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Behavior Management in Children with Autism and Related Disorders

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BEHAVIOR MANAGEMENT IN CHILDREN WITH AUTISM AND RELATED
DISORDERS

by

Lisa J. Miller
Bachelor of Science in Physical Therapy
University of North Dakota, 1996

An Independent Study

Submitted to the Graduate Faculty of the

Department of Physical Therapy

School of Medicine

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in partial fulfillment of the requirements

for the degree of

Master of Physical Therapy

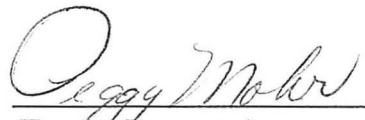
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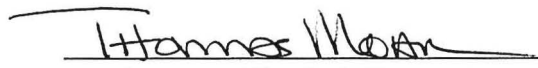
This Independent Study, submitted by Lisa J. Miller in partial fulfillment of the requirements for the Degree of Master of Physical Therapy from the University of North Dakota, has been read by the Faculty Preceptor, Advisor, and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.



(Faculty Preceptor)



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ABSTRACT

Children with autism and related disorders commonly suffer from developmental delays and physical impairments. These often require services such as physical and occupational therapy. The behavioral symptoms these children display can pose an additional challenge to therapy sessions, requiring therapists to spend time dealing with the behaviors rather than focusing on the treatment.

The purpose of the study is to review the literature on autism and related disorders and to provide effective means of behavior management to achieve more effective therapy sessions. This paper will discuss physical therapy interventions such as sensory integration and deep touch proprioception, and how these can be used to help keep students with autism and related disorders more focused and cooperative during therapy sessions.

CHAPTER ONE

Introduction

Working with children with disabilities can be a challenge, albeit a rewarding one. Not only does a therapist have to treat the physical symptoms of a child, she also must deal with the behavioral symptoms.¹ The latter is even more challenging if the child has physiological causes for their undesired behavior, as is the case in many children with autism and related disorders.

Autism is not a disorder that has physical symptoms which can be treated by a physical therapist, but it often coincides with a physical diagnosis.^{2,3,4} As many as one third to one half of children with autism also have a diagnosis of cerebral palsy.⁵ Many of the remaining often have developmental delays and difficulty with motor functioning. Autism and related disorders have a direct influence on therapy sessions due to the behavioral characteristics associated with them. These behaviors greatly interfere with the quality of a child's therapy session. Time spent attending to the child's behavior is time lost from therapy.

The Individuals with Disabilities Education Act (IDEA) lists autism, mental retardation, and multiple handicaps as conditions which qualify a child to receive special services for receiving an education in the least restrictive environment.⁶ Physical and occupational therapy are related services that

qualified students may receive if their diagnosis is interfering with their educational development. As such, physical therapists will likely be providing services to children with autism under the provisions of IDEA.

The behavior patterns seen in children with autism can interfere with a child's development process.⁷ Many of the behavior patterns seen in children with autism are also seen in children with related disorders such as Fragile X Syndrome, Pervasive Developmental Disorders not otherwise specified, Asperger's Syndrome, and Retts Syndrome. Mental retardation and multiple handicaps are common in these children as well. All of the above factors influence the outcomes of intervention efforts.

Most of the maladaptive behavior patterns seen in children with autism and related disorders can be traced to a dysfunctional sensory integration (SI) system and poor social skills.⁸ A dysfunctional SI system also limits a child's motor learning capabilities and affects their level of arousal, attention, and motivation. SI techniques have been found to help children with autism and related disorders control and respond to their sensory input, resulting in more appropriate adaptations to their environment.⁹⁻¹² The environment the child is in may affect behavior as well.^{1,11,13} Children with autism and related disorders perform best in well structured environments, with clearly explained rules and expectations.

The purpose of this paper is to review the literature on autism and related disorders, and to provide information on effective means of behavior management to achieve more effective therapy sessions. This paper will discuss physical

therapy interventions such as sensory integration and deep touch proprioception, and how these can be used to help keep students with autism and related disorders more focused and cooperative during therapy sessions.

CHAPTER TWO

Autism and Related Disorders

The purpose of this chapter is to discuss various conditions that involve behavior difficulties in children, primarily Fragile X syndrome and autism. It will define each of the above and discuss causes, signs, and symptoms of each disorder.

Autism

The exact cause of autism is not known.^{2,3,4} Different biological factors that are believed to cause autism include genetic damage, neurological damage, and biochemical imbalances.³ Biological causes are currently believed to be more reliable causative factors than environmental factors. Different biological conditions that can lead to autism include tuberous sclerosis, congenital rubella, infantile spasms with hypsarrythmia, neurofibromatosis, and cerebral lipidosis.^{3,4} However, these contribute to a small proportion of children with autism.

Autism may have a genetic pre-disposition.^{3,4} While no single gene mechanism has yet to be found to be responsible for autism, siblings of children with autism are 50 times more likely to develop autism than siblings of children without autism. There is also a greater chance of development between monozygotic twins than dizygotic twins.⁴

As a result of abnormal brain development, children with autism may be neurologically in a constant state of arousal.³ This can lead to behavior patterns

characteristic of autism which will be further discussed in a future chapter. The portions of the brain that process sensory information can fail to function as well, leading to delays in language, social, and cognitive skills.⁴ The hippocampus and amygdala, areas of the brain responsible for learning, emotion, aggression, and sensory input, may be underdeveloped, leading to difficulties in these skills.

