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## Early Interventions and Special Education Services for Children with Autism

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Early Interventions and Special Education Services for Children with Autism

Misha Wooden

Submitted in partial fulfillment of the Master of Arts Degree at Sarah Lawrence College

May 2020

## **Abstract**

Autism spectrum disorder (ASD) is a life-long developmental disorder that impairs a child's ability to communicate and interact with others. The core features of ASD are deficits in communication/social interaction and the presence of restricted, repetitive behaviors. These symptoms appear in early childhood and range in severity. Therefore, no two children are likely to express ASD in the exact same way. There is no cure for the disorder, but early recognition and interventions are highly beneficial in mitigating its effects. It is now widely known that behavioral interventions, cognitive interventions, and various therapies promote positive long-term outcomes in children on the spectrum. Parents play an integral role in deciding which interventions are best for their children and reporting effectiveness in research. This work explores the process of how a child receives a diagnosis and considers the many interventions and special education services available to children with ASD. It also examines the relationship between parent conceptions of ASD and the interventions they choose, identifying the factors that compel parents to select certain interventions over others. Culminating in a case study of a child receiving interventions in a school environment, this work demonstrates how crucial it is that ASD be detected early and that services are accessible to all children with ASD.

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## I. Introduction

While there is a consensus that early intervention services are critical for children with autism spectrum disorder (ASD), children receive interventions in a variety of ways and there is a controversy over which services are most effective, settings that are most conducive for implementation of services, and the amount of time needed for interventions before seeing benefits. In 2018, the Centers for Disease Control and Prevention (CDC) determined that about 1 in 59 children are diagnosed with ASD, indicating that ASD occurs in all ethnic, racial, and economic groups (Barrio et al., 2019). It is more common in White children compared with African-American or Hispanic children, and boys are five times more likely to have the disorder compared with girls because of mutations in the X-chromosome (Adeli et al., 2014). ASD is often considered a neurodevelopmental disorder characterized by a range of significant social, emotional, and behavioral challenges. ASD exists on a spectrum and the severity of symptoms differ from child to child, but children with ASD share core similarities of impairments in social interaction/communication, restricted stereotyped behaviors, and difficulties in sensory processing. Even though children with ASD have these challenges, they also sometimes have enhanced discrimination abilities to observe minute variations in feature and visual search tasks (Adeli et al., 2014). Around 10% of the general population with ASD show remarkable skill in areas like mathematical calculations, high memory, and musical abilities (Howlin et al., 2009; Adeli et al., 2014). Signs of ASD begin during early childhood and typically remain throughout a person's lifetime. Many children are diagnosed at age four, even though healthcare providers can often see developmental problems before this age (National Institute of Child Human Development [NICHD], 2017). To find deviations, physicians and clinicians conduct multiple observations and screenings that check for specific behaviors like repetitive body

movements, difficulty recognizing social cues, and trouble initiating or maintaining conversation (Center for Disease Control and Prevention [CDC], 2019). ASD diagnoses are made if there is an observable pattern of these behavioral symptoms. Once given a diagnosis, there are several interventions and treatments available for children on the spectrum.

There is no single cause for ASD or medication to treat it. ASD is thought to be a syndrome with multiple non-genetic and genetic causes. Some studies have implicated environmental factors including mercury, radiation, and diesel exhaust (Adeli et al., 2014). Many epidemiologic studies show that early environmental factors such as perinatal exposures to toxins, teratogens, and infections account for genetic mutations that lead to ASD (Muhle et al., 2004; Landrigan, 2010; Adeli et al., 2014). However, most cases are simply considered idiopathic or of unknown cause (National Human Genome Research Institute, 2019). Given the uncertainty of cause, families are faced with the task of finding appropriate interventions and treatments that will be most effective for the specific symptoms of their children. The most commonly available treatments primarily target behaviors and focus on improving daily functioning, communication, and social skills (Becerra et al., 2017). Many behavior-based therapies exist, but the most widely accepted and evidence-based therapy that focuses on reaching these targets through learning is Applied Behavior Analysis (ABA). Along with behavior-based therapies, families may seek interventions that have a cognitive approach. Cognitive Behavioral Therapy (CBT), for example, teaches children to alter their beliefs or to avoid thinking and then acting upon negative emotions. (Turner & Swearer-Napolitano, 2010). Additionally, families are likely to opt for special education services and place their children in environments that cater to the behavioral and cognitive needs that often hinder children with ASD from learning school-based material. It is argued that using an array of services and interventions in tandem treats the pervasiveness of

ASD symptoms and equips children with the tools necessary to thrive (Al Anbar et al., 2010; Becerra et al., 2017).

With the wide range of treatment and intervention options for children with ASD that have emerged in recent years, the number and types of interventions that parents choose to use have become of interest. This work will primarily explore the options for interventions, the factors behind parental choices, and the implications these choices have for children with ASD. The first half will summarize the beginnings of ASD diagnoses and early interventions starting in the 1960's and up until present day. There will also be a review of the differences in definition and service availability to children with a clinical diagnosis of ASD as opposed to an educational diagnosis of ASD. It will also include an examination of parental conceptions of ASD and delve into the reasonings for certain interventions over others. Parental conceptions are key in early interventions because they have varying beliefs about the cause and course of ASD, which certainly influences the treatments they seek for their children. The second half of this work will be a case study of a first-grade student with ASD who attends a special needs school. As his 1:1 aide this school year, I have helped to implement his Individualized Education Plan (IEP) determined by the Department of Education (DOE) and the individualized behavior plans developed by school clinicians, therapists, and his parents. A discussion of his ASD symptoms, the intervention choices of his parents, and his socioemotional development throughout the year will demonstrate the gravity of finding and being able to access early intervention services.

## II. Literature Review

### The First ASD Diagnoses

The discussion of ASD and early interventions must start with Leo Kanner. In the early 1940s, Kanner systematically observed a group of eleven children with a condition he called early infantile autism (Ospina et al., 2008). He saw that the children had a lack of affective contact with others, a strong insistence on following routines, and high levels of visuospatial skills (Pearce, 2005). He concluded that the condition was a neurodevelopmental disorder marked by high intelligence, hostility towards change, and ardent desire for aloneness and that these symptoms started to appear in early infancy (Kanner, 1943). This event single-handedly launched the scientific study of ASD. Notably, in the same years as Kanner, Hans Asperger studied children who he found to have Asperger's Disorder, which was defined by the same characteristics as infantile autism in addition to extremely original thought, abstract interests, and average to above-average intelligence (Barahona-Correa & Filipe, 2016). Kanner's syndrome made its way to the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III), while Asperger's work was largely unknown for almost half a century (Barahona-Correa & Filipe, 2016).

Later in the 1960s and early 70s, in the age of psychoanalysis, clinicians attempted to treat children with ASD using psychoanalytic therapy. A number of the first ASD cases were found in schools and thought to have severe intellectual disabilities and emotional disturbances (Ospina et al., 2008). Accordingly, the students were moved from their classrooms and into public institutions where they resided well beyond their childhood years and were sedated rather than treated for their symptoms (Ospina et al., 2008). This trend of sedating rather than treating changed when the Autism Diagnostic Observation Schedule (ADOS) was introduced in 1989.

This instrument made it possible to reliably distinguish individuals, as young as two years old, with ASD from those with other mental health conditions and developmental disorders (Ospina et al., 2008). The use of ADOS revealed that many more children than previously thought met the criteria for ASD. It became clear that earlier ideas about the characteristics of ASD were misguided, and that many children with ASD have spoken intentional communication and social interest, unlike what was previously believed (Ospina et al., 2008).

The emergence of brain imaging technologies, especially functional magnetic resonance imaging (fMRI), and advanced genetic methods added to ASD research. fMRIs made it possible to identify specific brain regions that activate during cognitive and affective tasks related to core autism symptoms (Thompson, 2013). These scans facilitated the differentiation of autism brain function from that of other conditions (Thompson, 2013). Advances like polymerase chain reaction and microarray technology, too, allowed biologists to search entire human genomes for small DNA differences that distinguish individuals with ASD from those without it (Thompson, 2013).

