data collection at that agency. Because a signed consent form is not required for exempt studies, the filing of signatures of participants with the TWU IRB is not necessary.

Another review by the IRB is required if your project changes in any way, and the IRB must be notified immediately regarding any adverse events. If you have any questions, feel free to call the TWU Institutional Review Board.

Sincerely,

Dr. David Nichols, Chair
Institutional Review Board - Denton

cc: Dr. Nan Restine, Department of Teacher Education
Dr. Michael Wiebe, Department of Teacher Education
Graduate School

APPENDIX B

PARTICIPANTS COVER LETTER

Dear colleague,

I am a current doctoral student at Texas Woman's University in Special Education Program. The topic of my dissertation is A Survey of Interventions and Services with Autism spectrum Disorders. My review of literature suggested that little is known about specific intervention for children with Autistic Spectrum Disorder (ASD). I am asking for your help in completing this survey project to fulfill my dissertation requirement for my doctoral degree.

From the review of the literature, it appears there is a lack of available information about services and interventions of schools serving individuals with ASD. Thus, a need exists to compile a preliminary list of information including methods of intervention strategies used in the treatment of individuals with ASD. This study will be conducted to accomplish three main purposes; the first purpose of this study is to identify the characteristics of specific program elements that existing in public and/or private schools with a history in treating individuals with ASD. A second purpose of this study is to assess the difference between actual and ideal levels of ancillary services offered to individuals with ASD. The third purpose of the study is to assess the relationships between actual and ideal levels of interventions used with individuals with ASD.

I would appreciate your participation in completing this survey. Please be assured this study will be conducted in an ethical manner. Participation is voluntary and your responses will remain anonymous. Although all steps are being taken by the researchers to ensure anonymity, there is a risk of loss of anonymity. The following steps will be taken to minimize your risk of a loss of anonymity:

- Confidentiality will be protected to the extent allowed by law
- No identifiable information will be collected and/ or retained
- All returned information will be kept in a locked file in the principal investigator's office six months after the data has been analyzed and the study has been completed, the survey results will be shredded.
- Data stored on a computer disk will be kept in a locked file and erased after six months.
- Finally, in order to properly notify participants of the risk of breach of confidentiality, the following statement will be included within the introduction of the survey and on the letters of recruitment: "There is a potential risk of loss of confidentiality in all email, downloading and internet transactions."
- Loss of participants' time. Time lost will be minimal (approximately 10-15 minutes for completion of the survey).

In order to complete my dissertation, I ask you to complete the survey attached to this letter. It will take approximately 10-15 minutes to complete. All information will be

completely confidential. For any further information, please contact me at the following address:

Muna A. Bajunaid

Texas Woman's University, P O Box 425769 ,Denton, TX 76204/5796
E-mail:

Thank you for your consideration. Muna A. Bajunaid

APPENDIX C
SURVEY

I: General Information

Directions:

This survey focuses on participants' perception of levels of importance and utilizations of Applied Behavior Analysis (ABA), Early intensive Behavioral Intervention (EIBI), Verbal Behavioral Intervention (VBI), Discrete Trial Training (DTT), Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) strategies for individuals with ASD

This section focuses on demographic information on schools, centers, and agencies serving individuals with ASD.

In which region and city of Texas is your school located? _____

Please complete the following items by placing an (X) in front of the response that is suitable for you

Interview

1. What are the ages of students you service and what are the requirements to be eligible for the services you provide?
☐ Infancy (Ages 0-3)
☐ Preschool (3-Kdg)
☐ Primary (Grades 1-5)
☐ Middle (Grades 6-8)
☐ Secondary (Grades 9-12)
☐ A combination of ages (please indicate ranges _____)
☐ Serve all ages (3-21)
2. Which general intervention best describes your agency?
☐ A single approach for all clients
☐ A single approach with individual modification
☐ An individually design approach
3. Does your facility advocate one approach more than the other?
Yes
No
☐ If the answer is yes please write the approach name _____
4. What is estimated length of your treatment?
30 days or less
☐ 30-60 days
☐ 60-90 days

____ More than 90 days

5. Have you noticed progress/changes in the children after learning your program in any of the following (check all that apply):