The final possible causes of autism discussed in this paper are biochemical abnormalities.³ There are several monoamines (neurotransmitters) in the brain that play a role in controlling emotions and behavior, specifically serotonin, dopamine, and norepinephrine. Studies have shown that children with autism have more than 100% of the normal levels of serotonin in their system.

According to Simpson and Zions (1992),³ the “cold parent” theory has long ago been disregarded as a cause of autism.^{3,4} This theory stated that unloving parents, who tended to be highly intelligent, structured, and professional, would predispose their children to develop autism. While family relationships and home environment can affect the educational and treatment success in children, it is no longer believed to be a cause of autism.

Children with autism often display abnormal social characteristics.³ They are agitated with any change in their environment, prefer to be alone, and show delays in their speech development. Autism is not, however, classified as an emotional disorder.

While there are no physical signs of autism, many kids with autism also have a diagnosis with associated physical consequences, such as cerebral palsy, Down’s Syndrome, PKU, encephalitis, meningitis, deafness, blindness, and tuberous sclerosis.³ These children are also more prone to overall developmental delays.^{3,4} They do not

develop motor skills as quickly as their peers, and their deficits in motor coordination can affect their gait, posture, and high skill activities.⁴ Their gait pattern is often lacking an arm swing, and standing posture is often with their elbows bent at their side and their heads bowed. At times, their movements are described as “puppet-like.” They also may lose a skill after it has been acquired.⁴ Approximately 1/3 of children with autism develop normally up to three years of age before autistic characteristics emerge. Children with autism tend to be either hyposensitive or hypersensitive to their environment in sensory areas such as auditory, tactile, taste, visual, vestibular, olfactory, and proprioception. Therefore, normal stimulation in these areas can be distressful. However, the cognitive and social delays are commonly greater than the developmental ones.

Pervasive Developmental Disorder

Today, autism is commonly referred to as pervasive developmental disorder (PDD).² This term was adopted to help prevent any confusion between autism and psychosis, which has been a problem in the past. “Pervasive” implies that multiple areas of development are affected.¹¹ PDD is a phrase which refers to children who do not develop appropriately in areas including social skills, language development, and behavior skills.

Children with PDD usually start displaying the “hallmark” behaviors of the disorder after 30 months of age, but before 12 years.⁷ These behaviors include self-stimulatory and self-injurious activities, preoccupations with objects, hyposensitivity, and hypersensitivity. They also display language disturbances. Motor disorders, such as

cerebral palsy, can accompany PDD.⁷ These children also can have difficulty with motor planning and coordination.

It is important to realize that PDD is not synonymous with autism.² PDD is a broad term used to describe widespread disorders (including communication, social, thought processing, and physical involvement,) which develop early on in life. Autism is the most severe and only specific form of PDD.³ Other forms of PDD that will be discussed in this paper are Retts Syndrome and Aspergers Syndrome.

Asperger's Syndrome: Asperger's Syndrome is a PDD that is quite similar to autism in its characteristics.¹⁴ Children with Asperger's Syndrome have deficits in language, cognition, and behavior. While these children often demonstrate good grammar and vocabulary skills, they have difficulty with social figurative language, such as idiomatic expressions. They also have tendency to engage in one-sided conversations, and speak in a flat, emotionless voice. There are impairments seen in both expressive and receptive non-verbal communication as well.

Cognitively, people with Asperger's Syndrome have normal IQs and many actually have above normal IQs in verbal areas.¹⁴ Their personalities are often described as eccentric and they tend to become obsessed with complex topics. These children have excellent rote memory (i.e. knowing all arrival times of a certain airline.)^{14,15} In spite of their high IQs, children with Asperger's Syndrome lack common sense and have great difficulty with abstract thought.

There are similarities in the behavior of children with Asperger's Syndrome and autism.¹⁴ These children engage in self-stimulatory behavior, are clumsy and awkward in their movements, and display inappropriate reciprocal interactions in social situations.^{14,15}

They also have sensory impairments. However, these do not appear to be as severe as in children with autism.

Children with Asperger's Syndrome also partake in repetitive activities, and prefer structured and predictable environments, refuse to accept criticism well, and have difficulty following directions.¹⁵ Children with Asperger's Syndrome may form unusual attachments to objects and are often pre-occupied by unusual things (i.e. plane schedules of a certain airline.)¹⁶

Retts Syndrome: The final PDD discussed in this paper is Retts Syndrome. Retts Syndrome is a progressive PDD which generally affects only females.^{11,17} These girls develop normally up to 6-12 months, when they begin to regress developmentally.

While the cause of Retts Syndrome is unknown, some evidence indicates it is either a metabolic or X-linked dominant disorder.¹⁸ In some children with Retts, there is a deficiency in an enzyme that metabolizes ammonia.¹¹ More evidence points to a genetic cause, since it is generally only found in females. Studies done on monozygotic twins supports this, also.