### **Behavior-Based Interventions**

The most significant finding in ASD identification during this time was the development of effective intervention strategies based on ABA (Thompson, 2013). ABA is a process that identifies the independent variable, or the thing that can be manipulated to cause a change in another variable, between observable behavior and the environment (Geneva Centre for Autism, 2006). ABA inspired treatments that are based on the behaviorist idea that desired behaviors can be taught through a system of rewards and consequences. Burrhus F. Skinner and Ole Ivar Lovaas were responsible for the emergence of a behavior analytic approach to ASD. Skinner

created the basic principles of behavior modification and Lovaas applied them specifically to young children on the spectrum.

Lovaas based his behavioral approach to early intervention on the assumptions that young children could be taught specific skills like imitation and cooperation to communicate their needs, care for themselves, and acquire basic cognitive skills using operant learning principles (Ospina et al., 2008). Lovaas led initial studies which showed that children with ASD could indeed be taught simple responses using mechanical signals like tones, lights, and spoken requests (Ospina et al., 2008). Most importantly, he found that these techniques were effective in applied settings with children and adolescents with developmental disabilities (Ospina et al., 2008). At the time, psychiatrists viewed behavioral intervention procedures as a means of managing psychiatric wards of patients rather than treatments. In opposition to the work of Lovaas and other behavioral psychologists, psychiatrists expressed concern that these treatments did not change the underlying psychiatric disorder (Ospina et al., 2008). However, Lovass' research prevailed and gained prominence when he conducted a study in 1987 involving children on the spectrum between the ages of 2-5 undergoing 40 hours per week of therapy for a duration of three years (Ospina et al., 2008). This study was successful in showing that behavioral early intervention methods were highly effective in reducing, and in some cases nearly eliminating, most ASD symptoms in about half of the treated young children (Ospina et al., 2008). Moreover, the effects of treatment, which is now called Early Intensive Behavioral Intervention (EIBI), were long-lasting.

Lovass' findings have been widely replicated with similar outcomes across many studies, with approximately half of children treated with EIBI for twenty or more hours/week for several years functioning intellectually, socially, and communicatively like their neurotypical peers

(Thompson, 2013). The other half of treated children exhibit more modest improvements and continue to work on intellectual and social abilities with the help of special needs programs for students with disabilities (Thompson, 2013).

The most used behavior-based interventions for ASD today that build off the principles of ABA and Lovass' work are an updated version of EIBI and Discrete Trial Training. The intervention that requires the most time is still Lovass' EIBI. Today, the treatment consists of 20-40 hours per week of individualized instruction for children over a span of 2-3 years. This treatment is particularly conducive to use in a classroom setting (Association for Science in Autism Treatment, n.d.). Another behavior-based intervention is Discrete Trial Training (DTT). DTT is based on the idea that children can learn any behavior or skill when the information is broken down into smaller steps. The treatment uses repetition, so children have plenty of opportunities to learn and practice new skills (Child Mind Institute, n.d.). DTT uses rewards to encourage children to use the new skills (Child Mind Institute, n.d.). These forms of ABA target different developmental areas, but they all work to reinforce positive behaviors so that they increase and ignore negative ones in order for them to reduce and eventually disappear (Child Mind Institute, n.d.). These interventions are often incorporated into classrooms as methods of positive behavior support (Thompson, 2013).

### **Cognitive-Based Interventions**

When early interventions are not based on behavioral principles, they are grounded in cognition. The most common cognitive-based intervention is Cognitive Behavioral Therapy (CBT). CBT is a form of psychotherapy that focuses on the role of cognition in the expression of emotions and behaviors. CBT assumes that abnormal feelings and behaviors develop through cognitive processes developed from interactions with others and experiences in the environment

(Turner & Swearer-Napolitano, 2010). Therefore, the goal of therapy is to identify the abnormal cognitive processes and help the child learn new ways of perceiving and thinking about interactions and events. These new ways of thinking lead to more positive responses, both behavioral and emotional.

CBT started with the work of Albert Ellis and Aaron T. Beck in the late 1950's and early 1960's (Turner & Swearer-Napolitano, 2010). Ellis wanted to find an alternative to psychodynamic therapy because he viewed the practice as indirect and inefficient. As a result, he developed Rational Emotive Therapy (RET) (Turner & Swearer-Napolitano, 2010). The term later changed to Rational Emotive Behavior Therapy (REBT), but Ellis' approach remained the same: emphasizing the role of cognitions in determining a person's feelings and behaviors. Following Ellis' lead, Beck developed a structured, short-term treatment for depression. Beck's approach, termed Cognitive Therapy, was based on his observation that his patients with depression held distinctive cognitive biases. From this, Beck developed a model of depression that included a negative view of the self, the world and the future, and a perception of the self as inadequate, alone, and worthless (Turner & Swearer-Napolitano, 2010). Beck found that similar systematic biases in information processing are characteristic of most psychological disorders. In Ellis' REBT, the therapist confronts and attempts to persuade the client that his or her thinking is irrational. In stark opposition to this, in Beck's Cognitive Therapy the client and therapist collaborate to find the client's irrational thoughts and determine their accuracy. The therapist is then able to treat the client accordingly (Turner & Swearer-Napolitano, 2010).

Over the years, CBT has been used to treat a wide variety of psychological disorders and across a variety of populations and settings. For children, its approaches easily accommodate the demands of evolving developmental levels. CBT provides structure for treatment but is flexible

enough to allow for adaptations to meet individual developmental needs. For young children, CBT usually has a behavioral emphasis and focuses on operant techniques to modify behavior (Turner & Swearer-Napolitano, 2010). But as cognitive abilities develop, the focus of therapy can shift to the cognitions that determine emotion and behavior. Specifically, for children who are not developmentally ready for more abstract forms of thinking and those on the spectrum, CBT often focuses on concrete skills including problem solving and rehearsal of positive coping statements (Turner & Swearer-Napolitano, 2010).

Eric Schopler and colleagues developed a cognitively based intervention that was largely used with school age children, entitled Treatment and Education of Autistic and Related Communication-Handicapped Children (TEACCH) (Thompson, 2013). It is based on the strength in visual information processing that many children with ASD display (Thompson, 2013). Some children on the spectrum have difficulties with auditory processing, particularly of language. Accordingly, this treatment uses visual cues such as picture cards to help children learn everyday skills like dressing and feeding. Information is broken down into small steps so that the information can be obtained more easily. Over time, the cues presented for organizing activities lead to increased independence (Thompson, 2013).

### **Relationship-Based Approaches, Speech, and Occupational Therapy**

There are also therapies that focus on the relationship between children and their parents or teachers. Floortime (Developmental, Individual Differences, Relationship-Based Approach, DIR) and Relationship Development Intervention (RDI) emphasize emotional bonding and children learning through guided exploration (Thompson, 2013). Floortime involves playing with children and doing the activities they like, typically on the floor. Parents can conduct this intervention and meet their children on their development level and build on their strengths. It

supports emotional and intellectual growth by introducing and practicing two-way communications skills and emotional thinking (Autism Speaks, n.d.-b). RDI is similar in that it is parent-led. It stresses thinking flexibly: understanding different perspectives, coping with change, and integrating information from multiple sensory sources (Autism Speaks, n.d.-b).

These approaches that strengthen communication and emotional channels are often used in tandem with other therapies. Commonly, children with ASD receive speech therapy and occupational therapy. Speech-language therapy helps children with speaking, communicating, and interacting with others. It can involve non-verbal skills, like making eye contact, knowing how to take turns in a conversation, and using and understanding gestures (Autism Speaks, n.d.-d). To be most effective, speech therapists work closely with parents and teachers to practice these skills in daily life. Related to speech-language therapy, therapists use Integrated Play Groups (IPGs) in which they combine children with and without ASD to engage in play (Autism Speaks, n.d.-d). In this environment, a child with ASD can draw from the other child's lead to learn how to play. Occupational therapy is also used in intervention approaches for children on the spectrum. This kind of treatment promotes the learning of life skills like dressing, bathing, and understanding how to relate to other people (Autism Speaks, n.d.-c). Occupational therapy can be highly individualized, as the focus depends on specific needs and goals of children and their families. These activities help children with ASD improve in doing everyday tasks, like learning to button a shirt or hold a fork properly. They can also involve anything related to school, work or play. Mastery of the skills introduced and refined in occupational therapy help children feel empowered and give them the opportunity to live as independently as they can.

