Evidence-Based Practice and Autism in the Schools

2nd Edition

AN EDUCATOR'S GUIDE TO PROVIDING APPROPRIATE INTERVENTIONS TO STUDENTS WITH AUTISM SPECTRUM DISORDER

National Autism Center
A Center of May Institute

Evidence-Based Practice and Autism in the Schools

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2nd Edition

National Autism Center | Randolph, Massachusetts

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Introduction

ABOUT THE NATIONAL AUTISM CENTER

The National Autism Center is May Institute's Center for the Promotion of Evidence-based Practice. It is dedicated to serving individuals with autism spectrum disorder (ASD) by providing reliable information, promoting best practices, and offering comprehensive resources for families, practitioners, and communities.

An advocate for evidence-based intervention approaches, the National Autism Center identifies effective programming and shares practical information with families and practitioners about how to respond to the challenges they face. The Center also conducts applied research and develops training and service models for practitioners. Finally, the Center works to shape public policy concerning ASD and its intervention through the development and dissemination of national standards of practice.

Guided by a Professional Advisory Board, the Center brings concerned constituents together to help individuals with ASD and their families pursue a better quality of life.

ABOUT MAY INSTITUTE

May Institute is an award-winning nonprofit organization that provides educational, rehabilitative, and behavioral healthcare services to individuals with autism spectrum disorder and other developmental disabilities, brain injury, mental illness, and behavioral health needs. The Institute also provides training and consultation services to professionals, organizations, and public school systems.

Since its founding 60 years ago, May Institute has evolved into a national network that serves thousands of individuals and their families annually. With corporate headquarters in Randolph, Mass., the Institute operates more than 160 service locations in more than a dozen states across the country.

Forward

Given the challenges of providing appropriate services to a diverse and increasingly numerous student population in this country with autism spectrum disorder (ASD), the need for evidence-based practice in our schools has never been so urgent. We must provide our educators with the tools and resources they need to give children and adolescents the greatest chance for success.

To assist educators who work hard to provide appropriate services, the National Autism Center published the first edition of "Evidence-based Practice and Autism in the Schools" in 2010. Thousands of educators from every state and dozens of countries have accessed it online. In a national survey conducted the following year, responses demonstrated that the manual was making a significant impact on improving educators' knowledge about ASD and providing effective interventions for students on the spectrum.

This newest edition of "Evidence-based Practice and Autism in the Schools" includes up-to-date information designed to assist front-line interventionists in selecting and implementing the most effective research-supported interventions for ASD.

We offer this manual to help fulfill the National Autism Center's mission to disseminate these kinds of resources to communities across the country and throughout the world. Lasting change in the education of students with ASD requires evidence-based practice as its foundation.

Acknowledgments

We are grateful to the many individuals and organizations that supported the development of this manual. Production and initial distribution have been made possible through a generous gift from the American Legion Child Welfare Foundation. Thanks to the Foundation's support, the National Autism Center has delivered thousands of free copies of the manual to educators serving students with autism spectrum disorder across the country.

The first edition of this manual could not have been developed without the contributions of its primary authors; their work remains at the heart of this new edition. We thank: Laura Fisher, Psy.D., for her comprehensive examination of autism spectrum disorder; Dipti Mudgal, Ph.D., BCBA, for her extensive review of interventions that have solid research support; Melissa Hunter, Ph.D., for her sensitive consideration of strategies for incorporating family input into decision making; and Susan Wilczynski, Ph.D., BCBA-D, for her analysis of methods of producing systemic change to enhance evidence-based practice in the schools.

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Introduction: The Importance of Evidence-based Practice

The evidence-based practice movement began in medicine in the 1990s. While research had led to advancements in the medical treatment of patients, physicians were not always aware of these advancements. In some cases, physicians continued to use medications or medical procedures that were no longer considered appropriate. In other cases, physicians were unaware of newer medications or medical procedures that would lead to better outcomes for their patients.

Physicians are not alone in their need to stay current with advances in research and best practices in their fields of expertise. A broad range of health and school professionals also face this problem. While keeping up with research is challenging, we are all obligated to do so in order to provide the most appropriate and effective services to the students we serve. In fact, federal legislation regulating the provision of services in schools is filled with references about the need to employ research-supported interventions (Individuals with Disabilities Education Improvement Act, 2004; No Child Left Behind, 2002).

The National Autism Center has developed this manual as a means of promoting evidence-based practice for autism spectrum disorder (ASD) in the schools. Why? Because we know that evidence-based practice is in the best interest of the student and that it is most likely to produce positive outcomes with this population. The information presented herein is meant for all "front-line" interventionists who work in school settings.

Although research findings are essential, they are not the only component of evidence-based practice. Evidence-based practice requires the integration of research findings with other critical factors.

These factors include professional judgment and data-based decision making, and the values and preferences of families, including the student on the autism spectrum, whenever feasible.

This definition of evidence-based practice is applied to school settings throughout this document. Evidence-based practice is complex and requires both ongoing communication and respectful interactions among all stakeholders. Even when a list of effective interventions is identified, collaboration is the key to achieving the best outcomes. To that end, we have provided examples involving a broad range of professionals and support staff throughout the manual to illustrate the points we make.

We have organized this manual in a progressive fashion. We recommend beginning with the chapter describing ASD and ending with the chapter on building capacity. Although some chapters may be perceived as more relevant to some school personnel (e.g., an administrator may be drawn to the chapter on building capacity), we believe it is important for all school personnel to be familiar with all factors that contribute to evidence-based practice for ASD. For example, we anticipate that even experienced professionals will benefit from the discussion about complex diagnostic concerns for this population.

About our Terminology:

Our goal has been to make this manual as user-friendly as possible. Therefore, we have tried whenever possible to avoid using jargon, and we have defined terms when necessary.

It is important to clarify our use of terminology regarding school personnel in these pages. We often use the terms "educators," "front-line interventionists," "school staff," and "school personnel" interchangeably. Although the examples we provide include paraprofessionals, teachers, and support service staff, we often apply the more generic terms because any of these individuals may be represented in the examples.

References

American Psychological Association. (1994). *Resolution on facilitated communication by the American Psychological Association*. Adopted in Council, August 14, 1994, Los Angeles, CA. Available at http://www.apa.org/divisions/div33/fcpolicy.html (accessed April 16, 2015).

Individuals with Disabilities Education Improvement Act of 2004, Pub. L. 108-466.

No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq. (2002).

1

Understanding Autism Spectrum Disorder

Historical Perspective

There has been tremendous progress made in the field of autism over the last six decades. While it was once a syndrome that was rarely discussed in public, we find information about autism spectrum disorder (ASD) all around us today—on television and radio, websites and Internet searches, public service announcements, and in the views of celebrities sharing their stories. Political leaders discuss the importance of autism diagnosis, cause, and cure, and have earmarked federal dollars for research and treatment initiatives that will be instrumental in furthering the field in the years to come.

Before discussing the current state of autism, however, let's briefly review the history of this disorder and what we have learned over the years.

In 1943, a doctor named Leo Kanner began observing a group of children who were previously thought to have mental retardation. He noticed that these children had difficulty developing speech, and did not socially interact with their peers. He also noted that these children engaged in ritualized and/or repetitive behaviors to the exclusion of other activities. These children had difficulties with transitions, and did not like changes in their routines or schedules. Some of them experienced regression in their functioning over time, losing skills that had been established previously. We know Kanner's description will be familiar to you if you serve children on the autism spectrum.

At the time, treatment for autism was very limited. Most of these children were placed in institutions, far from the public eye, to live out their lives. Professionals commonly held the view that "refrigerator mothers" were responsible for the symptoms observed in these

children. Deficits in the children's functioning were assumed to be linked to poor attachment and/or absentee parenting (Bettleheim, 1967). Because parents were often blamed for their children's disorders, many experienced great shame for having a child with ASD.

Much has changed in the last six decades. We now know that autism, a neurodevelopmental disorder, is most likely caused by a combination of genetic and environmental factors. Although we would like to think that parents are no longer blamed, all-too-frequent examples demonstrate how autism is still widely misunderstood. One example is a nationally known radio personality who stated that autism was "a fraud, a racket" and that a child diagnosed with ASD is probably "a brat who hasn't been told to cut the act out." Let's hope that some day parents will no longer face this kind of discrimination.

Around the same time that Kanner was identifying symptoms of autism, pediatrician Hans Asperger was studying another group of children (Wing & Gould, 1979). These boys and girls were also having problems in social interactions with their peers. Like their counterparts, they exhibited behavioral problems commonly seen in children with autism. However, this group of children did not have deficits in speech and language formation. In fact, these children often spoke early and frequently. They also did not display deficits in adaptive functioning. In other words, these children could feed themselves, dress themselves, participate in their personal care, and function independently in the community. Unlike the group that Kanner observed, most of these children did not have lowered cognitive abilities. They were often very bright and had specific areas of interest in which they could amass large amounts of information.

Unfortunately, Asperger's research was not discovered until three decades later. It was reintroduced to the field when other individuals interested in ASD began questioning the diagnostic criteria that were used at the time. His work has made a tremendous difference in the way we have come to view and understand the autism spectrum.

Defining and Diagnosing Autism Spectrum Disorder

Despite Kanner's identification of autism in 1943, criteria for the diagnosis of autism did not appear until the 1980 publication of the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III, American Psychiatric Association, 1980). In the DSM-III, the diagnosis of what we know as ASD was originally described as "infantile autism." The publication of the DSM-III-R in 1987 resulted in the appearance of the diagnosis of "autistic disorder" (American Psychiatric Association, 1987).