Children often receive a diagnosis of Retts Syndrome after exclusion of many other disorders.¹⁷ Children originally develop normally, but in as early as 6 months, they begin to lose skills. Their head growth slows, expressive and receptive communication skills reach a plateau, muscle incoordination develops, and ataxic gait patterns become evident. These children also show facial grimacing and teeth grinding, and demonstrate stereotypic hand wringing.¹⁷

Fragile X Syndrome

There are many similar characteristics shared by children with autism and Fragile X syndrome, but they are two distinct diagnosis.¹⁹ Fragile X syndrome is an inherited disorder occurring in 1:1000 males, and 1:1500 females.^{2,20} There is a “fragile” site (due to a disruption of chromatin) located on the long arm of the X chromosome which is prone to stretching and even breaking under certain conditions. The Fragile X gene (FMR-1) is located at this site.

Since Fragile X is an X-linked inherited disorder, males can inherit the gene from mothers who show no symptoms of the syndrome.^{19,20} Some of the male carriers (20%) of the gene are asymptomatic, but can still pass the gene on to their daughters, who can then have affected sons.

There are both physical and social symptoms of Fragile X.¹⁹⁻²¹ The physical symptoms involve a narrow and longer face, narrow palpebral fissures, puffiness around the eyes, large ears, and arched palate, low muscle tone, macroorchidism, a flattened nasal bridge, scoliosis, hypermobile joints, and cardiac abnormalities. While many of these children do have long ears, the measurement of their ear width is actually a more discriminative feature. Cardiac involvement may be due to connective tissue dysplasia, and can include heart murmur or mitral valve prolapse. These children are also more prone to suffering from hypertension, which may be due to increased anxiety over social interaction. Their skin, while mostly soft and smooth, is often callused around their hands from hand wringing and biting. Nearly 80% of symptomatic carriers of the Fragile X gene have one or more of these symptoms, but they may not appear until after puberty.^{19,21}

Behavioral signs displayed with Fragile X Syndrome include autistic-like hand slapping and hand biting, hyperactivity, tantrums, aggressive actions, decreased eye contact, decreased attention span, tactile defensiveness, and abnormal speech patterns.^{2,19,21} This all can lead to even further social isolation. The aggressive behavior is partly due to a child's inability to integrate sensory stimuli, such as touch and movement. This behavior can make a child seem impulsive and disorganized, however, aggressive outbursts are usually preceded by excessive stimuli in the environment.²¹ There is also evidence that a decrease in size of the posterior vermis of the cerebellum causes children with Fragile X to be overwhelmed by sensory stimuli.¹⁹ It is believed that the decrease in social function in males is due to dysfunction in visuospatial and visuoperceptive processing as well as constructional dyspraxia.²

Receptive and expressive speech deficits and language delays are common in children with Fragile X syndrome.¹⁹ Speech patterns commonly used include jocular (playful), litany (repetitive), or staccato (distinct breaks between words) speech. These children also "echo", use a fast and fluctuating rate of speech, and have trouble maintaining topics of speech. They also have a tendency to demonstrate stereotypical vocalizations or tics such as throat clearing, barking, or repetitive bursts of swearing (coprolalia.)

Children with Fragile X typically have mild to profound cognitive impairment.¹⁹ Fragile X Syndrome is the second leading cause of mental retardation.¹⁸ Along with this, they also have difficulty with abstract thought, number concepts, and verbal ability. Their trouble with abstract thought is more commonly blamed for the lower IQ scores with aging than is mental deterioration.

Females with Fragile X syndrome display slightly different social symptoms.¹⁹ Approximately 1/3 of female carriers have borderline to moderate cognitive impairment. The amount of social impairment depends on the degree of the mutation on the X-chromosome. A full mutation leads to shyness, distractibility, and impulsivity, and decreased eye contact, as compared to those with “pre-mutation” and non-involved siblings.

These are just a few of the disorders that can cause behavioral disruptions in children, making therapy sessions all the more challenging. The behavioral signs displayed take time away from the therapy sessions. It is important to have an understanding of these behaviors and why they occur.

CHAPTER THREE

Behavior Patterns

There are several behavior patterns displayed by children with autism and other disorders. These can not only be disruptive to their own therapy and learning sessions, but can interfere with peer's learning as well.⁹ These behaviors can prevent acquisition of new skills, decrease opportunities for learning, and dampen social development. This chapter will give an overview of various self-stimulatory and self-injurious behaviors displayed by children with autism and associated disorders, as well as describe their patterns of social interaction with their peers. It will also give an introduction to a behavior assessment.

Self-Stimulatory Behavior

Self-stimulatory behavior (SSB) is common in children with autism, Fragile X Syndrome, and related disorders.²² These behaviors can involve most of the senses including visual, auditory, tactile, vestibular, taste, and smell. SSB includes but is not limited to staring at lights, hand flapping, sniffing objects, rocking, tapping ears, licking objects, and rubbing hands together. SSB can result from the child being either hyposensitive or hypersensitive.^{9,22} The child may receive some sort of internal pleasure from SSB due to the possibility that beta-endorphins are released. Beta-endorphins are endogenous opiate-like substances which play an important role in pain regulation.²⁴ They can give the child an "opiate high" when released. Self-stimulatory actions also

may “block out” over-stimulating sensations, allowing the children to calm themselves and focus more inwardly.

Self-Injurious Behavior

Children may also engage in self-injurious behavior (SIB), which can cause bruising, open wounds, and tissue damage.^{10,23} SIB includes hand biting, head banging, rubbing, and scratching. Causes for this behavior are believed to be either social or physiological. A child may engage in SIB as a means of gaining attention from others or else to avoid doing something they do not wish to do.^{10,23} The behavior may be driven by a desire for a tangible consequence, such as a favorite toy. In these instances, it is important not to reward the behavior but rather to redirect it.