## Medications

The Food and Drug Administration (FDA) has only approved two drugs for treating the symptom of irritability that is sometimes associated with ASD (WebMD, n.d.). Risperdal, an antipsychotic first approved in the 1990's to treat schizophrenia and bipolar disorder, is widely used to treat children who are aggressive or excessively irritable (WebMD, n.d.). It can successfully calm children with severe behavior problems and enable them to function in social settings (Miller, n.d.). Its use often does come with the side effects of substantial weight gain and hormonal changes (Miller, n.d.). Aripiprazole, also an antipsychotic, can be used by children and adolescents with ASD between the ages of 6-17 (Blankenship et al., 2010). Studies have shown that aripiprazole can help reduce irritability, hyperactivity, and repetitive behaviors (Blankenship et al., 2010; Ching & Pringsheim, 2012). Aripiprazole has similar side effects to those shown by use of risperdal.

There are no known medications to treat the communication difficulties, social challenges and repetitive behavior symptoms of ASD. Instead, children on the spectrum are prescribed medication for conditions that are often associated or are co-occurring with ASD, like anxiety, hyperactivity, and aggression. Some doctors will prescribe selective serotonin reuptake inhibitors (SSRIs), anti-anxiety medications, or stimulants, which are not FDA-approved for ASD (WebMD, n.d.). The aims of these medications are to quell dangerous behavior patterns like disordered sleeping, meltdowns, and hitting that are often a result of the overwhelming anger and anxiety children on the spectrum are unable to express appropriately (Miller, n.d.). These medications have generally proved to be effective but finding the right drug for a specific child is often a process of trial and error because none of the medicines most often prescribed work well for every individual. Although they do not directly treat ASD's core symptoms, risperidone,

aripiprazole, and other drugs for comorbid symptoms can be beneficial in that they can ease their expression. For example, relieving irritability often reduces tantrums, aggressive responses, and self-injurious behaviors (Miller, n.d.-a). Decreasing these behaviors will increase the availability of children on the spectrum to learn socioemotional strategies for their symptoms. Therefore, it is widely accepted that medicines are most effective when used in conjunction with early interventions that do target ASD's core symptoms (Miller, n.d.-a; Autism Speaks, n.d.-a).

### **Reaching a Diagnosis and Accessing Services**

To access early intervention services, a child must first have a diagnosis. A child may receive a diagnosis for ASD in either a clinical or educational setting (Nowell et al., 2015). Clinically, screenings for delays in development should be done during wellness visits beginning at nine months of age and every six months thereafter (CDC, 2019). During these screenings, pediatricians typically ask parents questions about language development and the play of the child to understand how the child learns, speaks, and behaves in order to ensure that the child is reaching age-appropriate goals. Additionally, they will observe the child's behaviors such as facial expressions and babbling. If a child shows developmental problems, the pediatrician will refer the child to a specialist for more tests. A child psychologist, speech-language pathologist, occupational therapist, or a neurologist evaluates the child's cognitive level, language abilities, and life skills such as eating and dressing. The specialist will then be able to make a diagnosis using the Diagnostic and Statistical Manual Fifth Edition (DSM-5) as a guide. Under the DSM-5 criteria, ASD is defined as a neurodevelopmental disorder characterized by varying degrees of impairments in social communication/social interaction deficits and restricted and repetitive interests/behaviors (CDC, 2019). If a child has problems in these two areas, they are likely to fall on the spectrum. But, making the diagnosis can be difficult because behaviors seen in a child are

often dependent on other non-autism specific factors like cognitive functioning and developmental age. Sometimes, characteristics in young children that are common to ASD are not actually specific to the diagnosis but related to other disorders. In one study, for example, children with clinically diagnosed with ASD did not have more stereotyped language than the typically-developing children or children with other non-spectrum diagnoses (Huerta & Lord, 2012). These findings demonstrate that the types of behaviors clinicians look for are highly dependent on developmental factors, which likely accounts for children being diagnosed with ASD much later than when symptoms are first noticed.

Children may also receive an educational classification, as defined in the Individuals with Disabilities in Education Act (IDEA) of autism in public school settings (Nowell et al., 2015). IDEA is the federal special education law in the US that requires public schools to serve the educational needs and provide the services specific to the Individualized Education Programs (IEP) of students with disabilities (National Center for Learning Disabilities [NCLD], n.d.). This identification process does not include a DSM-5 diagnosis but monitors for symptoms that adversely affect any aspect of educational performance (Individuals with Disabilities Education Act [IDEA], 2004). Additionally, receiving a DSM-5 diagnosis of ASD in a medical or clinical setting does not necessarily result in a special education classification of autism. This classification and its associated special education services requires a child to show evidence of both a disability condition and educational need (IDEA, 2004). Similarly, it is possible for a child to be eligible for special education under the category of autism and not have a clinical diagnosis (IDEA, 2004). Autism does not apply if a child has poor educational performance primarily because of an emotional disturbance (NCLD, n.d.). The law defines emotional disturbance as a condition demonstrating one or more of the following characteristics over a long

period of time: an inability to learn that cannot be explained by intellectual, sensory, or health factors, an inability to build or maintain interpersonal relationships with others, having inappropriate behavior or feelings under normal circumstances, a general mood of unhappiness or depression, a tendency to develop physical symptoms or fears associated with personal or school problems, or have schizophrenia (IDEA, 2004).

The characteristics of emotional disturbance, which would prevent an autism diagnosis in a school, are exactly the kinds of observed behaviors that determine a clinical diagnosis for the disorder, especially those related to social interactions. DSM-5 diagnostic criteria for ASD include deficits in developing, maintaining, and understanding social relationships and limitations in social-emotional reciprocity such as having abnormal social approaches (CDC, 2019). Moreover, ASD symptoms are not better explained by intellectual disability. Intellectual disability and ASD frequently co-occur (CDC, 2019). Given the similarities between intellectual disability and ASD, the key qualification for receiving special education is the inability to learn without support. Schools assess for how behaviors may hinder the educational progress of a student, and so a student with ASD who receives good grades is often not eligible for an IEP. The distinction that schools make in determining educational services available seems to ignore the daily challenges of a student with ASD that they are likely to have despite their grades.

When students are eligible for intervention programs and special education services, the cost is considerable for families. The total costs per year for children with ASD in the United States were estimated to be between \$11.5 billion – \$60.9 billion in 2011 (CDC, 2019). In comparison to the medical needs of neurotypical children, those with ASD had average medical expenditures that exceeded those without ASD by \$4,110–\$6,200 per year (CDC, 2019). Even with governmental assistance and Free Appropriate Public Education (FAPE), the cost remains

high for services sought outside of the classroom. In 2005, the average annual medical costs for Medicaid-enrolled children with ASD were \$10,709 per child, which was about six times higher than costs for children without ASD (\$1,812) (CDC, 2019). In addition to medical costs, intensive behavioral interventions for children with ASD cost \$40,000 to \$60,000 per child per year (CDC, 2019).

The CDC suggests that children should be screened for autism specifically during wellness checks at 18 months and 24 months, which is when they are likely to begin to show symptoms (CDC, 2019). However, not all doctors routinely check for symptoms of autism and this leaves the responsibility to parents to ask that their child be screened for ASD (CDC, 2019). This poses a significant issue for families unaware that they should be asking developmental questions, especially those specific to the socioemotional growth of their children. Furthermore, the failure of doctors to check for developmental delays in all children limits the number of those who can access intervention services. Another challenge for families is that identification criteria varies across clinical and educational settings. A DSM-5 diagnosis and IDEA classification involve different types of professionals and data collection tools (Nowell et al., 2015). This may confuse families and mean that they receive different recommendations for ASD interventions as a result. These differences have implications for who is identified as having ASD, the timeliness of the diagnosis, and the likelihood of a child receiving the services he or she needs.