____ Socially

____ Educationally

____ Behaviorally

6. What are the qualifications percentages of the workers in your center or organization?

____ High-school

____ Bachelors

____ Masters

____ Doctoral

____ Other certifications (please describe) _____

____ Previous experience on working with children with autism

7. What is the approximate percentage of the staff ethnicity working directly with students with ASD

____ Caucasian

____ African American

____ Hispanic

____ Asian

____ Other (specify _____)

8. What is the staff gender

____ Male

____ Female

9. Years of teaching experience with individuals with ASD

____ (0-3)

____ (4-6)

____ (7-9)

____ More than that (please specify) _____

10. Teaching certification (s) have been obtained by staff

____ General Education

____ Special Education

____ Both

____ Other (please specify _____)

11. How many hours of specialized training have you received in any of the following interventions
- _____ ABA (uses antecedent stimuli and consequences, to produce behavioral change)
 - _____ EIBI (is an instructional procedure including reinforcement, modeling, prompting, fading, etc)
 - _____ VBI (focuses on teaching specific components of expressive language; Mand, Tact, Receptive repertoire, Imitation, Echoic)
 - _____ DTT (is an early intervention programs for children with ASD under the age of eight to learn communication and other essential skills.)
 - _____ TEACCH (it is a therapeutic tool to help autistic individuals understand their environments. The method provides the individual with structured and organized environment)
12. Where did you receive your training? _____
13. What training is provided in the center/institute to enhance the professionals' skills?
- _____ Formal academic courses
 - _____ In- service or staff development activities
 - _____ Other (Please explain)
- _____
14. What is staff primary mode of communication with the families/ parents
- _____ Email
 - _____ Phone
 - _____ Mail
 - _____ Face to face
 - _____ Involve families in treatment
 - _____ All of the above

Part A.

On the **left hand column** of the survey, please place an (X) in the boxes that best describe the frequency of a specific service your center uses. (1) never used, (2) rarely used, (3) used sometimes, (4) often used, (5) always used.

Time of Use by Percentage				Therapy services used in the treatment of children with ASD	Perceived level of Importance			
	2	3	4	5		2	4	5
				1. Speech and language therapy.				
				2. Occupational therapy.				
				3. Physical therapy.				
				4. Psychological therapy.				
				5. The use of assistive technology (computer, augmentative communication devices, etc).				
				6. The use of peers-tutoring.				

Please respond to the following question with short answer.

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III: Intervention sometimes used in the treatment of children with ASD

Directions:

On the **left hand column** of the survey, please place an (X) in the boxes that best describe the frequency with which your center uses a specifically defined strategy. (1) never used, (2) rarely used, (3) used sometimes, (4) often used, (5) always used.

On the **right hand column** of the survey, please place an (X) in the boxes that best describe how important you believe each defined service would be if all are available to you. (1) Low level of important, (2) being rarely important, (3) being sometimes important, (4) being often important, (5) being always important

Time of Use by Percentage					Applied Behavior Analysis (ABA): uses antecedent stimuli and consequences, to produce behavioral change.	Perceived level of Importance				
1	2	3	4	5		1	2	3	4	5
					1.Social interaction: a. Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction					
					b. develop peer relationships					
					c. develop spontaneous seeking to share enjoyment, interests, or achievements with other people					
					d. develop social or emotional reciprocity					
					2.Communication: a. Development of spoken language for individual with ASD with a language delay (using alternative modes of communication such as gesture or mime					
					b. increase the ability to initiate or sustain a conversation with others for individual with ASD with adequate language					
					c. reduce stereotyped and repetitive use of language or idiosyncratic language					
					d .build up spontaneous play or social imitative play appropriate to developmental level					
					3.Stereotyped patterns of behavior, interests, and activities: a. decrease stereotyped patterns of interest that is abnormal either in intensity or focus b. reduce repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).					

Directions:

On the **left hand column** of the survey, please place an (X) in the boxes that best describe the frequency with which your center uses a specifically defined strategy. (1) never used, (2) rarely used, (3) used sometimes, (4) often used, (5) always used.

On the **right hand column** of the survey, please place an (X) in the boxes that best describe how important you believe each defined service would be if all are available to you. (1) Low level of important, (2) being rarely important, (3) being sometimes important, (4) being often important, (5) being always used

Time of Use by Percentage					Early intensive behavioral intervention (EIBI): is an instructional procedure including reinforcement, modeling, prompting, fading, shaping, and error correction.	Perceived level of Importance				
1	2	3	4	5		1	2	3	4	5
					1.Social interaction: a. Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction					
					b. develop peer relationships					
					c. develop spontaneous seeking to share enjoyment, interests, or achievements with other people					
					d. develop social or emotional reciprocity					
					2.Communication: a. Development of spoken language for individual with ASD with a language delay (using alternative modes of communication such as gesture or mime					
					b. increase the ability to initiate or sustain a conversation with others for individual with ASD with adequate language					
					c. reduce stereotyped and repetitive use of language or idiosyncratic language					
					d .build up spontaneous play or social imitative play appropriate to developmental level					
					3.Stereotyped patterns of behavior, interests, and activities: a. decrease stereotyped patterns of interest that is abnormal either in intensity or focus b. reduce repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).					