If a child becomes frustrated or over-aroused, they may engage in SIB as a “release” to lower their arousal level.^{10,23} In cases where the child is hyposensitive, this behavior can provide them with sensory stimulation.

There are other physiological theories on SIB. For example, one theory proposes that the child may be having a sub-clinical seizure which triggers the behavior.²³ A second theory proposes that, like SSB, SIB can release beta-endorphins and give the child internal pleasure. A third theory proposes that a middle ear infection can lead to ear hitting and head banging.

Compulsive Behavior

Compulsive and ritualistic behaviors are defining criteria of autism.²⁵ These behaviors differ from the stereotypies because they are more purposeful. Examples of compulsive behaviors seen in 86% of males with autism include excessive handwashing, repetitive tapping of their fingers or feet, arranging objects, picking at items, scraping a

dirty plate completely clean, and checking all toilet seats to make sure they are down. These behaviors are additional distractions during treatment sessions.

Social Behavior

Children with autism and related disorders display unique social behavior problems that can make learning difficult and inhibit development of relationships.³ These children seem to be unable to normally relate to other people.¹³ The social abnormalities seen in these children tend to be most evident in the pre-school years and change as the children age.²² Decreased initiation of physical contact, social interactions, and cooperative play are all common, along with abnormal eye gaze patterns. In addition, many children with autism spend increased time engaged in ritualistic activities.^{4,22} Delays have also been noted in attachment development and in differentiating between parents and other adults.

Borden and Ollendick (1994)²⁶ examined three social subtypes used to classify children with autism: social aloofness, passive interaction, and active but odd interaction. Children categorized in the social aloof subtype had the most severe social impairments. They displayed general indifference towards others and their environment. In the passive interaction subtype, children would accept social initiation from others, but would rarely initiate it themselves. Children who were described as using active but odd interaction used repetitive and idiosyncratic preoccupations to initiate social contact. Borden and Ollendick (1994)²⁶ found this classification system to be useful in a clinical setting when planning treatment sessions.

Children with autism and related disorders have difficulty forming relationships with their peers.³ Delays in language development affect communication resulting in the

use of gestures instead of words.^{3,13} Another obstacle in forming relationships is the fact that limited use of eye contact is characteristic. These children may inaccurately be described by their peers as “stand-offish.”

Children with autism tend to have an egocentric view of the world.²⁷ They do not necessarily understand that other people think differently than they do or that others have their own emotions. This may cause further problems with their social and communication skills. Ozonoff and Miller (1995)²⁷ concluded that this egocentricism is a core feature of autism. Since these children cannot symbolize ideas or imagine as well as others, they also have difficulty expressing empathy towards others.⁷

These children may have difficulty differentiating between themselves and others, and often use the pronouns “I” and “you” interchangeably.^{4,13} This may not be a characteristic of autism but could be due to the developmental delays. They have trouble distinguishing between facial emotions in others, have a strong desire for maintaining sameness in their environment, and have a deep fascination with repetitive actions or specific objects.¹⁴

Children with autism and related disorders can also suffer from depression.²⁸ Depression may actually be underdiagnosed in these children due to their IQ and intelligence barriers. Ghaziuddin, Alessi, and Gredin (1995)²⁸ described symptoms seen with depression as an increase in social withdrawal, diminished interest in activities, disruptive sleep or eating patterns, and frequent crying spells. Their depression can be worsened or triggered by lifestyle changes, such as starting a new school.

Physical withdrawal is common in children with autism.²² According to Schlopler and Mesinov, (1986)²² “distance keeping is their main concern in life.”

Physical contact is rarely initiated. However, once physical contact is initiated, these children actually may tolerate it more than other children. Responsiveness to their social environment improved if ritualistic behaviors were reduced.

Children with autism and related disorders are prone to being unresponsive, as well as showing negativism and other oppositional behaviors.⁴ However, Schlopler and Mesinov (1988)⁴ found less evidence of negativism in children with well structured learning programs. Behaviors are also dependent on task complexity. For example, children displayed fewer negative behaviors if they were asked to perform a task within their level of competence. Colby, Laurel, and Windeck(1993)³⁰ stated that children with autism should be encouraged to pay attention and be given activities that they believe they can successfully perform.

Children with Fragile X syndrome display patterns of hyperactivity as well as decreased attention spans.^{19,21} As with children with autism, these behaviors can be a result of overwhelming sensory stimuli. They commonly demonstrate poor eye contact, unusual hand mannerisms, and perservative and/or cluttered speech. They also tend to be tactile defensive and may demonstrate some social withdrawal.²¹

When working with children who have behavioral problems, it will benefit the therapist to conduct a brief behavioral assessment.²² This will help to identify what can trigger certain behaviors and what activities help eliminate them. The primary goals of an assessment are to identify any key behaviors, determine the antecedents to these behaviors, develop a treatment plan, and evaluate the effects of any treatment.⁹ Assessments are typically more difficult in some children with disabilities, since these

children already tend to be socially withdrawn.²² This is especially true for children with autism.