### **Parental Conceptions of Autism and Intervention Decisions**

The literature on parent conceptions of ASD includes many studies that are based on vastly different populations and use various measures. Accordingly, it is conclusive that parents have varying beliefs about the cause and course of ASD in their children. The following studies highlight how demographic characteristics like race and ethnicity, socioeconomic status, and

home language factor into how parents form their ideas about ASD. Physicians and service providers may not always consider these characteristics and what their implications are for how families choose certain interventions over others. This information could be valuable for accommodating as many children on the spectrum as possible.

Harrison et al. (2017) used an analysis of the Autism Diagnostic Observation Schedule to find item-level biases, which are characteristics that affects one group disproportionately from others, in scores across socio-demographic groups of race, ethnicity, and gender. They found significant parental bias for race and ethnicity in categories of Unusual Eye Contact item, Stereotyped/Idiosyncratic Use of Words or Phrases item, and Immediate Echolalia (Harrison et al., 2017). Black children, specifically, were found to have higher ratings in these categories. Harrison et al. (2017) that decided these findings are significant because although the item-level bias is minimal when averaged across all participants, individual children may not be diagnosed and accommodated properly. While there were no demonstrated biases in Hispanic participants, there were multiple for Black children, suggesting that particular groups may experience systematic difference and that race is too broad of a category to use for analysis (Harrison et al., 2017). The researchers went further to acknowledge that there may be cross-cultural differences in ASD symptom recognition such as language, eye contact, etc. to account for the discrepancies between groups, with groups disagreeing about what is an appropriate social behavior and what is an inappropriate one.

Al Anbar et al. (2010) did not consider racial and ethnic differences but examined parental beliefs about what they thought was the cause of ASD and how much control they felt they had over their children's diagnosis. The most common cause was thought to be genetics, followed by random chance and environmental factors. Parents who held the idea that genetic factors were

the cause of their child's ASD also felt that they had personal control over their child's diagnosis and were more likely to use behavior and social skills therapies (Al Anbar et al., 2010). Parents who thought the cause of ASD was random or environmental felt that they had less control and were more likely to use prescribed medication. In their discussion, the researchers decided these findings were important for understanding what parent beliefs are and how they may create fixed concepts of ASD that limit exploration of services and interventions.

Zuckerman et al. (2015) examined variations in parental beliefs about ASD diagnosis and treatment according to social determinants of health (race, ethnicity, parent income, and parent education) to see if variations exist and if they are related to the use of health services. The researchers used data from 2011 Survey of Pathways to Diagnosis and Treatment and 2009/2010 National Survey of Children with Special Health Care Needs. Of 1,420 children, they found that parents of lower educational attainment who also had lower income were more likely to think that their child's condition was a mystery. The researchers found that there was less psychotropic medication, which is any medication capable of affecting the mind, emotions, and behavior, use in Black non-Hispanic and Hispanic children, as well as other non-Hispanic children compared to White children. There were also lower rates of behavioral intervention or modification among children of non-White race and ethnicity. Furthermore, near-poor families were less likely to think that they could change the condition. Hispanic and Black non-Hispanic children were less likely than White children to have parents who believed that their developmental condition was life-long. Moreover, parents who believed that their child's condition was life-long were more likely to have a child using medications. Parents who believed that ASD was a mystery were less likely to have a child who was using a behavioral intervention. An interesting finding of the study was that parents of minority children were more likely to think they could change the

child's condition. The researchers conclude, given all of the interesting trends among and between participants, that healthcare providers should pay attention to differences in parent beliefs because some beliefs can be related to social determinants of health. This awareness may lead to more practices of shared decision-making between parents and providers to access the right treatments for children with ASD.

Reyes et al. (2018) added to the literature on parental conceptions of ASD by considering diversity in terms of English language proficiency. Mothers in the limited English proficient Latino (LEP-L) group more strongly agreed with their child's diagnosis being a mystery than any other group. English proficient Latinos (EP-L) or LEP-L thought the condition was moderate/severe to a lesser extent. All groups had many similar beliefs about ASD: ASD is a life-long condition, ASD is a major consequence for a child, and parents have the power to influence a child's ASD. Ethnicity and language were not associated with ASD intervention services, but Reyes et al. (2018) found that parents viewing ASD as moderate/severe was associated with more weekly ASD treatment hours and LEP-L was associated with the use of fewer ASD treatment hours. Few studies in the literature analyze the ways in which language diversity impacts ASD treatment and by doing so, Reyes et al. (2018) noted how language is a social identifier that often goes unrecognized but is significant.

Lastly, Zuckerman et al. (2016) considered the relationship between health insurance and parental conceptions of ASD. They analyzed 2011 Survey of Pathways data to discover how parents from different races with either public or private insurance thought about the causes of ASD. Non-White, publicly insured and poor parents were more likely to believe in exposure causes and less likely to endorse genetic causes. Parents of Hispanic children were less likely than White non-Hispanic to definitely agree to genetic or hereditary causes. Parents of Black

children were more likely to definitely agree about exposure as a cause. Overall, parents with private insurance were twice as likely to somewhat agree to the cause being genetic or hereditary. Zuckerman et al. (2016) brought health insurance into the discussion about ASD perspectives and showed that the type of care that one has access to can influence thoughts about developmental delays.

Thought to be the result of a complex interaction between genetics and environmental factors, the cause of ASD remains unknown and parents are left to form their own ideas about its cause and course. From the previous studies, parents think that the causes are genetic, a result of heredity, from immunizations, and due to environmental exposure (Dale et al., 2006; Mercer et al., 2008; Zuckerman et al., 2016). These studies also suggest that for parents to determine the point at which normal variation of behavior becomes deviant and how they interpret the deviation is strongly influenced by cultural context, including demographic factors such as race and ethnicity, family income, parent education levels, and language (Al Anbar et al., 2010; Nowell et al., 2015; Zuckerman et al., 2016; Becerra et al., 2017; Harrison et al., 2017). Moreover, parent interpretations directly influence the services they seek for their children. Understanding parents' beliefs or views of having a child with ASD can potentially pinpoint ways in which service providers can increase the use of ASD intervention services in families of children with ASD.

This section offered an overview of when ASD became clinically salient and how treatments for the diagnosis have developed over time. Additionally, it covered how a child is diagnosed with ASD and the process families must undergo to access behavioral and cognitive interventions. This section also considered how this process is different for distinct groups based on race, ethnicity, socioeconomic status, and cultural beliefs of ASD. Many of the topics

discussed in this section will appear in the next, which is a case study of a child with ASD who attends a special needs school where he receives a mix of behavioral and cognitive services.

### **III. Case Study: Jordan's Plan**

Jordan is six years old and attends a school for children who are twice-exceptional. He and all the students at his school are intellectually advanced or have high academic potential. They also have learning and/or social-emotional differences and diagnoses of ASD, ADHD, specific learning disabilities, and mood disorders that require a flexible learning environment. To accommodate the students, Jordan's school has an integrated, special education model that stresses social cognition and executive functioning along with educational engagement. These features are fully embedded in curricula. Moreover, Jordan's school offers on-site therapies such as occupational therapy and counseling. Additionally, Jordan's school supports parents in reinforcing the model at home by regularly conducting conferences with parents and any other outside providers students may have.

Jordan reads and comprehends well beyond his first-grade level, can identify the flags of many countries from their pictures alone, and has an incredible memory. Jordan also is on the spectrum. He has trouble forming two-way relationships and communicating his emotions. He has minimal receptive and expressive language skills, but high verbal comprehension. He has a low processing speed, which makes following directions immediately or responding to questions posed to him in a timely manner difficult. He often responds to unexpected changes or new people with anger and aggressive behaviors. Like many children on the spectrum, Jordan also has other mental health concerns. He has anxiety that is triggered by new settings, people, sounds, and smells. He also has ADHD and must work hard to focus his attention on a task or person for an extended period of time. Jordan takes medications for his hyperactivity and his anxiety and is constantly working on functioning in social environments.

Given these characteristics, Jordan's family thought it was best for him to attend a school that specializes in educating children like him. In addition to learning age-appropriate material in subjects like Math and English Language Arts, Jordan also learns behavioral strategies and social skills that are specific to his needs. Jordan's plan, or daily schedule, includes occupational therapy, speech-language therapy, counseling, and the support of a 1:1 aide at all times. Jordan's school melds together behavioral and psychodynamic approaches to create a uniquely psychosocial approach to treating Jordan's ASD.