In 1994, the Diagnostic and Statistical Manual of Mental Disorders underwent a major overhaul resulting in the DSM-IV (American Psychiatric Association, 1994). The diagnostic criteria for Pervasive Developmental Disorders (PDD), commonly referred to as Autism Spectrum Disorders (ASD), were reviewed and revised to include five diagnoses:

1. Autistic Disorder
2. Asperger's Disorder
3. Pervasive Developmental Disorder–Not Otherwise Specified (PDD-NOS)
4. Rett's Disorder
5. Childhood Disintegrative Disorder

When the DSM-V was published in 2013, it eliminated the previously separate subcategories and redefined the autism spectrum to encompass all of the disorders listed above except Rett's Disorder and Childhood Disintegrative Disorder. According to the American Psychiatric Association (APA), the revised diagnosis represents a new, more accurate, and medically and scientifically useful way of diagnosing individuals with ASD (APA, 2013).

The DSM-V diagnostic criteria for ASD include two domains: social-communicative impairment and restrictive and repetitive behaviors, interests, or activities (Volkmar & McPartland, 2014). The DSM-V criteria also include "severity levels" which describe different levels of support and impact on an individual's functioning level. The DSM-V states that individuals with a "well-established" diagnosis of autistic disorder, PDD-NOS, or Asperger's Disorder should receive a diagnosis of ASD. The DSM-V includes a new diagnostic category,

social (pragmatic) communication disorder (SPCD) (APA, 2013). SPCD criteria include impairment in verbal and nonverbal communication and essentially impact relationships and the ability to participate in school or at work (APA, 2013). The APA suggested the inclusion of SPCD may aid in more accurately diagnosing individuals with social communication impairments who do not exhibit repetitive or restrictive interests/behaviors and do not meet criteria for ASD (APA, 2013).

Autism Today

There has been much discussion as to why the rate of autism has been steadily increasing since the 1990s. One reason is linked to the change in diagnostic nomenclature in 1994. At that time, the diagnostic criteria for autism expanded to include children who were not previously considered "on the spectrum."

Studies have shown that, despite this change in diagnostic criteria, the number of diagnosed cases of ASD is much higher than expected (Johnson & Myers, 2007). Many researchers believe the increase in the number of cases of autism worldwide is due to a combination of genetic and environmental factors (Folstein & Rosen-Sheidley, 2001).

Researchers are working diligently to seek answers for families about the cause of autism.

Current facts about autism:

- It affects 1:68 children nationwide (Centers for Disease Control and Prevention).
- It can be found in all cultures of the world, and does not discriminate based on race, socioeconomic status, education of parents, or other demographic variables (Wong, Hui, & Lee, 2004; Howlin & Asgharian, 1999).
- It is almost five times more likely to occur in boys than girls.
- Approximately 10 percent of children with ASD have an identifiable genetic or chromosomal disorder (i.e., fragile X or tuberous sclerosis).
- It currently has no known cause or cure.

What Does Autism Spectrum Disorder Look Like?

This section describes autism spectrum disorder in greater detail. The term "spectrum" can be defined as a continuous sequence or range (Merriam-Webster's online dictionary, n.d.). As such, educators will recognize the wide range of strengths and challenges students with ASD bring to the classroom setting.

Social Communication Impairments may include the following:

- The child may display poor or fleeting eye contact. This is often one of the earliest signs of ASD, as is a lack of responding to one's name.
- The child may exhibit difficulty initiating or maintaining a conversation. Or, conversations may focus on a preferred topic of interest. Individuals with ASD may have difficulty understanding when to start or stop a conversation.
- Language that seems "scripted" or echoed from television, a movie, or previous interaction. Many educators and caregivers report children with ASD engaging in "movie talk" or "TV talk" which refers to the child verbally repeating scenes from a television show or preferred movie.
- The child may lack empathy. For example, the child may be unable to recognize when another person is distressed because of a broken toy or dropped ice cream on the floor.
- The child may have difficulty understanding nonverbal communication (e.g., eye-rolling suggesting negative response or thumbs-up as a sign of agreement). The child may not understand cues of yawning or looking away as a lack of interest in the topic of conversation.
- The child may have challenges understanding verbal communication (e.g., extensive instructions for an assignment). Although a child may be able to communicate using language and understand basic requests, excessive language during instructions or questions may result in confusion or distress.
- Some children have an aversive response to a hug, handshake, or pat on the back. The response may be as simple as pulling away from the hug or as distressing as self-injury.
- The child may have a preference to remain alone during breaks or recess. It is not unusual for students with ASD to sit in the corner of the playground alone or under a play structure.
- The child may demonstrate the inability to participate in pretend play (e.g., not able take on a "character" or use a bowl as a hat).

- The child may be unable to use language to communicate (uses communication device or picture communication).

Restricted, repetitive patterns of behavior, interests, or activities include:

- The child may exhibit strong interests in a specific topic or toy. Children with autism have been known to have extreme interests, such as memorizing train schedules or dates in history, or categorizing all aspects of aquatic life. They may have extremely well-developed memory skills and be able to easily recall things that occurred many years ago. Many children gravitate to numbers, letters, and colors in their play and communication with others. Some children become fixated on videos such as Thomas the Tank Engine, watching segments of the movie over and over.
- The child may have extremely rigid ideas about time, travel, daily routines, feeding, dressing routines, and placement of objects around the classroom.
- Probably one of the most obvious symptoms of ASD includes the atypical body movements that are sometimes associated with this disorder. Although not always indicative of ASD, these symptoms are often the first things people notice in terms of unusual behavior. For instance, some children really enjoy spinning their bodies in circles for much longer than their peers could sustain. Other children engage in full or partial body rocking, and may position their bodies in unusual ways. Children will sometimes run in ritualized patterns on the playground or in the home. They may walk on their toes or flap their hands. At times, they may flick their fingers or cross them in unusual ways.
- The child may experience sensory challenges, and will be either over- or under-sensitive to temperature, texture, smell, or sound. It is not uncommon for the child to refuse to wear specific types of clothing or sleep on sheets that are not made of a specific material.
- The child often engages in unusual play-based behaviors. She will line up her toys, categorize them, or place them in various positions that cannot be altered. Some children enjoy watching objects fall, and will repetitively drop objects such as balls, water, sand, etc. Other children enjoy spinning items, and will spin toys, plates, forks, lids, or other things that are not meant to be spun.
- The child may visually examine his toys or objects in their environments. He may peer at objects out of the corner of his eye, but also may place them directly in his field of vision, moving them in and out of that field. Often, a child will flip over a toy car and flick the wheels while watching them spin, or lie on the floor and watch the wheels move as he pushes the car.

Many educators and caregivers report students with ASD exhibit behavioral challenges such as tantrum behavior, aggressive behavior, self-injurious behavior, property destruction, and noncompliance. Challenging behaviors should be addressed promptly to maximize the student's access to educational programming.

Recognizing behavioral strengths of students with ASD is equally important, as it is those strengths that can be expanded to increase adaptive behavior. Just like neurotypical students, those with ASD have a wide range of talents. A student with ASD may be able to play a song on the piano without sheet music, but will avoid interaction with peers. That student's piano-playing skills may be incorporated in the classroom to help increase communication with peers. For example, make a game of "name that tune," encourage turn-taking at the piano, have the student teach peers about the piano, etc. Make use of the vast knowledge a student with ASD may have on a particular topic. For example, if a student is fixated on train routes, have that student develop a presentation with peers regarding specific routes, draw a wall-size map of routes, incorporate routes in lesson plans regarding transportation, communities, or history. These activities are often beneficial to the student with ASD *and* his or her peers!

Autism Across the Lifespan

The symptoms exhibited by a student with ASD may change over time. A child who receives speech services at age 3 may face very different communication challenges by the time she reaches her high school years.

Each developmental stage brings its own challenges for all children, and this holds true for students on the spectrum. You are more likely to see certain symptoms in the toddler years, but these symptoms may be extremely subtle or non-existent by the time the student reaches adolescence.

This pattern of development can be very confusing for individuals unfamiliar with the autism spectrum because they expect the same symptoms to remain fairly constant over time. In fact, some of these individuals may doubt whether an ASD diagnosis is warranted due to preconceived notions about what a student with ASD should "look like" at certain ages.

Table 1 lists some of the various challenges that students with ASD may face across the years they are served in the schools. It includes an overview of symptoms commonly observed at different stages in a student's life. We recommend sharing this information with colleagues who may have less experience working with students on the autism spectrum.

Table 1} Developmental Changes in Students with ASD Across the School Years

Domain	Age	Symptoms
Social Development	Infant/Toddler	• May avoid touch • May isolate from groups • An infant may not imitate facial expressions • Toddlers may not laugh in response to parent's laughter • Failure to respond to the emotional needs of others
	Early School Years	• May not engage in social games • May prefer younger children • May appear "bossy" when playing with other children
	Adolescence/ Early Adulthood	• Gaps in social skills become even more apparent • Dating challenges • Social challenges sometimes related to issues such as poor hygiene (e.g., rigid adherence to rules regarding frequency of bathing)
Communication Development	Infant/Toddler	• May lack speech • Immediate or delayed echoing of other's words • Use of scripted phrases • May not respond to name • Unlikely to use gestures
	Early School Years	• May sound like "little professors" who are lecturing on a topic • Conversations are one-sided • May not see how their behavior hurts others
	Adolescence/ Early Adulthood	• Poor understanding of abstract concepts • Challenges in understanding jokes or slang • May mimic language from television or movies, placing them at risk for problems at schools (e.g., say "I'm going to get a gun and kill him" as a means of expressing anger or frustration)
Restricted, repetitive, nonfunctional patterns of behavior, interest, or activity	Infant/Toddler	• Repetitive motor movements like hand-flapping, finger flicking, rocking, etc. • May line up toys for visual examination • May categorize toys instead of playing functionally with them • Some rigidity in routines
	Early School Years	• Rule-bound • May create own rules to make sense of the world—then have a hard time managing when others violate these rules
	Adolescence/ Early Adulthood	• May engage in elaborate rituals to avoid motor tics • May obsess for hours about a brief encounter with a peer
Other	Infant/Toddler	• Tantrums • Sensitivity to light or sound • Feeding challenges (often associated with texture) • Safety concerns (e.g., may run outside in bare feet into the snow)
	Early School Years	• Academic concerns • Difficulties with concentration and irritability due to sleep or communication problems • May be disruptive during transitions • May be clumsy in sports activities
	Adolescence/ Early Adulthood	• Symptoms of depression or anxiety • Acting out • May not understand rules regarding sexual behavior (and may be set up by peers to violate these rules) • Increased risk for seizures (associated with onset of puberty)

Differential Diagnoses and Co-morbid Conditions

Our goal in this section is to provide background information on disorders that are related to ASD in two ways. Some disorders include a behavioral presentation similar to ASD (and may therefore be confused with ASD), or they often occur along with ASD.