A behavioral observation is a key to the assessment.²² The observer should watch for frequency and duration of the negative behavior and note any variables which may set off the behavior, such as environmental stimuli (temperature, location, people,) or organismic variables (fatigue, poor health.)⁴ The physical characteristics of the behavior (“how does it look”), different environments where it occurs, and response of peers to the behavior should also be recorded. The reinforcements and consequences given in response to the behavior are important to be aware of.

After a behavioral assessment has been completed, it is time to implement a treatment plan. The remainder of this paper will discuss several treatment techniques that are designed not only to help a child develop motor skills but to also help control unwanted behavior.

CHAPTER FOUR

Sensory Integration and Deep Touch Proprioception

As mentioned previously, children with autism and related disorders often have difficulty with sensory integration (SI).⁸ A properly functioning sensory system is necessary to maintain proper cortical arousal needed for normal behavior.⁹ When a child experiences sensory restrictions or overload, the experience may trigger disruptive behavior. SI techniques have been found to help children with their attention, awareness, and behavior.⁹⁻¹²

Children who have SI dysfunction have difficulty interpreting the input receive from their senses, especially the tactile, vestibular, and proprioceptive systems.^{8,30} These three systems are closely interrelated with each other and are also connected with other systems in the brain. An intact sensory feedback system is necessary for proper motor learning and performance as well.¹² The brain is made aware of position sense via joint proprioceptors. Children who have SI dysfunction often have difficulty with coordination and kinesthetic ability in addition to their behavioral deficits.

If children cannot properly cope with the sensory input they receive, they will have difficulty learning needed tasks for functional living, which can lead to further frustration.³⁰ These children are also limited in their ability to organize meaningful responses to social and physical demands.

This chapter will briefly discuss the tactile, vestibular, and proprioceptive systems, and provide treatment ideas which can help reduce or eliminate unwanted behaviors.

Tactile System

The tactile system is our sense of touch, and includes light touch, pain, temperature, and pressure.^{8,30} Nerves underneath the skin's surface send information about the environment to the brain, which then will interpret the information accordingly. The tactile system can be divided into two systems: protective and discriminative.³⁰ The protective system alarms the body to danger, and activates the flight, fright, and fight responses. The discriminative system informs the brain what is touching the body.

Some children may be tactile defensive, causing them to be hypersensitive to various tactile input.⁸ This dysfunction can overwhelm the brain, resulting in unwanted responses to touch. The child's inability to respond to touch can lead to anxiety, as well as self-stimulatory behavior to replace the lost tactile sensation.³¹ Children who are tactile defensive are particular about the texture of their clothes, food, and touch.³⁰ They may either overreact or underreact to normal tactile stimulation. A dysfunctional tactile system can interfere with a child's ability to learn new skills, also.

Children who are tactile defensive may have inappropriate protective and discriminative responses.³⁰ The protective system can inaccurately perceive normal daily contact as threatening, resulting in unwanted behavior from the child. This may also cause the child to become socially withdrawn. Zisserman (1992)³¹ found that children who overreacted to light touch benefited from sensory integration therapy.

Vestibular

The function of the vestibular system is to detect movement and identify the direction and speed with which the body is moving.³⁰ The vestibular system gives people a sense of safety as well. The semi-circular canals located in the inner ear are primarily responsible for this.⁸ The vestibular system is also responsible for bilateral coordination.³⁰

Children may have either a hyposensitive or hypersensitive vestibular system, resulting in dysfunction with various daily activities.⁸ A hypersensitive system may prevent a child from feeling safe during activities such as climbing, swinging, or sliding. These children may appear clumsy and uncoordinated.³⁰ A child with hypersensitivity may become socially withdrawn and avoid activities requiring coordination. If a child is hyposensitive, they may crave vestibular activities as a mean of stimulation. A dysfunctional vestibular system can cause delays in communication, learning, and memory, which further inhibits their social development due to decreased freedom of exploration of the environment.

Proprioception

The proprioceptive system is the body's sense of position.⁸ Proprioceptors located in muscles, tendons, and joints provide information on position in space and allow people to maintain a balanced posture. Dysfunction in this system can lead to clumsiness, poor fine motor skills, and difficulty with motor planning. These children may actually crave deep pressure which may result in self-stimulatory behaviors.

McClure and Holtz-Yotz (1990)¹¹ followed a child with autism who received a deep pressure sensory treatment. They observed the child to be more cooperative and

demonstrate fewer episodes of self-stimulatory and self-injurious behavior when he received deep pressure stimulation. Zisserman (1992)³¹ also noted a reduction in unwanted behaviors with the use of deep pressure.

Dysfunction in the tactile, vestibular, or proprioceptive systems can have negative effects on a child's behavior.^{9-12,30} When working with such children, it is important to help them deal with their ability to process sensory stimulation. Therapists also need to provide children with controlled and appropriate sensory information so their CNS can better organize it.

Sensory integration not only can help reduce negative behavior in a child but also help them with motor function.¹² Since motor input is dependent on sensory input, improved behavior will make the child more responsive to other types of therapies, which will enhance their overall development. The therapist may help the child explore their environment and make any modifications necessary to achieve this exploration.¹⁷

Treatment Ideas

Tactile stimulation can be given to a child who displays tactile dysfunction.¹⁷ This stimulation can be excitatory, such as rubbing a child's skin with a surgical brush or paint brush, or it can be inhibitory, such as playing in a bubble ball pool.⁹ Other types of excitatory stimulation include rubbing a child's skin with a rough material, like terry cloth, while inhibition can also be given with a soft back rub. Iwasaki and Holm (1989)⁹ found both excitatory and inhibitory stimulation helped reduce unwanted behaviors. Caution must be used to prevent sensory overload with these techniques. The effects of treatment should be closely monitored to allow for any needed modifications.