## **Behavior**

In Jordan's school, most students have their own individualized behavior plan to limit unwanted behaviors that impede learning in the classroom. These plans are typically reward-based in nature such as receiving an incentive like stickers when the student participates in the required number of activities for the day or earning minutes of a video the student likes to watch when he or she chooses to use kind language. No two students are likely to have the same plan because they are tailored to each student's developmental goals and personal interests. Moreover, these plans are constantly altered or adjusted to promote the desired behaviors. Jordan is not highly motivated by physical rewards such as earning a new toy every day. Instead, he responds to incentives such as time to play his favorite board game or the opportunity to go to the park with his class. Therefore, these interests are included in his behavior plan. Jordan's behavior goals are to keep his and the bodies of others safe, to use kind words about himself and his peers, and to follow group expectations. His plan's main focus is on understanding why these behaviors occur and then finding alternative behaviors or strategies Jordan could use to meet his needs in a more acceptable way. It also includes instructional or environmental changes, providing

reinforcement, developing both proactive and reactive strategies, and effective communication between Jordan and me.

A safe body is one that is calm, keeps an appropriate distance from others, and does not use physical aggression. After much observation of Jordan in various settings, it was clear that his challenges with keeping a safe body are rooted in his anxiety and low frustration tolerance. Jordan is triggered by new people, new settings, and changes in a setting with which he is already familiar. He will react with screaming or crying. Moreover, he will act aggressively towards the new change, whether it be a person or object. Jordan will also hit when he is frustrated by his peers. This frustration typically happens when Jordan is told “no,” a student tries to take an object from him without consent, or when he feels as though another student is not listening to what he is trying to tell them. When Jordan hits, he is removed from the classroom for a break. During this break, he first takes time to re-regulate by laying in a beanbag. Once he is no longer screaming or crying, Jordan and I work to acknowledge and label the behavior that occurred. He is able to pinpoint what bothered him during this time and with support can determine if his behavior was appropriate or inappropriate for the situation. With hitting, Jordan knows that it is always an inappropriate behavior. However, he has sometimes been able to vocalize that he simply does not know what else to do in those moments. From there, we have been able to come up with strategies for his moments of frustration. Some strategies are taking a deep breath, asking for help from a teacher, or squeezing my hand.

After noting the patterns of things that trigger Jordan’s aggression, I try to be proactive so as to prevent a dysregulating break from the classroom. I will give Jordan a warning before the timer that signals a transition sound. I will also give clear explanations and descriptions of what the new activity or setting will be like so that he can slowly integrate into them. I will also

sometimes scaffold the resolution between Jordan and a peer in a frustrating moment by asking both students what they are feeling and how they can accommodate each other. When Jordan is able to successfully transition, work through a frustrating moment with a peer, or even apologize to his peer, I give him lots of praise for safely being a part of the group.

To reach his goals of using kind words and following group expectations, Jordan is incentivized by having individual time playing his favorite board game. Typically, Jordan will use inappropriate language during frustrating moments like messing up his drawing, forgetting which number he was on when counting a group of blocks, or a peer accidentally knocks over his structure. The target of these words varies: a teacher, a peer, an object. However, it is consistent that his use of unkind words is a reaction. Therefore, his intervention is about finding a replacement behavior that is conducive to the classroom. When Jordan uses unkind words to a teacher, the teacher will choose either to ignore or to note how the words make him or her feel and question why Jordan used the language. Actively ignoring is successful in stopping Jordan from using a string of unkind words when it is during a group activity. In these moments, Jordan sees that the teacher's focus is on students who are continuing to follow directions and his desire to be a part of the group supersedes his desire to get a reaction out of the teacher. When he is one-on-one with either a teacher or a peer, Jordan is more inclined to repeat unkind language until it is acknowledged by the other person. Teachers will sometimes respond with "Jordan, those words do not make me feel good. How would you like it if someone said that to you?" Jordan is more likely to grasp the concept of someone's feelings being hurt when the situation is reflected back on him and he is made the target of unkind words. Sometimes this strategy has the intended effect and Jordan responds with "no!" and stops using the unkind words. Teachers will also say "those words make me think that you need a break" in response to Jordan's

inappropriate language. Like in the active ignoring strategy, Jordan would rather be a part of the group and can usually refocus and stop the use of unkind words immediately. When Jordan's unkind words are directed at a peer, a teacher will typically intervene on the peer's behalf and use the commenting on the unkind words strategy. After these moments of using unkind words, I will check in with Jordan to comment on how he handled the situation and remind him that using kind words gives him time to play his favorite board game. This often limits the number of moments during the day when Jordan uses unkind words and encourages him to communicate what is frustrating him and ask for help.

### **Communication and Social Skills**

To aid in Jordan's use of kind language and his communication in general, Jordan has a couple of sessions with a speech-language pathologist (SLP) a week. Significantly, the SLP uses the Social Thinking curriculum with Jordan to help him with his social skills. The Social Thinking Methodology's mission is to help people develop social competencies to better connect with others (Winner & Crooke, 2009). Social Thinking's concepts and strategies are designed for people with social learning challenges with near average to way above average language skills and IQ. Its founding principle is that the thoughts and emotions of people are strongly connected. What people do behaviorally impacts the thoughts and feelings of others. These thoughts and feelings ultimately impact how people feel about themselves. According to Social Thinking, social skill interventions for people with social challenges, especially those with ASD, includes the following:

1. Making the abstract concrete

2. Providing a scaffold of language support
3. Fostering self-awareness and self-esteem
4. Using programs in a sequential and progressive manner
5. Providing opportunities for generalization and ongoing practice

Jordan's SLP follows all of these principles in his sessions to relate information to him in ways that he can easily process.

His SLP also uses ILAUGH. The ILAUGH model in the Social Thinking Methodology is designed to improve communication and problem-solving skills (Winner & Crooke, 2009). The "I" stands for Initiation of Language, "L" is Listening with Eyes and Brain, "A" is abstract and inferential language/communication, "U" is understanding perspective, "G" is gestalt processing/getting the big picture, and "H" is humor and human relatedness (Winner & Crooke, 2009). In his speech session, Jordan's SLP focuses on concepts that are most challenging for him. She emphasizes the concept of listening with eyes and brain. Many children on the spectrum often struggle to process visual information because of an inability to read nonverbal cues. Listening or understanding one's surroundings requires the integration of both visual and auditory information to make sense of what is happening. When reading a story to Jordan, the SLP constantly reminds Jordan to actively listen or engage in "whole body listening" (Winner & Crooke, 2009). When Jordan "whole body listens," he directs his vision, his hearing, and his body toward the speaker. In this way, he is able to more deeply grasp concepts. Jordan is also working on understanding perspective. Jordan sometimes struggles to take the perspectives of others and is particularly challenged by recognizing how others may be feeling based off of his interactions with them. To tackle this challenge, the SLP spends time introducing the range of

emotions that humans experience. Jordan understands emotions such as anger, happiness, and sadness. He is working towards a better understanding of more complex feelings like guilt, pride, and discomfort. The SLP uses stories with characters going on adventures and experiencing different emotions to aid Jordan's growth in this area through asking Jordan what he thinks the characters might be feeling. The ability to interpret others' perspectives or beliefs, thoughts and feelings across contexts is a critical social learning skill. The ILAUGH Model recognizes and emphasizes that people have thoughts and feelings about each other's social behavior (Winner & Crooke, 2009). This recognition is essential for group participation in social and academic settings. Jordan is able to practice the concepts he learns about in his sessions all the time in the classroom as he interacts with his peers.

The concepts the SLP works on with Jordan in his individual sessions are carried over into the classroom and all teachers reinforce the Social Thinking Methodology, especially by using its vocabulary to describe and explain social expectations. Jordan is often reminded to "think with your eyes." This statement used in place of phrases like "look at me" or "use good eye contact" helps the student understand that eyes are used to look at another person during an interaction so as to gain the necessary information that can be obtained from the interaction (Winner & Crooke, 2009). Many children with social learning challenges are not sure what they should think or do when told to "use good eye contact." This statement helps students to think about the exact source of where they can get information (Winner & Crooke, 2009). For example, a teacher shows a picture book to the class. The expectation is that the students do not use "eye contact" with the teacher, but that the students show that they are thinking about the book by using their eyes to look at the book. This concept of "thinking with eyes" easily translates to problem-solving and perspective-taking. Jordan becomes more available for

learning when directed to “think with eyes,” as it directs his attention away from his own distracting thoughts and to the information at hand.