- **Differential**. Some disorders share common characteristics with ASD. For example, children with ASD can have behavioral concerns, attention and concentration difficulties, mood dysregulation, and medical involvement—and all of these symptoms alter with age. It is not easy to diagnose these children or adolescents because they do not have "classic" autism. An ASD diagnosis must be differentiated from that of other disorders that are similar to ASD. When psychologists or psychiatrists make these decisions, it is called a differential diagnosis.
- **Co-morbid Diagnoses**. Some disorders may occur simultaneously with ASD. In these cases, students should appropriately be diagnosed with an ASD and be diagnosed with an additional disorder. When psychologists or psychiatrists make these decisions, the additional diagnosis is called a co-morbid condition.

To confuse the matter further, some disorders may appear as a differential diagnosis for one child and as a co-morbid condition in another child.

For example, consider a young boy who has the following challenges at school:

- Experiences social problems with other students
- Seems to violate social rules with adults, like talking when the teacher is talking
- Tends to look away from tasks that are presented to him
- Throws tantrums when things do not seem to go his way
- Misunderstands comments made by others
- Fidgets and cannot seem to sit still

Does this child have an ASD? Attention Deficit Disorder? Both? Obtaining a clear and comprehensive evaluation from a qualified professional is the first step to clarifying whether a child has an ASD or requires a different or additional diagnosis.

School professionals often play an instrumental role in referring a child or adolescent whose correct diagnosis may have otherwise been missed by medical professionals or family members. We hope this information helps you make referrals for some of your students whose pattern of symptoms may be very complicated. After all, the sooner they get the proper diagnosis and support they need, the more quickly and fully they will achieve their potential.

Frequently Occurring Diagnoses and Conditions

Whenever a psychiatric or psychological disorder is suspected, it is important that a qualified diagnostician conduct a comprehensive assessment and render intervention recommendations.

Anxiety and Depression

Mood dysregulation and anxiety symptoms can be easily missed in children with ASD. On the other hand, a high-functioning teenager with undiagnosed ASD may only come to someone's attention specifically because of symptoms of depression or anxiety.

Consider the following diagnostic challenges related to depression:

- A teenager who is increasingly isolated, avoiding his peers more often or in different ways, and spending excessive amounts of time focused on a specific topic of interest may have symptoms of depression secondary to an ASD diagnosis.
- In teens with ASD, classic symptoms of depression may sometimes be masked. Their ability to effectively communicate their emotional states may be limited.

Therefore, mental health professionals may have to do some sleuthing to determine if behaviors observed are congruent with ASD in isolation, or ASD paired with a mood disorder. School professionals who have the opportunity to observe the student in a wide variety of circumstances may provide the information essential to making the correct diagnosis.

Anxiety symptoms can also be misleading. Consider the following diagnostic challenges:

- A child who is anxious about speaking in public may not only have a common phobia (e.g., public speaking), but may also display body-rocking (common repetitive behavior in ASD) that could be exacerbated by the activity.
- For many students, school refusal is linked with anxiety-based disorders. However, the student with ASD may also avoid school because the school day is too strenuous due to the high demand for social interaction and need to control stereotypic or self-stimulatory behavior. For example, some children develop enough self-control to stop themselves from engaging in repetitive motor mannerisms at school but are exhausted at the end of the day as a result.

Anxiety levels should be regularly evaluated for students with ASD to make certain these students are receiving appropriate services.

Attention Deficit Hyperactivity Disorder

Attention Deficit Hyperactivity Disorder (ADHD) affects a child's ability to remain focused and attend to tasks. As noted previously, some children with ADHD may also be impulsive and explosive, and have extreme difficulties remaining seated or following simple classroom rules.

Consider the following diagnostic challenges:

- Children with ASD may have difficulty with attention and concentration. They may experience the same behavioral challenges as a child with ADHD. However, the reason for the behavior is different. A child with ADHD may lose focus because he is thinking about recess. In contrast, a child with ASD may lose focus because he is fixating on the color of the teacher's sweater or watching the fan rotate. In addition, students with ASD may not be able to concentrate because instructions are too complicated given their communication difficulties.
- A child with ADHD may engage in problem behaviors due to pent-up energy. In contrast, a child with ASD may act out behaviorally due to a sensory interest or repetitive motor or vocal tic symptom. The same behaviors occur in both children, but there may be very different causes or triggers.

Carefully identifying the function or purpose of a behavior is often critical. The function of the behavior may influence both the diagnosis that is rendered and the treatment that is recommended.

Obsessive-Compulsive Disorder

Children with ASD often display stereotypic or self-stimulatory behaviors. That is, they ritualistically repeat the same set of behaviors. Based on simple observation, it can be difficult to distinguish the compulsive behavior of an individual with obsessive-compulsive disorder (OCD) and the self-stimulatory behavior of an individual with ASD.

Consider the following diagnostic challenges:

- Children with ASD and children with OCD might line up their toys, categorize things, insist on sameness in their routines or rituals, or have strange rules that they create to govern their actions with others. However, a child with OCD may feel compelled to line up all of her shoes facing north and according to color. Usually, there is a

cognitive process associated with the behavior, such as "I need to line my shoes up, so the house won't burn down while I am at school today." In contrast, the child with ASD might identify a preference for sameness or, more likely, will be incapable of articulating why he engages in these behaviors.

- Repetitive hand-washing may be a self-stimulatory behavior for a student on the autism spectrum or it may be associated with intrusive fears of contamination and disease for the child with OCD.

It may be particularly difficult to make the distinction between compulsive and self-stimulatory behaviors with children who lack strong communication skills. Making the appropriate differential diagnosis is based on the child's ability to express whether or not intrusive thoughts and fears are present. Also, children with OCD often state that they wish they did not perform the compulsions. The appropriateness of specific medical treatments is clearly tied to the correct diagnosis.

Psychotic Disorders

Some children with ASD are mislabeled as psychotic.

Consider the following diagnostic challenges:

- A student with ASD may talk to himself and mumble under his breath in the classroom. When the teacher asks about this behavior, he states, "My friends are talking." It is clear to the front-line interventionists that this child was not speaking to any friends in the classroom! However, the student was reciting actual conversations that had occurred around him in the lunch room earlier that day. It's just that he does not understand the reciprocal nature of communication and social interaction. The student provided the teacher with what seemed to him as the appropriate response.
- Asking children who are on the spectrum about "hearing voices" or "seeing strange things" is likely to elicit some unusual and misleading responses as well. For instance, a student with ASD may state she is always hearing voices of people who are not in the room with her. However, she is referring to people downstairs, down the hall, or outside—not in her head. She is responding quite literally to the question that has been asked.
- Children with ASD may repeat fantasy-based activities that they have seen on television, or in video games or movies. They may or may not realize that what they are acting out is make-believe or pretend play. For instance, a boy with ASD may perfectly replicate every move made by Spiderman. If asked, he may insist that he is Spiderman

and may have a tantrum when you challenge this statement. He is not truly psychotic, but he may benefit from some guidance in reality testing—mostly for his own safety and the safety of others.

Significant differences exist in the treatment of psychotic disorders and ASD. While these conditions may be co-morbid, you should consult a qualified professional who has sufficient experience with both disorders if a psychotic disorder is suspected.

Bipolar Disorder and Oppositional Defiant Disorder

The most confusing symptom we probably see in children with ASD is linked to behavioral outbursts. Many professionals who are not familiar with ASD assume a child's behavior is due to a mood disorder such as bipolar disorder, or a behaviorally driven diagnosis such as oppositional defiant disorder (ODD). The true cause of the behavior can be quite different.

Consider the following diagnostic challenges:

- Children with bipolar disorder can be explosive, impulsive, and highly aggressive. Their symptoms are often cyclical and follow a pattern over time that can be tracked and monitored.
- There is not typically an environmental stressor that is the primary trigger for the explosive, impulsive, and highly aggressive behavior for children with bipolar disorder. These behaviors are ruled by fluctuations of the chemicals in their brains that lead to (sometimes highly rapid) changes in their overall behavior. Although students with ASD may have these same symptoms, their problems are typically tied to environmental stressors. It may not be readily apparent, however, what that environmental stressor might be (e.g., days in which math and music both appear in the afternoon may not be a pattern most people would easily recognize!).
- Children with ODD often act out for very specific reasons. They are often inadvertently taught to respond to limit-setting in a negative manner. When positive behavioral supports are provided, they are often able to restructure their responses in a positive and motivated way. In contrast, the child on the autism spectrum may act out because the noise in the next room is highly distressing even though it does not bother any of the other students in the classroom. He may rock back and forth, cover his ears in response to the "noise," and hit the girl next to him who tries to console him. He is unlikely to calm down until the sensory stressor is removed, or until he has become accustomed to the sound (this is not likely to happen quickly).