A child can receive vestibular input through swinging, spinning, and rocking.^{8,9} This can be done on a hammock or a platform swing (which can also promote balance and trunk control.)³⁰ Sitting on a “sit and spin” toy or sitting on a bolster roll and swaying back and forth can provide vestibular input as well. Any activity which requires rolling will stimulate a child’s vestibular system also.

Proprioceptive input can be achieved several ways. It can be given to the child through deep hugs or back rubs.³¹ A child can jump on a trampoline or hang by their arms from a bar. They can bounce on an air filled inner tube or play hop-scotch. A weighted vest can be worn throughout the day. Having the child lift and carry heavy objects will stimulate proprioception, also. A foam filled mattress can be placed on the floor for jumping. Proprioceptive stimulation can also be received from pushing against a wall, playing with clay, and kneading bread dough. Activities which involve resisted contractions of the large muscle groups around the joints can stimulate joint proprioceptors.⁸

It may be most beneficial to start a treatment session with proprioceptive input, since the effects only last about 15 minutes.³⁰ This may allow the child to be focused for the remainder of their therapy session.

Sensory Integration can be a vital tool when trying to control disruptive behavior in children with autism and related disorders. By helping children process input to their tactile, vestibular, and proprioceptive systems, a therapist may have more efficient treatment sessions.

Chapter Five

Managing Behaviors

The environment a child is in plays a large role in their behavior.^{1,7,13} Certain environments can actually reinforce an unwanted behavior. For example, if children are uncomfortable in their learning environment, they may engage in unwanted activity with hopes of being removed from that environment. If a child is not in a comfortable environment, it becomes even more difficult to learn appropriate behavior.⁷ Too much environmental stimuli can overwhelm a child, limiting the ability to learn new tasks and appropriate behavior.¹³ On the other hand, not enough environmental stimulation may prevent exploration which can also decrease learning. It is vital when working with children with autism and related disorders to have a well-structured environment.^{7,13}

A well-structured therapy environment can be obtained by following a few guidelines.³² The first is to clearly state which behaviors are acceptable and which are not. Second, be specific so the child can understand these guidelines. Third, try to keep all behavioral statements positive and emphasize what the child should do instead of what they should not do. Fourth, state guidelines in as few words as necessary. Simple rules are easier to remember. Rules may be more effective if the child has input in making them. Finally, keep all rules reasonable. Too many rules at once can overwhelm a child.³³ These are just a few guidelines to follow. Every child will be different in their level of social function, so adaptations may need to be made to best fit each child.

In addition to the already established behavior problems seen in children with autism, the transition of moving from the classroom to therapy room (if the child is being seen in a school setting) can cause further non-compliance.³² By establishing a few general guidelines for these transitions, the maladaptive behavior may be avoided. A child can have “cue cards” when leaving the classroom. The card can state where the child needs to go, as well as how to get there appropriately. If a child has a friend that they feel safe with, the friend may be able to walk to therapy with them. (The “buddy” also serves as a reinforcer.) The transition can be made into a game. The therapist can time how long it takes to walk from the classroom to the therapy room. Also, preparing the child for the transition will give the child time to think about what they will need to do.³²

When planning treatment sessions, it is important to know what activities are motivating to the child.^{13,32} These motivators can be used to the therapist’s advantage in developing a hierarchy of consequences. If a child enjoys playing on the swing, it can be a follow-up activity to an activity they do not enjoy as much. The child should know what the rules of therapy sessions are and the therapist must remain consistent in following through with rule enforcement for rules to be most effective.

When working with children with autism and related disorders, it is important to minimize frustration that can lead to maladaptive behavior. Table 5.1 lists a few guidelines which can be followed to help this.³³

Table 5.1³³
Guidelines to Minimize Child Frustration

1. Match teaching style with child's learning style
2. Keep expected tasks within the child's capabilities
3. Break tasks into smaller steps if child is having difficulty succeeding at them.
4. Make any instructional modifications necessary to accommodate the child's needs.
5. Give clear and precise instructions.
6. Avoid any interruptions during treatment sessions.

There are several behavior management techniques that can be used with children with autism and related disorders.^{1,7,13,32} These techniques can either promote adaptive behavior or dissuade maladaptive behavior.

Positive reinforcement is a process in which rewards are given following desired behavior in children.^{1,13} The goal of reinforcement is to increase the rate of desired behavior.¹ Primary reinforcers are those which are naturally enjoyable to a child. Examples are favorite foods, drinks, or toys. Reinforcement usually begins with primary reinforcers, but they should be used only temporarily.⁷ Primary reinforcers help children understand the link between behavior and outcome. Secondary reinforcers are learned from association with other reinforcers.¹³ An example of this would be pairing verbal praise with a primary reinforcer, then removing the primary reinforcer. Consequently, the child will learn that verbal praise is also rewarding.