Some vocabulary used with Jordan relates to the expectations of being in different contexts. Every situation has an “expected” behavior and an “unexpected” behavior. These behaviors create different thoughts people involved in the interactions might have. An “expected” behavior for a situation encourages good thoughts and feelings, while an “unexpected” behavior produces uncomfortable or negative thoughts and feelings (Winner & Crooke, 2009). The SLP relates how the thoughts someone has about another person in a particular situation can be embedded in their memory. Their thoughts may impact how they interact in the next situation. For example, student 1 gives student 2 a drawing he or she made for student 2. Say student 2 takes the drawing and rips it. Student 1 has a thought that they should not make drawings for student 2 in the future because student 2 does not appreciate the drawings. Jordan works to do “expected” behaviors so as to maintain good relationships with his classmates.

While Social Thinking does involve teaching social skills, its main message is to demonstrate how social thinking precedes the use of social skills. A person must first be aware of the people in the situation, and the situation itself, before being able to decide how to behave. Social Thinking notes that the majority of time people are socially thinking in the presence of others, they are not actually interacting with others, but rather they are co-existing. In a classroom, students are expected to work quietly during tests to keep from distracting the thoughts of other students around them. In this way, students are demonstrating the social skills that exist and are expected without any type of verbal interaction. Consistent emphasis on being aware of others and environments helps Jordan learn how to effectively be a part of a group.

## **Sensory Processing**

Jordan's plan also implements sensory techniques that help him self-regulate throughout the day. Jordan exhibits sensory processing issues and has trouble taking information drawn from touch, sound, and sight. He experiences too little stimulation through these senses, demonstrating hyposensitivity, and therefore he seeks out more sensory stimulation (Child Mind Institute, n.d.) Jordan has a constant need to touch people or textures, even when it's not socially acceptable. He does not fully understand personal space and its importance for making others feel safe and comfortable. Jordan will often impulsively reach out to feel another's student clothing or hair without asking or giving any verbal indication of his intentions. Jordan is also fidgety and unable to sit still for long periods of time. He flaps his arms frequently and jumps up and runs to the other side of the room before finding his seat again and returning his attention to the task at hand. Lastly, he sometimes exhibits extreme behaviors like screaming if he touches something wet or slimy and throwing tantrums when he smells something that he does not like. These sensations can be overwhelming to him and prevent him from engaging in the classroom activities. Jordan's occupational therapist (OT) uses these characteristics as a springboard for which to develop his plan for his individual sessions.

The OT often starts Jordan's session with brushing, or the Wilbarger Protocol. It involves brushing his body with a soft, plastic sensory brush. The OT runs the brush over Jordan's skin or clothes, using very firm pressure. Brushing starts at his arms and goes down to the feet, avoiding the sensitive face, chest, and stomach areas. Brushing usually takes 2-3 minutes to administer. Jordan's parents and his OT use this technique because they are sometimes able to see decreases in Jordan's sensory defensiveness and anxiety after its use. It also helps Jordan transition between daily activities, improves his attention span, and promotes better self-regulation

(National Autism Resources, n.d.). Next, the OT will give Jordan joint compressions. Joint compressions provide input into Jordan shoulders, elbows, wrists, fingers, hips, knees, and ankles. This proprioceptive input, or sensations that inform the body where it is located in the space, functions to bring awareness and organization to Jordan's body (Middletown Centre for Autism, n.d.). Once Jordan is organized, he can begin the movement part of his OT plan with a calm body.

In the bulk of his session, Jordan's OT uses sensory integration therapy to help Jordan reach an ideal level of sensory regulation. The OT accomplishes this through physical contact and having Jordan do movements like spinning, crashing, and jumping. All of these activities provide therapeutic sensory input that Jordan craves throughout the day (Child Mind Institute, n.d.). Sometimes it is difficult for him to transition from a fast, intense activity such as going through an obstacle course to something more slow-paced like yoga. When this happens, Jordan's OT uses deep pressure. Deep pressure, similar to brushing, is commonly used to help reduce arousal levels and anxiety. It can cause the release of certain brain chemicals like dopamine, promote a relaxing response in the body, and can reduce the production of stress hormones (AppliedBehaviorAnalysisEdu, n.d.). Deep pressure touch is also known to help increase body awareness and reduce hypersensitivity to touch. Jordan's OT gives him deep pressure massages, also known as deep pressure touch or "hand hugs," between activities. The OT uses the palms of her hands to apply firm pressure to his hands. They alternate between the OT administering the hand squeezes and Jordan squeezing her hands. Jordan also responds well to laying on a carpeted surface while the OT presses a cushion over his body or tightly wraps him in a blanket or covering.

The deep pressure techniques used in OT can also be used in the classroom. I administer hand squeezes throughout the day, especially during activities that include the whole group. Jordan also will crash into the beanbag in the classroom when he needs a break from the group. Jordan also benefits from other sensory tools that help him focus. Jordan regularly uses a HowdaHUG chair. This sensory chair, structured with wood and lined in fleece, is used to increase tolerance in the classroom environment, provide postural support, increase focus on work, and promote core strengthening (Howda Designz, n.d.). This chair gives Jordan proprioceptive input and allows him to move while seated. Jordan needs movement in order to focus and have a productive flow of ideas and in the sensory chair, he can do so without being disruptive. He often tips all the way back and comes back up with assistance, which helps him strengthen his core.

The last sensory technique that regulates Jordan is therapeutic listening. Therapeutic Listening is a specific sound-based intervention that implements developmental and sensory integration perspectives. The music in Therapeutic Listening uses electronic modifications and organized, rhythmical sound patterns to trigger the self-organizing capacities of the nervous system (Vital Links, n.d.). Additionally, the music combines sound-based intervention with traditional sensory integration treatment strategies to increase attention, self-regulation, oral articulation, social skills, and communication. With the use of sensory processing techniques, Jordan is better able to participate in group activities and follow classroom expectations.

### **Parent Involvement**

Jordan's parents are thoughtful and understanding of him and his diagnosis. Jordan's needs at school are no surprise to them because he exhibits the same behaviors at home. For this

reason, his parents are constantly seeking information from me and the school about strategies they can implement at home, the friendships he is making in the classroom, and his overall developmental progress. They religiously go over the daily check-ins that go home with Jordan. These check-ins rate Jordan's participation in the subjects of the day from 1-3, 1 being did not participate and 3 being fully participated. Under these ratings, I typically leave comments about what the activities were and how Jordan completed them. His check-in includes spaces for Jordan's input as well. He lists what was his favorite part of his snack and an activity that he enjoyed the most that day. There is also a section on the check-in that asks about the strategies used throughout the day. I will list the tools that were particularly helpful to Jordan that day or explain why Jordan needed to take a break from the room. Jordan is not required to know what ratings or comments I give him, but I set aside a few minutes of the day to go over how we thought his day went. Jordan usually remembers both the challenging and the rewarding parts of his day. He is often able to articulate why he felt like those challenges or good parts of the day happened and discuss how he can do better the next day. When Jordan goes home, his parents engage in the same conversation with Jordan about his day. His parents work to reinforce the importance of Jordan thinking introspectively about his thoughts and actions so that he is able to build strategies to improve his classroom behavior over time. I find that this helps significantly. For example, after a particularly challenging day, Jordan arrives at school the next day ready to have a better one and not repeat any inappropriate behaviors from the previous day.