The behaviors may look the same for the student with ASD, the child with ODD, or the individual with bipolar disorder (e.g., Johnny hits Susie in the classroom), but the underlying *reasons* for the behavior are much different (i.e., chemical dysfunction, learned behavior, sensory-driven behavior, or rule-based behaviors). Determining what caused the behavior in the first place often leads to an accurate diagnosis.

Final Considerations

Being aware of ASD and its myriad presentations will be an important step in helping children with ASD in the school setting. Working closely with other educators, treatment providers, and diagnosticians in the field will help close the gaps between identification, intervention, and the best possible outcome for the child.

Even when outside professionals are involved, school personnel remain the "front line" in helping students with ASD reach their potential. This is most likely to occur when the needs of students with complicated school behavior and psychiatric histories are examined within their proper context.

Once a proper diagnosis is secured, intervention selection begins. It typically begins with identification of interventions that have been shown to be effective based on well-controlled research. Chapter 2 includes a discussion of research-supported interventions for ASD.

Recommended Readings

Autism Specific:

Attwood, T. (2007). *The complete guide to Asperger's syndrome*. Philadelphia, PA: Jessica Kingsley Publishers.

Baron, M. G., Groden, J., Groden, G., & Lipsitt, L. P. (2006). *Stress and coping in autism*. New York, NY: Oxford University Press, Inc.

Bolick, T. (2001). *Asperger's syndrome and adolescence: Helping preteens and teens get ready for the real world*. Gloucester, MA: Fair Winds Press.

Hall, L. J. (2013). *Autism spectrum disorders: From theory to practice* (2nd ed.): Pearson.

Lord, C., & McGee, J. P. National Research Council, Committee on Educational Interventions for Children with Autism. (2001). *Educating children with autism*. Washington, DC: National Academy Press.

O'Brien, M., & Daggett, J. (2006). *Beyond the autism diagnosis: A professional's guide to helping families*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc..

Ozonoff, S., Dawson, G., & McPartland, J. (2002). *A parent's guide to Asperger's syndrome and high-functioning autism*. New York, NY: Guilford Press.

Volkmar, F. R., McPartland, J. C., & Reichow, B. (Eds.). (2014). *Adolescents and adults with autism spectrum disorder*. New York, NY: Springer.

Other Disorders:

Barkley, R. A. (2000). *Taking charge of ADHD: The complete authoritative guide for parents*. New York, NY: Guilford Press.

Geller, B., & DelBello, M. P. (2003). *Bipolar disorder in childhood and early adolescence*. New York, NY: Guilford Press.

Penzel, F. (2000). *Obsessive-compulsive disorders: A complete guide to getting well and staying well*. New York, NY: Oxford University Press, Inc.

References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

American Psychiatric Association. (2013). *Social (pragmatic) communication disorder* [Fact sheet]. Retrieved from http://www.dsm5.org/Documents/Social%20Communication%20Disorder%20Fact%20Sheet.pdf

Bertrand, J., Mars, A., Boyle, C., Bove, F., Yeargen-Allsopp, M., & Decougle, P. (2001). Prevalence of autism in the United States population: The Brick Township New Jersey investigation. *Pediatrics, 108*, 1155-1161.

Bettleheim, B. (1967). *The empty fortress: Infantile autism and the birth of the self*. New York, NY: Plenum Press.

Chakrabati, S., & Fombonne, E. (2005). Pervasive developmental disorders in preschool children: Confirmation of high prevalence. *American Journal of Psychiatry, 162*, 1133-1141.

Folstein, S. E., & Rosen-Sheidley, B. (2001). Genetics of autism: Complex etiology for a heterogeneous disorder. *Nature Reviews Genetics, 2*, 943-955.

Fombonne, E. (2003). Epidemiological surveys of autism and other pervasive developmental disorders: An update. *Journal of Autism and Developmental Disorders, 33*, 365-382.

Gupta, V. B., Hyman, S. L., Plauche Johnson, C., Bryant, J., Byers, B., Kallen, R., Levy, S., Myers, S., Rosenblatt, A., & Yeargin-Allsopp, M. (2007). Identifying children with autism early? *Pediatrics, 119*, 152-153.

Howlin, P., & Asgharian, A. (1999). The diagnosis of autism and Asperger's syndrome: Findings from a systematic survey. *Developmental Medicine and Child Neurology, 4*, 834-839.

Kabot, S., Masi, W., & Segal, M. (2003). Advances in the diagnosis and treatment of autism spectrum disorders. *Professional Psychology: Research and Practice, 34*, 26-33.

Klinger, L. G., Dawson, G., & Renner, P. (2003). Autistic disorder. In E. J. Mash & R. A. Barkey (Eds.), *Child Psychopathology* (2nd ed., pp. 409-454). New York, NY: Guilford Press.

Lifter, K. (2008, March). Developmental play assessment and teaching: Theory to research and practice. Presented at May Institute, Randolph, MA.

Plauche Johnson, C., & Myers, S. (2007). Identification and evaluation of children with autism spectrum disorders. *Pediatrics, 120*, 1183-1215.

Spectrum. (n.d.) In *Merriam-Webster*. Retrieved Oct. 6, 2014, from http://www.merriam-webster.com/dictionary/spectrum

Sigman, M., Dijamco, A., Gratier, M., & Rozga, A. (2004). Early detection of core deficits in autism. *Mental Retardation and Developmental Disabilities Research Reviews, 10*, 221-233.

Volkmar, F. R., & McPartland, J. C. (2014). From Kanner to DSM-5: Autism as an evolving diagnostic concept. *Annual Review of Clinical Psychology, 10*, 193-212.

Walker, D. R., Thompson, A., Zwaigenbaum, L., Goldberg, J., Bryon, S. E., & Mahoney, W. J. (2004). Specifying PDD-NOS: A comparison of PDD-NOS, Asperger's syndrome and autism. *Journal of American Academy of Child and Adolescent Psychiatry, 43*, 172-180.

Wing, L., & Gould, J. (1979). Severe impairments of social interaction and associated abnormalities in children: Epidemiology and classification. *Journal of Autism and Developmental Disorders, 9*, 11-29.

Wong, V., Hui, L., & Lee, W. (2004). A modified screening tool for autism (checklist for autism in toddlers CHAT-23) for Chinese children. *Pediatrics, 114*(2), 166-176.

2

Research Findings of the National Standards Project, Phase 2

Our understanding of autism spectrum disorder (ASD) continues to evolve, bringing refinements in both diagnosis and interventions. More than 55 years of research have increased our knowledge of this complex neurodevelopmental disability and led to a vast array of intervention options.

The need to evaluate and select from this long list of intervention options can be daunting for all of us—parents, educators, and health professionals. The good news is that information is available to help us focus on those interventions that have evidence of effectiveness.

In this chapter, we provide detailed information about the Established Interventions identified by the National Standards Project, Phase 2 (NSP2). We also provide a list of the interventions identified as Emerging and Unestablished.

According to the NSP2 criteria, the interventions identified as Established are considered evidence-based interventions. Keep in mind that ASD intervention research is very active; there could be quality scientific evidence published since the 2012 (when the literature review for NSP2 was completed) that would impact the placement of interventions in each category.

Our goal here is to familiarize you with these interventions and give you a place to begin or continue your exploration of available resources. Once you have decided which of these Established Interventions will be the best option(s) for your students and school, we recommend that you develop a collaborative and carefully planned strategy in order to build your school's capacity to implement these interventions with a high degree of accuracy (see Chapter 5).

Here are a few important points to remember as you review the results of NSP2:

- There are 14 Established Interventions that have been thoroughly researched and have sufficient evidence for us to confidently state that they are effective.
- There are 18 Emerging Interventions that have some evidence of effectiveness, but not enough for us to be confident that they are truly effective.
- There are 13 Unestablished Interventions for which there is no sound evidence of effectiveness.

Established Interventions

In the following pages, we provide a detailed definition and description for each of the 14 Established Interventions identified for individuals under age 22 in Phase 2 of the National Standards Project.

You may already be familiar with some of these options. Many volumes have been published on each of these interventions; we encourage you to learn more about those that might be most useful to you in your work.

The 14 Established Interventions are:

- Behavioral Interventions
- Cognitive Behavioral Intervention Package
- Comprehensive Behavioral Treatment for Young Children
- Language Training (Production)
- Modeling
- Natural Teaching Strategies
- Parent Training Package
- Peer Training Package
- Pivotal Response Training
- Schedules
- Scripting
- Self-management
- Social Skills Package
- Story-based Intervention

Behavioral Interventions

Established Intervention & Detailed Description

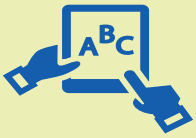
The largest category of Established Interventions is the Behavioral Intervention category. The results of the NSP1 included Behavioral Package and Antecedent Package. Given the feedback provided by professionals and family members, the antecedent package interventions and behavioral package interventions were combined into one category, Behavioral Interventions.

The challenge in teasing apart the Behavioral Intervention category lies in the complexity of the majority of interventions packages evaluated in the 155 articles in this category. Take, for example, prompting. Prompting is commonly described as a set of procedures used to teach a new skill. Prompting can be gestural (e.g., a teacher pointing to the correct answer), verbal (e.g., a teacher saying "The answer is cat. Say 'cat'."), or positional (e.g., a teacher placing an array of three flashcards with the target flashcard placed closest to the student, to encourage a correct response).