The more structured a reinforcement program is, the more successful it will be.¹³ Reinforcers should be alternated so as not to lose their effectiveness. Children with autism and related disorders may behave more appropriately if it is explained to them which behaviors are desirable and which are not. Therapists should also try to keep a positive focus on all expectations from the child.³² Reinforcers should be quick and easy to administer and be given immediately after the desired behavior.¹³ If there is a delay, children may not understand why they are being rewarded.^{13,32} It will also help them understand why they are being reinforced. Since children with autism and related disorders tend to have trouble transferring classroom skills to social skills, reinforcement should be applied in many various settings to help with the transfer of skills.

A variation of the reinforcement system is the token economy system.^{7,13,32} With a token economy system, the child is given a tangible reinforcer, such as a poker chip, play money, or stickers. These can be exchanged for another larger item. For example, after earning 15 poker chips (15 appropriate responses), the chips can be exchanged to participate in a favorite activity or game. When implementing a token economy system, the token being used should be identified to the child as well as which behaviors will be rewarded and with how many tokens.⁷ The rules of redemption should be clearly explained and enforced. A strong reinforcer should be available for redemption to have more effectiveness.

There are many benefits to using a token economy system.^{7,13} A token is a quick and easy reinforcer that can be given without interrupting a therapy session.¹³ It helps reduce the delay seen between desired behavior and secondary reinforcers. A token economy can help with a child's development of social function.⁷ A child can gain

symbolic development by understanding how a token can “stand for” something. They will develop budgeting skills when trading in their tokens. They can also build self-determination by learning how their actions can affect future choices.

Shaping is an effective method to increase appropriate behavior.^{1,7,13,32} With shaping, modifications are subtle so that the student is not aware of the changes.¹³ Behavior is reinforced step by step until appropriated behavior is achieved. The therapist gradually narrows the criteria for acceptable behavior.⁷ As the child learns the “new” behavior, the amount of reinforcement is gradually faded, requiring the child to perform the behavior independently.¹

Chaining is another method of reinforcing small steps needed to achieve a desired behavior.^{7,13,32} It differs slightly from shaping in that a child is taught the specific steps of a desired behavior.³² By breaking the behavior into smaller, simpler steps, a child can experience more success. Once a child has achieved the first step of a behavior, the next link may be added.

There are two types of chaining: forward chaining and backward chaining. With forward chaining, the behavior is taught starting with the lowest step, building up to the final step.^{13,32} In backward chaining, the final step of a behavior is taught, followed by each preceding step.

Prompting can be used to give hints to a child on which behaviors and responses are desired.¹³ These hints will help increase the likelihood of achieving appropriate behavior. The least amount of prompting necessary should be administered. Prompts include verbal and physical cues as well as demonstration. If prompts are used, it is important to fade them gradually to encourage independence.

Modeling can also help achieve appropriate behavior in children with autism and related disorders.^{7,13} Modeling works when there are more than one child in a therapy session at a time. The therapist can give praise to a child who is behaving appropriately. The child with autism can observe the appropriate behavior and become motivated by the reinforcement that was given. One caution with the use of modeling in children with autism and related disorders is that these children may have difficulty with imitation.³² The child should be encouraged to imitate behavior as soon as possible after observing it.

When working with children with autism and related disorders, not only is it important to increase appropriate behavior but also to decrease maladaptive behavior.^{1,7,32} Extinction is a means of eliminating unwanted behavior by ignoring it. To be effective, the therapist does not give any positive reinforcement (i.e. attention) to a child after they display unwanted behavior. The theory behind extinction is that the child's inappropriate behavior is reinforced with attention.⁷ Extinction will only be effective if this is true for the child. (Self stimulatory behavior may not be eliminated by extinction.) Self-injurious behavior should not be ignored, as it poses a danger to the child and others.¹³ The effects of extinction are not immediate and behavior will worsen before improving. The success of extinction is dependent on the therapist's patience level.¹³

When working with children displaying inappropriate behavior, it is important to keep the treatment environment as pleasant for the child as possible.⁷ The emphasis of behavior management should be more on improving appropriate behavior than decreasing maladaptive behavior. Therapists should make every attempt to keep treatment activities enjoyable for children with autism. If children find satisfaction from such activities, they may be less likely to engage in maladaptive behaviors.

Finally, treatment sessions should be organized to allow the child success and enjoyment.^{1,7,13,32} Success in an activity is a powerful reinforcer. A fun activity planned after a hard one can be a good motivator to the child. Nelson (1984)⁷ found success at a task to be a positive reinforcer in children with autism and related disorders. Treatment activities should be purposeful to the child for increased compliance.

CHAPTER SIX

Conclusion

Behavioral characteristics seen in children with autism and related disorders does not need to interfere with therapy sessions. By understanding what leads to undesired behavior, therapists can better control it to allow for a more effective therapy session.

Sensory Integration have been shown to be effective means of behavior management in children with autism and related disorders as well as deep touch proprioception stimulation. Both of these methods of intervention can also help the child with motor functioning, and can be reinforcing to the child. Positive reinforcement has also been found to be an effective way to increase appropriate behavior.

The methods of behavior management discussed in this paper are meant to be used as general guidelines for therapists. No two children will respond the same to specific interventions. It is important to monitor the results of any type of behavior intervention to allow for more effectiveness. Behavior modification techniques should be made specific to each child.

Therapists working with children with autism will benefit from an advanced understanding of behavioral assessment techniques. This can not only allow them to modify undesired behavior more effectively, but perhaps remove any environmental triggers to such behavior as well. Therapists should also try to understand the behavioral symptoms of a child's specific disorder.