Once a month, the team of clinicians, teachers, and therapists lead a phone call with Jordan's parents to provide updates about how he has progressed across the various aspects of his education. Jordan's parents are able to hear from his occupational therapist, his speech-language pathologist, his counselor, and his teachers about how he has improved, adjusted, or

struggled in the past month and in which particular areas. This is also a time that his parents use to update the school about changes at home such as Jordan's mother going on a trip or forgetting to give Jordan his medication for a week. Jordan's parents note the smallest changes, which are immensely helpful since Jordan is a student that is highly susceptible to alterations in routines. The team is usually able to pinpoint where these changes may have happened because Jordan exhibits deviations from his general, regulated behavior such as being overly irritable or extra reluctant to attend a certain activity. These monthly phone calls are valuable for all involved and demonstrate the constant and consistent work required between parents and specialists for children to get the most out of intervention services.

### **Discussion and Reflection**

Jordan will be moving to second grade next school year. At his school, the goal is for students to move from grade to grade in the time a neurotypical student would. However, it is not always the expectation. Sometimes, students need more support in areas such as reading comprehension or self-regulation. These students will spend multiple years in the same grade level until they are equipped for the expectations of the next. In Jordan's case, he made significant improvement throughout the school year. Academically, Jordan is right on target for next year. He has sufficient reading comprehension, adequate writing ability, and his number sense is satisfactory. Most of his growth has been socioemotional. Jordan displays a decreased anxiety about school and interacting with new people. He walks through the halls to his locker excited about the day and rarely screams or hits when someone says "hello" to him. When observers come into the classroom, Jordan notices them, asks who they are, and is able to accept the answer without an inappropriate reaction. He is also developing independence in completing

tasks. Jordan has a strong desire to complete worksheets, build structures, and write on his own. His motivation has resulted in Jordan coming up with his own strategies for challenging moments. Instead of ripping a worksheet or destroying a structure, Jordan often pauses to contemplate how he can fix an issue like an incorrect written answer or two pieces of a toy that do not fit together perfectly. Jordan still requires support with multi-step tasks, but the growth of his frustration tolerance is commendable. Jordan is also developing in play. He requires less scaffolding from a teacher in communicating his imaginative ideas. He shows more flexibility in working with a peer to create a joint play experience rather than a parallel one.

It is likely that some of Jordan's improvement can be attributed to his natural development. Jordan is reaching the age of seven and beginning to see himself as autonomous and capable of being independent in completing tasks, especially those that are meaningful to him. Although he continues to prefer structured activities over those that are open-ended and rely on teachers for direction, Jordan is demonstrating the drive to use his own logic and problem-solving skills. He is beginning to show the capability of organizing his own thoughts, making sense of them, and then being able to clearly and concretely relate them to others. I argue that the support of early intervention has enhanced and aided Jordan's growth and has provided him with a foundation from which he can continue to strive to reach his social goals.

#### IV. Conclusion

Early diagnosis and intervention can have a significant positive impact on the developmental outcomes of children with ASD. An early diagnosis increases the likelihood that children are directed to the appropriate interventions for their symptoms. Interventions, particularly those that blend behavioral and cognitive approaches, have been shown to effectively change behavior and improve daily functioning, communication skills, and social interactions (Ospina et al., 2008; Thompson, 2013; Becerra et al., 2017). Moreover, starting interventions early better prepares children and their parents to live with ASD for a lifetime. This work has highlighted the needs of children with ASD and revealed some barriers that hinder many families from accessing the necessary interventions.

One of the barriers is the timeliness of receiving a diagnosis. Signs of ASD appear early, but a diagnosis and intervention recommendations are not always given when the disorder is first noticed. Studies show that social orienting, language, and cognitive skill difficulties can emerge as early as 6 months of age (Zwaigenbaum et al., 2015). However, a definite diagnosis is not typically given until 18 months or later (Zwaigenbaum et al., 2015; American Psychological Association [APA], 2016). Specialists have found that ASD symptoms can continue to develop until around 24 months. In this time, the symptoms can also fade away and babies showing early signs of delays can catch up to the developmental level of their peers. For these reasons, specialists wait to diagnose until the ASD symptoms are stabilized (Autism Speaks, 2013). However, the average age at diagnosis in the United States is more than 4 years old, which is a significant amount of time later than when ASD could first be pinpointed (APA, 2016). For many children this is not because they are not getting diagnosed, it is because they are getting a different diagnosis first. ADHD or sensory processing issues are often diagnosed by a

pediatrician at age 2 or 3 (Miller, n.d.-b). Then, symptoms are not thought to be related to ASD until children have more demands in school and social situations (Miller, n.d.-b). Children who have ASD symptoms and are high-functioning are not likely to be diagnosed until they enter school and struggle socially (Autism Speaks, 2013). More effort by specialists and pediatricians to provide an early ASD diagnosis may result in greater use of effective interventions and improved outcomes for children with ASD.

The discrepancy between a clinical diagnosis and an educational diagnosis, too, limits access to interventions for ASD. The prevalence rate of clinical diagnoses for ASD (1 in 59) is noticeably higher than the rate of educational diagnoses for ASD (1 in 89) (Barnard-Brak, 2019). An educational diagnosis of ASD requires that schools provide services in accordance with IDEA, while a clinical diagnosis does not. This means that the majority of children with ASD are not eligible for services in a school setting because their disorder is not thought to impact their grades. Some children do have milder forms of ASD but given the high co-occurrence of intellectual impairments and severe behavior difficulties among children with ASD, the discrepancy between clinical and educational identification rates raises concern that students with ASD are under-identified and under-served in schools (Sullivan, 2013). The educational diagnosis' focus on academic performance evades the areas that children with ASD often need the most support, which is in communication and social interaction. High-functioning children may still need interventions in these areas but are unable to access them because of special education ineligibility. In the case study, Jordan was the prime example of how targeted interventions in a school setting help children with ASD be successful in classrooms with their peers. The variability in diagnoses of ASD prevents all children from having the prolonged, consistent interventions that they could receive in school environments and policymakers should

find ways to bridge this gap in order to ensure children on the spectrum receive all services that have the potential to help ASD symptoms.

An early diagnosis and sufficient knowledge about interventions can also be beneficial to parents as it can improve their well-being by reducing the stress associated with untreated ASD. Given the importance of parental report for a diagnosis of ASD, measures need to be taken to ensure that parents know what warning signs to look for in their child's development.

Practitioners can start acknowledging the diversity of beliefs among families. Understanding the different ways in which parents can interpret ASD will inform adaptations to early detection methods, screenings, and educational material about interventions. These efforts could minimize health disparities and practices that marginalize under-served children with ASD and break down the barriers preventing them from being successful in school and beyond.

## References

- Adeli, H., Bhat, S., Bairy, G., Acharya, U., & Adeli, A. (2014). Autism: Cause factors, early diagnosis and therapies. *Reviews in the Neurosciences*, 25(6), 841-850.
- Al Anbar, N., Dardennes, R., Prado-Netto, A., Kaye, K., & Contejean, Y. (2010). Treatment choices in autism spectrum disorder: The role of parental illness perceptions. *Research in Developmental Disabilities: A Multidisciplinary Journal*, 31(3), 817-828.
- American Psychiatric Association. (2016, August 1). *Children Diagnosed with Autism at Earlier Age More Likely to Receive Evidence-Based Treatments*.  
<https://www.psychiatry.org/newsroom/news-releases/children-diagnosed-with-autism-at-earlier-age-more-likely-to-receive-evidence-based-treatments>
- AppliedBehaviorAnalysisEdu.org. (n.d.). *What is Deep Pressure Stimulation?*  
<https://www.appliedbehavioranalysisedu.org/what-is-deep-pressure-stimulation/>
- Association for Science in Autism Treatment. (n.d.). *Early Interventive Behavioral Intervention/Treatment*. <https://asatonline.org/for-parents/learn-more-about-specific-treatments/early-intensive-behavioral-interventiontreatment-2/>
- Autism Speaks. (2013, March 15). *How Early Can Autism Be Diagnosed?*  
<https://www.autismspeaks.org/expert-opinion/how-early-can-autism-be-diagnosed>
- Autism Speaks. (n.d.-a) *Medicines for Treating Autism's Core Symptoms*.  
<https://www.autismspeaks.org/medicines-treating-autisms-core-symptoms>
- Autism Speaks. (n.d.-b) *What is Floortime?* <https://www.autismspeaks.org/floortime-0>
- Autism Speaks. (n.d.-c) *What is Occupational Therapy?*  
<https://www.autismspeaks.org/occupational-therapy-ot-0?gclid=CjwKCAjwp->

X0BRAFEiwAheRui4EBKw15UPxD-BF-

Y3IU3REAFVcZTpsIK3LLQI99i4VEPB43o48DCBoCMYoQAvD\_BwE

Autism Speaks. (n.d.-d) *What is Speech Therapy?* <https://www.autismspeaks.org/speech-therapy?gclid=CjwKCAjwp->

X0BRAFEiwAheRuiyfsfYqV1TQge12eqybf2YqDhCrJBGWYQDpaHMCqGyiJe1IUZD  
O20hoClScQAvD\_BwE

Barahona-Corrêa, J. B., & Filipe, C. N. (2016). A Concise History of Asperger Syndrome: The Short Reign of a Troublesome Diagnosis. *Frontiers in psychology*, 6, 2024.