There are at least 12 studies in which prompting is part of a complex behavioral intervention consisting of two or more components. The issue with teasing out prompting as a "stand alone" evidence-based intervention is isolating the use of prompting and its impact on a target behavior. However, prompting along with other components of behavioral interventions was identified as having sufficient evidence to have beneficial intervention effects.

The Behavioral Intervention category is comprised of interventions typically described as antecedent interventions and consequent interventions. Antecedent interventions involve the modification of situational events that typically precede the occurrence of a target behavior. These alterations are made to increase the likelihood of success or reduce the likelihood of problems occurring. Consequent interventions involve making changes to the environment following the occurrence of a targeted behavior. Many of the consequent interventions are designed to reduce problem behavior and teach functional alternative behaviors or skills through the application of basic principles of behavior change.

Basic Facts



Number of articles reviewed:

NSP1 = **298** NSP2 = **155**

Age range of participants: Children and adolescents 3–21 years

Skills increased:

- higher cognitive functions (NSP2)
- motor skills (NSP2)
- academic, communication, interpersonal, learning readiness, personal responsibility, play, and self-regulation (NSP1&2)

Behaviors Decreased:

- sensory or emotional regulation (NSP1)
- problem behaviors (NSP1&2)
- restricted, repetitive, nonfunctional patterns of behavior, interests, or activity (NSP1&2)

Example

Examples of Behavioral Interventions consisting of one identified component:

- Joint Attention Intervention
- Chaining
- Differential Observing Response (DOR)
- Forward Chaining
- Function-based Intervention
- Imitation Training
- Reinforcement Schedule (schedule specified)
- Response Interruption and Redirection (RIRD)
- Repeated Practice
- Standard Echoic Training

Examples of Behavioral Interventions consisting of two identified components:

- Extinction + Reinforcement
- Function-based Intervention + Prompts
- Sign Extinction + Differential Reinforcement of Alternative Behavior (DRA)
- Stimulus Fading + Positive Reinforcement

Examples of Behavioral Interventions consisting of three identified components:

- Choice + Task Interspersal + Positive Reinforcement
- Discrete-trial Training + Natural Consequences + Error Correction
- Most to Least Prompting + Natural Consequences + Activity Interspersal
- Preteaching + Prompting + Positive Reinforcement

Examples of Behavioral Interventions consisting of four or more identified components:

- Combined Task Direction + Contingent Reinforcement + Physical Prompts + Stimulus Fading
- Modeling + Prompting + Reinforcement + Redirection + Abolishing Operation Component
- Prompt Delay + Auditory Scripts + Manual Prompts + Behavioral Rehearsal + Tokens
- Reinforcement Pairing + Habit Reversal + GaitSpot Squeakers + Differential Reinforcement of Incompatible Behavior (DRI)
- Video Modeling + DRA + Escape Extinction + Stimulus Fading + Photo Prompting
- Video Modeling + Highlighting + Prompting/ Fading + Reinforcement
- Video Modeling + Photo Prompts + Contact Desensitization + Shaping + Differential Reinforcement of Other Behavior (DRO) + Escape Extinction
- Written Task Analysis + Social Scripts + Prompting + Self-monitoring + Fading

Recommended Readings

Gerhardt, P. F., & Crimmins, D. (Eds.) (2013). *Social skills and adaptive behaviors in learners with autism spectrum disorders*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc.

Luiselli, J. K. (Ed.) (2014). *Children and youth with autism spectrum disorder (ASD): Recent advances and innovations in assessment, education, and intervention*. New York, NY: Oxford University Press.

Luiselli, J. K., & Cameron, M. J. (1998). *Antecedent control: Innovative approaches to behavioral support*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc.

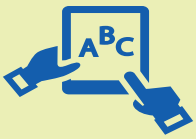
Matson, J. L. (Ed.) (2009). *Applied behavior analysis for children with autism spectrum disorders*. New York, NY: Springer.

Cognitive Behavioral Intervention Package

Established Intervention

Cognitive Behavioral Intervention Package (CBIP) was previously listed as an Emerging Intervention in NSP1. With additional scientific evidence published since NSP1, CBIP has moved to the Established Intervention category. Cognitive Behavioral Therapy has long been an evidence-based intervention for individuals diagnosed with anxiety disorders and depressive disorders (i.e., without autism spectrum disorder, or ASD).

Basic Facts



Number of articles reviewed:

NSP1 = **3** NSP2 = **10**

Age range of participants: Children and adolescents 6-14 years

Skills increased:

- higher cognitive functions (NSP1)
- interpersonal, personal responsibility, and placement (NSP2)

Behaviors decreased:

- problem behaviors (NSP2)
- sensory or emotional regulation (NSP2)

Detailed Description

There are manualized cognitive behavioral intervention programs that have been modified for individuals with ASD. These modifications can take different forms but typically involve making adjustments to materials (e.g., adding visual cues, role-play) or the structure of sessions. There are also cognitive behavioral intervention programs developed and individualized for specific purposes (e.g., to address anger management). In either case, cognitive behavioral interventions often include several commonly used strategies.

Common strategies:

- An educational component describing feelings/emotions, physical responses to emotions, and prevalence of individuals with similar challenges.
- A cognitive restructuring component in which the therapist assists the individual to modify cognitive distortions such as "all-or-nothing" thinking or "catastrophizing."
- Development of scale to identify anxiety or distress. Some scales take the form of a thermometer, a ladder, or "volume control."
- Homework assignments. Individuals are expected to work on skills in the home, school, and community setting. Typically, there is a specific assignment that requires some type of recording of behavior or observations.
- Parent sessions. Cognitive behavioral interventions often take place for 45 minutes to one hour per week for a specified number of weeks

{cont.}

Detailed Description *{cont.}*

(e.g., 16 weeks). During that time, there are often "parent sessions" in which the parents and therapist meet to discuss progress and strategies to support the individual with ASD.

Some of the manualized cognitive behavioral intervention packages modified in studies reviewed in the NSP2 included The Coping Cat Program, and Exploring Feelings.

Note: Cognitive behavioral interventions should be implemented by a trained professional with experience in providing cognitive behavioral therapy as well as working with individuals with ASD.

Example

Ester is a 12-year-old with ASD in a mainstream middle school classroom. She has started to display behaviors associated with anxiety when participating in physical education class. Specifically, Ester is afraid of getting hit by a ball or puck, and afraid of getting knocked down during games. She began to display distress following an incident in which she was bumped into a wall during a kickball game in the gym. She experiences tearfulness, sweating, fidgeting, and refusal to participate.

Professionals at Ester's school hold a case conference with Ester's mother. Ester's mother agrees that the issue should be addressed as it is beginning to interfere with Ester's ability to participate in school activities. The school social worker provides Ester's mother with the name of a doctoral-level psychologist with experience in providing cognitive behavioral therapy for children and adolescents with ASD.

Ester begins to participate in cognitive behavioral therapy to address her concerns regarding participation in physical education class. She and her therapist review how Ester experiences distress (e.g., rapid heart beat, sweating, crying). They work on role playing different games and even bring in Ester's siblings to play. Ester's homework assignments include recording how she feels before, during, and after physical education class and practicing her relaxation techniques. Ester learns strategies such as appropriate breathing, muscle relaxation, and how to tolerate various games (e.g., kickball, soccer, etc).

It takes a number of weeks and participation and support from Ester's parents and teachers, but Ester begins to show progress and a decreased level of distress during physical education class. Ester uses her "thermometer" to self-monitor and communicates her level of distress. Her parents and teachers remind her of the various techniques that she can use to relax and participate in physical education class.

Recommended Readings

Attwood, T. (2004). *Exploring feelings: Anxiety: Cognitive behaviour therapy to manage anxiety*. Arlington, TX: Future Horizons.

Kendall, P. C., Choudhury, M., Hudson, J., & Webb, A. (2002). *"The C.A.T. Project" manual for the cognitive behavioral treatment of anxious adolescents*. Ardmore, PA: Workbook Publishing.

Kendall, P. C., & Hedtke, K. A. (2006). *Cognitive-behavioral therapy for anxious children: Therapist manual* (3rd ed.). Ardmore, PA: Workbook Publishing.

Scarpa, A., White, S. W., & Attwood, T. (Eds.) (2013). *CBT for children and adolescents with high-functioning autism spectrum disorders*. New York, NY: The Guilford Press.

Comprehensive Behavioral Treatment for Young Children

Established Intervention

Comprehensive Behavioral Treatment for Young Children (CBTYC) programs involve intensive early behavioral interventions that target a range of essential skills which define or are associated with autism spectrum disorder (ASD) (e.g., communication, social, and pre-academic/academic skills, etc.). These interventions are often described as ABA (or applied behavior analysis), EIBI (or Early Intensive Behavioral Intervention), or behavioral inclusive programs.

Basic Facts

Number of articles reviewed:

NSP1 = **21** NSP2 = **20**

Age range of participants: Children 0-9 years

Skills increased:

- play (NSP1)
- academic and learning readiness (NSP2)
- communication, higher cognitive functions, interpersonal, and personal responsibility (NSP1&2)
- motor skills (NSP1&2)

Behaviors decreased:

- general symptoms (NSP1&2)
- problem behaviors (NSP1&2)

Detailed Description

- Intensive service delivery (typically 25-40 hours per week for 2-3 years) based on the principles of applied behavior analysis (ABA)
- Data-based decision making that targets the defining symptoms of ASD
- Typical interventions include the use of discrete trial teaching, incidental teaching, errorless learning, behavioral momentum, shaping, modeling and other interventions derived from ABA
- Individualized instruction in various settings (e.g., home, community, inclusive, and self-contained classrooms) and small group instruction

Example

Due to the complexity of CBTYC, it is difficult to develop an example that reflects all aspects of this type of intervention. Although programs typically follow a curriculum, each program is individualized to meet the needs of the child with ASD. The following is an example of what a morning might include for a young child in a comprehensive behavioral program.