Physical and occupational therapists as well as children with autism and related disorders will benefit from additional research in the area of behavior modification. While the methods discussed in this paper have been shown to be effective, more research needs to be done on the duration of the results, as well as carry-over into different environments. Therapists should investigate the effects of established methods of modification have on treatment sessions and provide documentation for research studies.

REFERENCES

1. Parrish J. Behavior management in the child with developmental disabilities. *Pediatr Clin North Am.* 1993;40(3):617-625.
2. Lovell R, Reiss A. Dual diagnosis: Psychiatric disorders in developmental disabilities. *Child Dev Dis.* 1993;40(3):579-91.
3. Simpson R, Zionts P. Information and Resources for parents, families, and professionals. Austin, TX:Pro Ed; 1992.
4. Schopler E, Mesinov G. Diagnosis and Assessment in Autism. New York City, NY:Plenum Press; 1988.
5. Zoltack BB. Autism: Recognition and management. *Pediatr Nurs.* 1986;12(2):90-4.
6. Lindeblad S; Tecklin J, ed. Pediatric Physical Therapy. Philadelphia, PA:JB Lippincott Company; 1994:447.
7. Nelson D. Children with Autism and other PDD. Thorofare, NJ;Slack; 1984.
8. Blanche E, Botticelli T, Hallway M. Neuro-Developmental Treatment and Sensory Integration Principles: An Approach to Pediatric Therapy. Tucson, AZ:Therapy Skill Builders;1995.
9. Iwasaki K, Holm M. Sensory treatment for the reduction of stereotypic behaviors in persons with severe multiple disabilities. *Occup Ther J Res.* 1989;9(3):170-83.
10. Reisman J. Using a sensory integrative approach to treat self-injurious behavior in an adult with profound mental retardation. *Am J Occup Ther.* 1993;47(5):403-10.
11. McClure M, Holtz-Yotz M. Effects of sensory stimulation treatment of an autistic child. *Am J Occup Ther.* 1991;45(12):1138-42.
12. Jarus T, Dikla G. The effect of kinesthetic stimulation on the acquisition and retention of a gross motor skill by children with and without sensory integration disorders. *Phys Occup Ther Pediatr.* 1995;14(3/4):59-73.

13. Simpson R, Regan M. Management of Autistic Behaviors. Austin, TX:Pro Ed;1986.
14. Volkmar F, Klin A, Schultz R, Bronnen R, Marans W, Sparrow S. Asperger's syndrome. J Am Acad Adolesc Psychiatry. 1996;35(1):118-23.
15. Jackel S. Asperger's Syndrome Support Network Homepage.
<http://www.vicnet.au/vicnet/community/aspergter.htm>. (April 9, 1996).
16. Szatmari P, Archer L, Fisman S, Streiner D, Wilson F. Asperger's syndrome and autism: Differences in behavior, cognition, and adaptive functioning. J Am Acad Adolesc Psychiatry. 1995;34(12):1662-71.
17. Coster W, Tickle-Degnen L, Armenta L. Therapist-child interaction during sensory integration treatment: Development and testing of a research tool. Occup Ther J Res. 1995;15(1):17-35.
18. Kaplan H, Sadock B, Grebb J. Kaplan and Sadock's Synopsis of Psychiatry 7th ed. Baltimore, MD:Williams and Wilkens; 1994.
19. Davis K. Fragile X Syndrome. Oxford, NY:Oxford University Press;1989.
20. Lesick M. Pediatric management problems. Pediatr Nurs. 1993;19(6):622-4.
21. Jenssen Hagerman R, McKenzie McBrigg, J. Fragile X Syndrome: Diagnosis, Treatment, and Research. Baltimore, MD:Johns Hopkins University Press;1991.
22. Schlopler E, Mesinov G. Social Behavior and Autism. New York City, NY:Plenum Press;1986.
23. Edelson S. An Overview of Autism. <http://www.autism.org/overview.html> (April 9, 1996).
24. Rhodes R, Pflanzner R. Human Physiology 2nd ed. Orlando FL:Saunders College Publishing;1992.
25. McBride J. An examination of the phenomenology and the reliability of ratings of compulsive behavior in autism. J Aut Dev Dis. 1995;25(4):381-96.
26. Borden C, Ollendick T. An examination of the validity of social subtypes in autism. J Aut Dev Dis. 1994;24(1):23-37.
27. Ozonoff S, Miller J. Teaching theory of mind: A new approach to social skills training for individuals with autism. J Aut Dev Dis. 1995;25(4):413-33.

28. Ghaziuddin M, Alessi N, Greden J. Life events and depression in children with PDD. *J Aut Dev Dis.* 1995;25(5):495-502.
29. Heiman M, Nelson K, Tjus T, Gillberg C. Increased reading and communication skills in children with autism through an interactive multimedia computer program. *J Aut Dev Dis.* 1995;25(5):459-80.
30. Colby Trott M, Laurel M, Windeck S. *Sensabilities. Tuscon, AZ:Therapy Skill Builders* 1993.
31. Zissermann L. The effects of deep pressure on self-stimulating behaviors in a child with autism and other disabilities. *Am J Occup Ther.* 1992;46(6):547-51.
32. Warger C, Heflin LJ. *Managing Behaviors: A Therapist's Guide. Tucson, AZ:Communication Skill Builders;* 1994.