Directions:

On the **left hand column** of the survey, please place an (X) in the boxes that best describe the frequency with which your center uses a specifically defined strategy. (1) never used, (2) rarely used, (3) used sometimes, (4) often used, (5) always used.

On the **right hand column** of the survey, please place an (X) in the boxes that best describe how important you believe each defined service would be if all are available to you. (1) Low level of important, (2) being rarely important, (3) being sometimes important, (4) being often important, (5) being always used

Time of Use by Percentage					Discrete trial training (DTT): is an early intervention programs for children with ASD under the age of eight to learn communication and other essential skills.	Perceived level of Importance				
1	2	3	4	5		1	2	3	4	5
					1.Social interaction: a. Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction					
					b. develop peer relationships					
					c. develop spontaneous seeking to share enjoyment, interests, or achievements with other people					
					d. develop social or emotional reciprocity					
					2.Communication: a. Development of spoken language for individual with ASD with a language delay (using alternative modes of communication such as gesture or mime					
					b. increase the ability to initiate or sustain a conversation with others for individual with ASD with adequate language					
					c. reduce stereotyped and repetitive use of language or idiosyncratic language					
					d .build up spontaneous play or social imitative play appropriate to developmental level					
					3.Stereotyped patterns of behavior, interests, and activities: a. decrease stereotyped patterns of interest that is abnormal either in intensity or focus b. reduce repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).					

Directions:

On the **left hand column** of the survey, please place an (X) in the boxes that best describe the frequency with which your center uses a specifically defined strategy. (1) never used, (2) rarely used, (3) used sometimes, (4) often used, (5) always used.

On the **right hand column** of the survey, please place an (X) in the boxes that best describe how important you believe each defined service would be if all are available to you. (1) Low level of important, (2) being rarely important, (3) being sometimes important, (4) being often important, (5) being always used

Time of Use by Percentage					Verbal behavior intervention (VBI): focuses on teaching specific components of expressive language; Mand, Tact, Receptive repertoire, Imitation, Echoic.	Perceived level of Importance				
1	2	3	4	5		1	2	3	4	5
					1.Social interaction: a. Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction					
					b. develop peer relationships					
					c. develop spontaneous seeking to share enjoyment, interests, or achievements with other people					
					d. develop social or emotional reciprocity					
					2.Communication: a. Development of spoken language for individual with ASD with a language delay (using alternative modes of communication such as gesture or mime					
					b. increase the ability to initiate or sustain a conversation with others for individual with ASD with adequate language					
					c. reduce stereotyped and repetitive use of language or idiosyncratic language					
					d .build up spontaneous play or social imitative play appropriate to developmental level					
					3.Stereotyped patterns of behavior, interests, and activities: a. decrease stereotyped patterns of interest that is abnormal either in intensity or focus b. reduce repetitive motor manners (e.g., hand or finger flapping or twisting, or complex whole-body movements).					

Directions:

On the **left hand column** of the survey, please place an (X) in the boxes that best describe the frequency with which your center uses a specifically defined strategy. (1) never used, (2) rarely used, (3) used sometimes, (4) often used, (5) always used.

On the **right hand column** of the survey, please place an (X) in the boxes that best describe how important you believe each defined service would be if all are available to you. (1) Low level of important, (2) being rarely important, (3) being sometimes important, (4) being often important, (5) being always used

Time of Use by Percentage					Structured Teaching Program (TEACCH): it is a therapeutic tool to help autistic individuals understand their environments. The method provides the individual with structured and organized environment.	Perceived level of Importance				
1	2	3	4	5		1	2	3	4	5
					1.Social interaction: a. Develop nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction					
					b. develop peer relationships					
					c. develop spontaneous seeking to share enjoyment, interests, or achievements with other people					
					d. develop social or emotional reciprocity					
					2.Communication: a. Development of spoken language for individual with ASD with a language delay (using alternative modes of communication such as gesture or mime					
					b. increase the ability to initiate or sustain a conversation with others for individual with ASD with adequate language					
					c. reduce stereotyped and repetitive use of language or idiosyncratic language					
					d .build up spontaneous play or social imitative play appropriate to developmental level					
					3.Stereotyped patterns of behavior, interests, and activities: a. decrease stereotyped patterns of interest that is abnormal either in intensity or focus b. reduce repetitive motor manners (c.g., hand or finger flapping or twisting, or complex whole-body movements).					

Part IV.

Please respond to the following question with short answer.

- From your experience, which intervention (s) most effective with certain age group? Please explain.