Ellie is 3 years old and begins her day in a one-to-one teaching situation focused on basic play skills and imitation. Ellie's behavior therapist teaches basic direction following using prompting and modeling. For instance, Ellie learns to clean up her toys when her therapist states, "clean-up time, Ellie." The therapist provides gestural prompts (e.g., pointing) and models how to clean up the playroom (e.g., puts a doll in a basket, then hands the doll to Ellie). The behavior therapist then uses discrete trial training to teach Ellie to label basic household items and different foods. A snack break provides an opportunity for Ellie to make requests for preferred foods. Snack time also provides an opportunity to generalize compliance with directions and attending skills. After snack, Ellie moves to small group activities to work on social communication with same-age peers.

As Ellie progresses through the curriculum during the first year, she develops the ability to effectively communicate her wants and needs. Her tantrum behavior has decreased as her communication skills become fluent. She participates in basic turn-taking games, can follow directions in a small group, and responds to requests from peers.

Recommended Readings

Leaf, R., & McEachin, J. (1999). *A work in progress: Behavior management strategies and a curriculum for intensive behavioral treatment of autism*. New York, NY: DRL Books, Inc.

Lovaas, O. I. (2002). *Teaching individuals with developmental delays: Basic intervention techniques*. Austin, TX: PRO-ED, Inc.

Maurice, C., Green, G., & Foxx, R. M. (2001). *Making a difference: Behavioral intervention for autism*. Austin, TX: PRO-ED, Inc.

Maurice, C., Green, G., & Luce, S. (Eds.) (1996). *Behavioral intervention for young children with autism: A manual for parents and professionals*. Austin, TX: PRO-ED, Inc.

Language Training (Production)

Established Intervention

Language Training (Production) targets the ability of the individual with autism spectrum disorder (ASD) to emit a verbal communication (i.e., functional use of spoken words). Language Training (Production) was identified as an Emerging Intervention in NSP1 and, with the addition of three studies in NSP2, Language Training (Production) met criteria to be an Established Intervention.

Basic Facts

Number of articles reviewed:

NSP1 = **10** NSP2 = **2**

Age range of participants: Children 3–9 years

Skills increased:

- interpersonal and play (NSP1)
- communication (NSP1&2)

Detailed Description

Language Training (Production) makes use of various strategies to elicit verbal communication from individuals with ASD. Language Training (Production) begins with appropriate assessment and identification of developmentally appropriate targets. Individualized programs often include strategies such as:

- Modeling verbalizations for the individual with ASD to imitate
- Various prompting procedures including verbal, visual, gestural prompts
- Cue-Pause-Point
- Using music as part of language training
- Reinforcement for display of targeted verbal response

Example

Felix is a 2.5-year-old boy working with a speech language therapist and a behavior therapist to develop functional verbal communication. Following developmental assessments and an evaluation of items/activities that could be used to motivate Felix, an individualized program was implemented. Identified targets include approximations of "milk," "car" and "dog." The therapists and Felix's parents work throughout each day using the actual objects and modeling to encourage Felix to provide a verbal response. He is provided milk, his toy car, and his toy dog each time he makes a successful approximation such as "mmmmm" for milk.

Recommended Readings

Prelock, P., McCauley, R. J., Fey, M., & Kamhi, A. (Eds.) (2012). *Treatment of autism spectrum disorders: Evidence-based intervention strategies for communication and social interactions*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc.

Modeling

Established Intervention

One of the most effective ways to teach someone what to do is to show him or her how to do it. The goal of modeling is to correctly demonstrate a target behavior to the person learning the new skill, so that person can then imitate the model. Children can learn a great deal from observing the behavior of parents, siblings, peers, and teachers, but they often need to be taught what behaviors should be imitated.

Basic Facts

Number of articles reviewed:

NSP1 = **51** NSP2 = **28**

Age range of participants: Children and adolescents 3-18 years

Skills increased:

- higher cognitive functions (NSP1)
- academic (NSP2)
- communication, interpersonal, personal responsibility, and play (NSP1&2)

Behaviors decreased:

- problem behaviors (NSP1)
- sensory or emotional regulation (NSP1)

Detailed Description

There are two types of modeling—live and video modeling.

Live modeling occurs when a person demonstrates the target behavior in the presence of the child with autism spectrum disorder (ASD). When providing live modeling:

- Clearly outline, in writing, the target behavior to model.
- Ensure all individuals modeling the target behavior are doing so in a consistent manner. It may be helpful for parents/caregivers/therapists to practice together to make certain each person provides the same model.
- Obtain the child's attention prior to modeling the target behavior.
- Develop a plan to fade or stop the use of modeling to encourage the child to independently display the target behavior.

Video modeling occurs when you pre-record a person demonstrating the target behavior. Video modeling can be a great option for children/adolescents with an affinity for television shows, movies, or interest in seeing themselves on a monitor (i.e., television screen, computer monitor, video recorder monitor). Some children/adolescents may enjoy assisting in the production of the video.

Detailed Description *{cont.}*

- Anyone who can correctly and independently perform the task can serve as a model—this includes the person with ASD.
- Make sure your child is paying attention to and is interested in the video.
- Point out the important steps/features to your child during the video. Be sure to make the best quality video possible. Remember, after the initial time invested in making the video, it is an easy-to-use teaching tool, and is cost- and time-effective (e.g., the same video clip can be used by multiple individuals any time).

Example

Henry is a 6-year-old kindergartner with ASD. He had many successes during the school year including attending to story time, engaging in turn-taking activities, and following simple directions in a small group. A big challenge for Henry came at lunch time in the cafeteria and during library time when checking out books. Henry could not wait in line while providing peers with personal space. He would consistently stand too close to peers, resulting in a frustrating situation for the peer and, eventually, the teacher.

Henry loved watching YouTube videos of kids singing, dancing, and doing magic tricks. Knowledgeable in the fact that video modeling was an established intervention, Henry's teacher decided Henry might benefit from watching a video demonstrating the appropriate way to remain in line in the school cafeteria and library. His teacher also knew that Henry was able to imitate, as demonstrated in previous skill acquisition programs targeting adaptive behavior. Henry's teacher recruited a few older peers who Henry was familiar with to make the video. The teacher made use of a tablet with a built-in camera to film the video.

Henry was instructed to watch the video of his peers standing in line. He seemed to enjoy watching his peers on the tablet (i.e., just like his preferred YouTube videos). Henry's teacher pointed out a specific peer for Henry to imitate. Henry practiced standing in line just like his peers in the video. During the following week, prior to lunch time or library time, Henry's teacher reviewed the video model of waiting in line with Henry. After several days of viewing the video, Henry demonstrated the appropriate "waiting in line" behavior in the cafeteria and the library.

Recommended Readings

Buggey, T. (2009). *Seeing is believing: Video self-modeling for people with autism and other developmental disabilities*. Bethesda, MD: Woodbine House.

Murray, S., & Nolan, B. (2013). *Video modeling for young children with autism spectrum disorder: A practical guide for parents and professionals*. London, UK: Jessica Kingsley Publishers.

Nikopoulos, C., & Keenan, M. (2006). *Video modelling and behaviour analysis: A guide for teaching social skills to children with autism*. London, UK: Jessica Kingsley Publishers.

Naturalistic Teaching Strategies

Established Intervention

Naturalistic Teaching Strategies (NTS) are a compilation of strategies that are used to teach children skills in their home, school, and community. The basic concepts include using materials in the environment and naturally occurring activities as opportunities to increase adaptive skills. These strategies are primarily child-directed.

Basic Facts

Number of articles reviewed:

NSP1 = **27** NSP2 = **3**

Age range of participants: Children 0-9 years

Skills increased:

- interpersonal and play (NSP1)
- learning readiness (NSP2)
- communication (NSP1&2)

Detailed Description

When using NTS, consider the following guidelines:

- Observe your child to find out what motivates him or her, and then structure teaching interactions around those interests.
- Use materials your child is likely to encounter on a daily basis. For example, if you want to teach her to identify items that fall into the category "things you play with," you might use dolls, blocks, and cars that are available at home and at school.
- Teach skills in a variety of situations and settings (such as the home and community) while using a variety of materials (e.g., teach numbers by using different items such as pieces of candy or silverware).
- Provide consequences that are naturally found in the environment and have a direct relationship to the activity you are completing. For example, food might be a natural and direct reinforcer at lunch and toys might be a natural and direct reinforcer during "playtime."
- Provide loosely structured teaching sessions that vary based on the child's interests for that day. For example, if you are teaching your child to request objects of different sizes, you may need to use dolls rather than teddy bears if she shows a greater interest in dolls that day. Different names have been given to the intervention strategies included in the NTS category. These include: focused stimulation, incidental teaching, milieu teaching, embedded teaching, responsive education, and prelinguistic milieu teaching.

Example

Walter is working with a behavior specialist and his parents to identify common objects in his home. Walter enjoys stacking items and filling containers up (i.e., with rice, beans, or water) and emptying containers out. The behavior specialist and Walter's parents decide to use Naturalistic Teaching Strategies to increase his ability to identify common objects.

Walter's parents lay out many different items they hope to teach him to identify. For example, there are cups, hats, shoes, preferred toys, and books placed within easy access. There is also a large bin of beans in the living room that Walter loves to play in. As Walter demonstrates interest in playing in the bean bin, his mother takes out several cups to fill up/pour out with beans. Walter becomes very excited and reaches for the cup. His mother provides a verbal prompt "cup" and Walter responds with an approximation "K-k." His mother excitedly hands over the cup for Walter to fill up with beans. She does this repeatedly with different cups. Over several weeks, Walter's parents use this activity to generate attempts at labeling many items including shoes!