Barnard-Brak, L. (2019). Educational versus clinical diagnoses of autism spectrum disorder: updated and expanded findings. *School Psychology Review*, 48(2), 185–189.

Barrio, B., Hsiao, Y., Prishker, N., & Terry, C. (2019). The impact of culture on parental perceptions about autism spectrum disorders: Striving for culturally competent practices. *Multicultural Learning and Teaching*, 14(1).

Becerra, T. A., Massolo, M. L., Yau, V. M., Owen-Smith, A. A., Lynch, F. L., Crawford, P. M., Pearson, K. A., Pomichowski, M. E., Quinn, V. P., Yoshida, C. K., & Croen, L. A. (2017). A Survey of Parents with Children on the Autism Spectrum: Experience with Services and Treatments. *The Permanente journal*, 21, 16–19.

Blankenship, K., Erickson, C. A., Stigler, K. A., Posey, D. J., & McDougle, C. J. (2010). Aripiprazole for irritability associated with autistic disorder in children and adolescents aged 6-17 years. *Pediatric health*, 4(4), 375–381.

Center for Disease Control and Prevention. (2019) *Screening and Diagnosis of Autism Spectrum Disorder*. [www.cdc.gov/ncbddd/autism/screening.html](http://www.cdc.gov/ncbddd/autism/screening.html).

Child Mind Institute. (n.d.-a). *Sensory Processing FAQ*. <https://childmind.org/article/sensory-processing-faq/>

Child Mind Institute. (n.d.-b) *What is Applied Behavior Analysis?*

<https://childmind.org/article/what-is-applied-behavior-analysis/>

Ching, H., & Pringsheim, T. (2012). Aripiprazole for autism spectrum disorders (asd). *The Cochrane Database of Systematic Reviews*, 5(5), 009043.

Dale, E., Jahoda, A., & Knott, F. (2006). Mothers' attributions following their child's diagnosis of autistic spectrum disorder: Exploring links with maternal levels of stress, depression and expectations about their child's future. *Autism: The International Journal of Research and Practice*, 10(5), 463-79.

Geneva Centre for Autism. (2006). *What is IBI and is it the same as ABA?* Geneva Centre for Autism. <https://www.autism.net/faqs/595-what-is-ibi-and-is-it-the-same-as-aba.html>

Harrison, A., Long, K., Tommet, D., & Jones, R. (2017). Examining the role of race, ethnicity, and gender on social and behavioral ratings within the autism diagnostic observation schedule. *Journal of Autism and Developmental Disorders*, 47(9), 2770-2782.

Howda Designz. (n.d.). *HowdaHUG Sensory Chair*. <https://www.howda.com/howdahug-sensory-chair/>

Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2009). Savant skills in autism: psychometric approaches and parental reports. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, 364(1522), 1359–1367.

Huerta, M., & Lord, C. (2012). Diagnostic evaluation of autism spectrum disorders. *Pediatric clinics of North America*, 59(1), 103–xi.

Individuals with Disabilities Education Act, Part B U.S.C. § 1414 (2004).

- Kanner, L. (1943). *Autistic disturbances of affective contact*. (n.p.)
- Landrigan, P. (2010). What causes autism? exploring the environmental contribution. *Current Opinion in Pediatrics*, 22(2), 219-25.
- Mercer, L., Creighton, S., Holden, J., & Lewis, M. (2006). Parental perspectives on the causes of an autism spectrum disorder in their children. *Journal of Genetic Counseling*, 15(1), 41-50.
- Middletown Centre for Autism. (n.d.). *Proprioceptive*. <https://sensory-processing.middletownautism.com/sensory-strategies/strategies-according-to-sense/proprioceptive/>
- Miller, C. (n.d-a) *What Parents Should Know about Risperdal*. Child Mind Institute. <https://childmind.org/article/what-parents-should-know-about-risperdal/>
- Miller, C. (n.d.-b). *Why Autism Diagnoses Are Often Delayed*. Child Mind Institute. <https://childmind.org/article/why-autism-diagnoses-are-often-delayed/>
- Muhle, R., Trentacoste, S., & Rapin, I. (2004). Pediatrics electronic pages - the genetics of autism. *Pediatrics*, 113(5), 1389.
- National Autism Resources. (n.d). *The Wilbarger Protocol (Brushing) for Sensory Integration*. <https://www.nationalautismresources.com/the-wilbarger-protocol-brushing-therapy-for-sensory-integration/>
- National Center for Learning Disabilities (NCLD). (n.d.) *Learn the Law: IDEA*. <https://www.nclld.org/get-involved/learn-the-law/>
- National Human Genome Research Institute (2019). *About Autism*. [www.genome.gov/Genetic-Disorders/Autism](http://www.genome.gov/Genetic-Disorders/Autism).

- National Institute of Child Human Development. (2017). *When do children usually show symptoms of autism?*  
<https://www.nichd.nih.gov/health/topics/autism/conditioninfo/symptoms-appear>
- Ospina, M. B., Krebs Seida, J., Clark, B., Karkhaneh, M., Hartling, L., Tjosvold, L., Vandermeer, B., & Smith, V. (2008). Behavioural and developmental interventions for autism spectrum disorder: a clinical systematic review. *PloS one*, 3(11), e3755.
- Pearce, J. (2005). Kanner's infantile autism and asperger's syndrome. *Journal of Neurology, Neurosurgery, and Psychiatry*, 76(2), 205-205.
- Reyes, N., Reynolds, A., Folan, A., Lindly, O., Chavez, A., Macias, K., Zuckerman, K. (2018). Maternal beliefs about autism: A link between intervention services and autism severity in white and latino mothers. *Research in Autism Spectrum Disorders*, 51, 38-48.
- Sullivan, A. L. (2013). School-based autism identification: Prevalence, racial disparities, and systemic correlates. *School Psychology Review*, 42(3), 298-316.
- Thompson, T. (2013). Autism research and services for young children: History, progress and challenges. *Journal of Applied Research in Intellectual Disabilities*.
- Turner, R. & Swearer-Napolitano, S. (2010). Cognitive Behavioral Therapy (CBT). *Encyclopedia of Cross-Cultural School Psychology*, 226-229.
- Vital Links. (n.d.) *Therapeutic Listening*. <https://vitallinks.com/therapeutic-listening/>
- WebMD. *Risperdal*. <https://www.webmd.com/drugs/2/drug-9846/risperdal-oral/details>.
- Winner, M. & Crooke, P. (2009). Social Thinking®: A developmental treatment approach for students with social learning/social pragmatic challenges. *Perspectives on Language Learning and Education*, 16(2), 62-69.

- Zuckerman, K., Lindly, O., Sinche, B., & Nicolaidis, C. (2015). Parent health beliefs, social determinants of health, and child health services utilization among us school-age children with autism. *Journal of Developmental and Behavioral Pediatrics, 36*(3), 146-157.
- Zuckerman, K., Sinche, B., & Lindly, O. (2016). Parent beliefs about the causes of learning and developmental problems among children with autism spectrum disorder: Results from a national survey. *American Journal on Intellectual and Developmental Disabilities, 121*(5), 432-447.
- Zwaigenbaum, L., Bauman, M. L., Choueiri, R., Fein, D., Kasari, C., Pierce, K., Wetherby, A. (2015). Early identification and interventions for autism spectrum disorder: executive summary. *Pediatrics, 136*, 9.