As Walter is able to approximate the names of common items, he is prompted to use the labels during his daily routine. For example, when reaching for his drink at the dinner table, he is prompted to say "cup." Many activities in Walter's home become opportunities to work on skill development.

Recommended Readings

Charlop-Christy, M. H. (2008). *How to do incidental teaching*. Austin, TX: PRO-ED, Inc.

Thompson, T., & Odom, S. (2011). *Individualized autism intervention for young children: Blending discrete trial and naturalistic strategies*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc.

Parent Training Package

Established Intervention

The Parent Training Package category is new to the NSP. NSP1 focused on the elements of the interventions used in studies in which parents acted as therapist or received training to implement various strategies. NSP2 made the change to highlight parents' and caregivers' integral role in providing a therapeutic environment for their family members with autism spectrum disorder (ASD).

Basic Facts

Number of articles reviewed:

NSP1 = **37*** NSP2 = **11**

Age range of participants: Children and adolescents 0-18 years

Skills increased:

- interpersonal and play (NSP1&2)

Behaviors decreased:

- general symptoms (NSP2)
- problem behaviors (NSP2)
- restricted, repetitive, nonfunctional behavior, interests, or activity (NSP2)

**The 37 studies identified in NSP1 were re-categorized into the current Parent Training category. The majority of the 37 in NSP1 were previously categorized in the Behavioral Package.*

Detailed Description

Parent training can take many forms including:

- *In vivo* individual training
- Group training
- Support groups with an educational component
- Training manuals

Examples of skills parents learned to use include:

- Strategies to develop imitation skills
- Commenting on the child
- Expectant waiting to elicit communication
- Appropriate sleeping routines
- Joint attention
- Development of play date activities

Example

Nico is a 3-year-old recently diagnosed with ASD. His parents have enrolled him in home-based services and other services (speech and OT) outside of the home setting. The behavior therapist and Nico's parents decide to begin working on play skills with Nico. The therapist begins providing parent training regarding evidence-based interventions to increase developmentally appropriate play.

Nico's parents learn how to identify preferred activities and items and how to use these items/activities to increase joint attention, pointing, and turn taking. They also use live modeling to act out play scenarios such as "going shopping" or "walking the dog." Finally, Nico's parents learn to how to develop a daily picture schedule to communicate upcoming events to Nico.

Recommended Readings

Ingersoll, B., & Dvortcsak, A. (2010). *Teaching social communication to children with autism: A practitioner's guide to parent training / A manual for parents* (2 volume set). New York, NY: The Guilford Press.

Rogers, S. J., Dawson, G., & Vismara, L. A. (2012). *An early start for your child with autism: Using everyday activities to help kids connect, communicate, and learn*. New York, NY: The Guilford Press.

Online Resources

Autism Internet Modules: Online training for parents, professionals, and caregivers. www.autisminternetmodules.org

Peer Training Package

Established Intervention

Difficulty interacting appropriately with peers is a commonly reported characteristic of autism spectrum disorder (ASD). Further, children with ASD often rely on adults for prompting and guidance. Peer Training Packages facilitate skill growth for children with ASD by training peers on how to initiate and respond during social interactions with a child on the spectrum. These programs have been used in school and community settings.

Basic Facts

Number of articles reviewed:

NSP1 = **43** NSP2 = **3**

Age range of participants: Children and adolescents 3-14 years

Skills increased:

- learning readiness (NSP2)
- communication and interpersonal (NSP1&2)

Behaviors decreased:

- restricted, repetitive, nonfunctional behavior, interests, or activity (NSP1)

Detailed Description

Some children on the spectrum frequently try to interact with peers, but may do so in unexpected or socially inappropriate ways. There are many factors to consider when designing a Peer Training Package including:

- The age and skill level of the children (with and without ASD) should be similar. You should choose peers who are socially skilled, compliant, regularly available, willing to participate, and able to imitate a model.
- The activities you include in the session should address the interests and preferences of both groups to ensure high motivation.
- Teach the peers how to get the attention of the individual with ASD, facilitate sharing, provide help and affection, model appropriate play skills, and help organize play activities.
- After training, have the peers interact with the individual with ASD in a structured setting during a familiar activity. This will allow the peers to practice their new skills in a comfortable environment.
- The group instructor should use prompts and feedback to facilitate interactions.
- Be sure to train in multiple settings and with multiple peers to increase the likelihood that all the children use their skills frequently. Different names of peer training programs include: Project LEAP, peer networks, circle of friends, buddy skills package, integrated play groups, peer initiation training, and peer-mediated social interaction training.

Example

Fiona is a 9-year-old girl who has made great progress in language/communication, but continues to face challenges when interacting with her peers. Initiating and maintaining interactions with peers is one of Fiona's IEP goals. Her special education teacher decides to make use of a Peer Training Package. The teacher consults with the behavior specialist to complete the appropriate assessments and identify neurotypical peers to work with Fiona.

The special education teacher and behavior specialist design a Peer Training Package tailored to meet Fiona's needs. They recruit several male and female peers to work with Fiona. The initial goal is to get Fiona to sit with her classmates at lunch. The peers work with the teacher and behavior specialist to understand goals and role-play. The peers are motivated to have Fiona join them at lunch.

During the first several school lunch periods, the teacher and behavior specialist provide verbal prompts to the peers and Fiona. The teacher and behavior specialist are able to gradually fade the prompts. Fiona is now motivated to join her peers at lunch and has initiated some verbal exchanges. The special education teacher is excited to generalize the Peer Training Package to recess and gym.

Recommended Readings

Cater, E. W., Cushing, L. S., & Kennedy, C. H. (2008). *Peer support strategies for improving all students' social lives and learning*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc..

Reid, D. H., & Parsons, M. B. (2002). *Facilitating play dates for children with autism and typically developing peers in natural settings: A training manual*. Morganton, NC: Habilitative Management Consultants.

Online Resources

LEAP Preschool: An Inclusive Model of Early Autism Intervention
www.youtube.com/watch?v=vVl08lHZdZA

Teacher's Toolbox
www.ttoolbox.com/teacher_training.htm

Pivotal Response Treatment®

Established Intervention

Pivotal Response Treatment® focuses on targeting "pivotal" behaviors related to motivation to engage in social communication, self-initiation, self-management, and responsiveness to multiple cues. Key to the delivery of PRT® is parent involvement and implementation in the natural environment such as the home, community, and school setting.

Basic Facts

Number of articles reviewed:

NSP1 = **11** NSP2 = **6**

Age range of participants: Children 3-9 years

Skills increased:

- interpersonal (NSP1)
- learning readiness (NSP2)
- communication and play (NSP1&2)

Detailed Description

Pivotal Response Treatment® is also referred to as Pivotal Response Training®, Pivotal Response Teaching® and the Natural Language Paradigm. Like Naturalistic Teaching Strategies, PRT® aims to teach children to respond to various teaching opportunities within their natural environment, and to increase independence from prompting. There are many pivotal areas targeted in PRT®. For example, motivation, self-initiation, self-management, and responding to multiple cues are typically addressed.

- Motivation can be enhanced by increasing choice, making learning materials meaningful by: building a direct relationship between the target behavior and the reinforcer; incorporating both new and mastered tasks into the day; and reinforcing reasonable attempts (none of us do new tasks perfectly!).
- Self-initiation involves teaching children to take action in the world so they can be more independent.
- Self-management involves teaching children to regulate their own behavior by tracking their progress and accessing reinforcers for their successes.
- Responding to multiple cues involves teaching children to respond to the diverse statements of others, or to different kinds of materials.

Example

Ms. Tanaka has noticed that her son Hideki has difficulty asking questions about novel items that interest him. She decides she is going to teach her son to ask questions like, "What is that?" She knows that Hideki has a particular interest in books about trains, so she purchases a couple of pop-up books on this topic. She wants to create an environment that motivates him to learn.

Hideki's mother sits near him and looks inside the bag that contains the books. She verbally prompts Hideki to say, "What's that?" She responds, "It's a book about trains." She then pulls out the book, opens it, and allows him to look at the trains. They look through the book together and comment on the trains. She has also been helping him learn to make comments to others about things that are interesting to him.

They finish the book and set it aside. Ms. Tanaka looks in her bag again and verbally prompts her son by saying, "What's that?" She follows the same procedure, and uses another book to share his interest and work on making comments. She has one more book left. After she looks in the bag, she looks at her son expectantly. After two seconds Hideki says, "What's that?" Hideki's mother is ecstatic! She presents her son with the book and looks through it with him while providing lots of attention.

Recommended Readings

Koegel, R. L., Schreffirnan, L., Good, A., Cerniglia, L., Murphy, C., & Koegel, L. K. (1998). *How to teach pivotal behaviors to children with autism: A training manual*. Santa Barbara, CA: University of California.

Koegel, R. L., & Koegel, L. K. (2012). *The PRT pocket guide: Pivotal response treatment for autism spectrum disorders*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc.

Koegel, R. L., & Koegel, L. K. (2006). *Pivotal response treatments for autism: Communication, social, and academic development*. Baltimore, MD: Paul H. Brookes Publishing Co., Inc.

Online Resources

Koegel Autism: Pivotal Response Treatment (PRT)® Training and Services
www.autismprthelp.com

University of California Santa Barbara Koegel Autism Center
http://education.ucsb.edu/autism

Schedules

Established Intervention

Schedules can be used for children with autism spectrum disorder (ASD) to increase their independence and allow them to plan for upcoming activities. A schedule simply identifies the activities that must be completed during a given time period and the order in which these activities should be completed.

Basic Facts

Number of articles reviewed:

NSP1 = **11** NSP2 = **2**

Age range of participants: Children 3-9 years

Skills increased:

- self-regulation (NSP1&2)

Detailed Description

Children with ASD may better handle transitions when they can predict what will happen next. This can be accomplished through the use of schedules. Schedules can be used anywhere—at home, in classrooms, during doctors' visits, or on community outings. Schedules can be used for any activity —including leisure, social interaction, self-care, and housekeeping tasks. It is important for children and adolescents to possess prerequisite skills of picture identification (when using pictures) or reading (when using words/phrases) when considering use of schedules. Schedules:

- Can be used once per day, multiple times per day, or once per week.
- Are often used to help teach "first, then" concepts—such as, first complete your chores, then you can watch television.
- Should be followed by access to preferred activities. You can gradually increase the number of activities required before giving your child access to preferred activities.
- Can be presented in multiple formats. You can use pictures (real photos or Boardmaker®), written or typed schedules, 3-D objects, or personal digital assistance programs.

The use of schedules may be as simple as:

- Placing the pictures/texts on the board at the time of the activity
- Pointing to the activity immediately prior to beginning each step or activity
- Taking the picture off the board when the step or activity is completed
- Placing the picture in a "done" container such as a bin, box, or pile

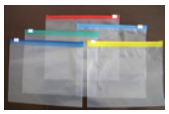
Example

Carly is learning to pack her own snack for school. Although she is making progress, she consistently forgets certain steps that would allow her to be successful at independently packing her snack.

Her mother and behavior therapist developed a picture schedule to promote independence and success when Carly is completing this task. Her behavior therapist completed a brief assessment to determine the steps Carly could not complete independently. These steps were outlined using the picture schedule shown here. The schedule consisted of pictures and words, as Carly is able to read some sight words. Carly's mom and behavior therapist modeled the use of the schedule for Carly. With the use of the picture schedule, Carly is able to make a snack with no prompting from an adult.

Take out snack

Take out scoop



Take out bags

Two scoops

Put in school bag

Clean up

Recommended Readings

Cohen, M. J., & Sloan, D. L. (2007). *Visual supports for people with autism: A guide for parents and professionals*. Bethesda, MD: Woodbine House.

McClannahan, L. E., & Krantz, P. J. (2010). *Activity schedules for children with autism: Teaching independent behavior* (2nd ed.). Bethesda, MD: Woodbine House.

Scripting

Established Intervention

Scripting occurs when an individual with autism spectrum disorder (ASD) is provided guidance as to how to use language to initiate or respond in certain situations. These interventions involve developing a verbal and/or written script about a specific skill or situation which serves as a model for the child with ASD. Scripts are usually practiced repeatedly before the skill is used in the actual situation. Scripting was identified as an Emerging Intervention in NSP1 and, with the addition of five studies in NSP2, Scripting met criteria to be an Established Intervention.

Basic Facts

Number of articles reviewed:

NSP1 = **6** NSP2 = **5**

Age range of participants: Children and adolescents 3–14 years

Skills increased:

- play (NSP2)
- communication and interpersonal (NSP1&2)

Detailed Description

Scripting consists of providing the child/adolescent with language to successfully complete an activity or interaction.

- Ensure prerequisite skills are mastered. For example, the child should have necessary reading skills or be able to imitate a verbal model.
- Scripting is typically used in conjunction with behavioral interventions such as reinforcement, modeling, and prompting.
- Scripts can be useful in a variety of social situations in the school, home, and community setting.
- Scripts should be faded as soon as possible to increase independence and spontaneity.

Example

Liam is an 8-year-old boy who often enjoys going to sporting events and restaurants. Liam's parents and behavior therapist decide to target independent ordering of food or snacks (i.e., at concession stands). His behavior therapist develops a brief script detailing the language necessary to order his preferred snacks at a concession stand. Liam's family is often at baseball games to watch his older brother play. Liam's therapist and parents model how to order and provide Liam with an opportunity to practice his script.

With his script ready to go, Liam proceeds to make his first order of nachos at the concession stand. He required gestural prompts during the first few interactions. With repeated opportunities, Liam became proficient at ordering preferred snacks. A fading plan was initiated to promote independence. At the conclusion of the baseball season, Liam was able to order four of his preferred snacks independently.

Recommended Readings

Griffin, S., Harris, R., & Hogdon, L. (2013). *Teach me with pictures: 40 fun picture scripts to develop play and communication skills in children on the autism spectrum*. London, UK: Jessica Kingsley Publishers.

McClannahan, L. E., & Krantz, P. J. (2005). *Teaching conversation to children with autism: Scripts and script fading (topics in autism)*. Bethesda, MD: Woodbine House, Inc.

Online Resources

Lovaas Institute Blog
www.lovaas.com/blog/archives/10-Dynamic-and-Creative-Ways-to-Teach-Pretend-Play-Skills-to-Children-with-Autism

Self-management

Established Intervention

Independence is greatly valued in our society because it increases the likelihood of success in any situation and setting. Self-management strategies have been widely used to promote independence with tasks in which adult supervision is not needed, accepted, or expected. The process can involve teaching individuals with autism spectrum disorder (ASD) to evaluate and record their performance while completing an activity. Self-management is also used to help these individuals monitor social behaviors and disruptive behaviors. Finally, these strategies involve teaching individuals to gain access to preferred items/activities for a job well done.

Basic Facts

Number of articles reviewed:

NSP1 = **21** NSP2 = **10**

Age range of participants: Adolescents 15-21 years

Skills increased:

- academic, interpersonal, and self-regulation (NSP1)
- communication (NSP2)

Behaviors decreased:

- restrictive, repetitive, nonfunctional patterns of behavior, interests, or activity (NSP2)

Detailed Description

Self-management strategies focus on teaching individuals to be aware of and regulate their own behavior so they will require little or no assistance from adults. Because self-management is a relatively complex skill set, it is important to determine that appropriate prerequisite skills are in place.

Before starting a self-management intervention, make certain your child can perform each component of the task. Initially, you may need to use other strategies like live or video modeling to teach the basic skills.

We all "work" for reinforcers—like a paycheck from your boss and a smile from your child! Before you begin, make sure you have identified reinforcers that will be meaningful for your child.

After completing a step in the activity, your child should evaluate his own efforts to determine if he performed the step correctly.

The evaluation process should consist of:

- Clear criteria so the individual knows when he has succeeded and when he has fallen short of the mark

{cont.}

Detailed Description *{cont.}*

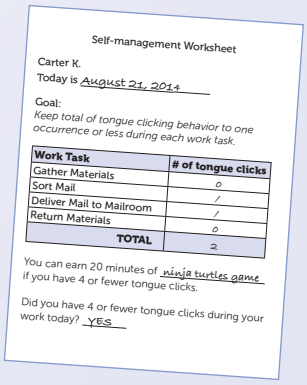
- A systematic method for evaluating performance (e.g., checklists, wrist counters, or Velcro smiley faces that move from the incomplete column to the completed column of a task list)
- Adults who can provide neutral feedback about the accuracy of the recording. Prompts may be necessary so your child can learn to correctly self-record his behavior.
- Adults who can teach your child to seek access to reinforcers when he has met the pre-established criteria
- Initially focusing on rewarding accuracy in recording and not accuracies in performance
- A plan to systematically fade or reduce the number of cues given by adults during self-management

Benefits of self-management include:

- Building awareness of your behavior
- Accountability for carrying out a task
- Direct and immediate feedback when recording your own data
- Multi-tasking (i.e., managing your own behavior and recording it)
- Decreasing social stigma that occurs when an adult's assistance with simple and personal tasks is required

Example

Carter is a 16-year-old student who loves working at a local business as part of his vocational training program. He has made great progress in many of his IEP goals and objectives. However, he continues to engage in self-stimulatory behavior that is described as "tongue clicking." Carter's tongue clicking can be a distraction to others as it can be loud and frequent.



Self-management Worksheet

Carter K.

Today is August 21, 2014

Goal:

Keep total of tongue clicking behavior to one occurrence or less during each work task.

Work Task	# of tongue clicks
Gather Materials	0
Sort Mail	1
Deliver Mail to Mailroom	1
Return Materials	0
TOTAL	2

You can earn 20 minutes of ninja turtles game if you have 4 or fewer tongue clicks.

Did you have 4 or fewer tongue clicks during your work today? YES

Carter's vocational trainer and behavior specialist conducted an assessment of the tongue clicking behavior and determined that it is automatically reinforced. Carter is aware of the behavior and will stop engaging in tongue clicking when asked. The vocational trainer and behavior specialist decided to make use of a simple self-management protocol to decrease the frequency of tongue clicking during Carter's work at a local business. The vocational trainer worked with Carter to teach accurate self-monitoring. Carter is now able to independently monitor his tongue clicking behavior while working.

Recommended Readings

Baker, B. L., & Brightman, A. J. (2004). *Steps to independence: Teaching everyday skills to children with special needs* (4th ed.). Baltimore, MD: Paul H. Brookes Publishing Co., Inc.

Koegel, L. K., Koegel, R. L., & Parks, D. R. (1992). *How to teach self-management to people with severe disabilities: A training manual*. Santa Barbara, CA: University of California.

Social Skills Package

Established Intervention

Social skills refer to a wide range of abilities including providing appropriate eye contact, using gestures, reciprocating information, initiating or ending an interaction. The challenges individuals with autism spectrum disorder (ASD) face regarding social skills vary greatly. The general goal of any Social Skills Package intervention is to provide individuals with ASD the skills necessary to meaningfully participate in the social environments of their homes, schools, and communities.

Basic Facts

Number of articles reviewed:

NSP1 = **14** NSP2 = **21**

Age range of participants: Adolescents 13-18 years

Skills increased:

- communication, learning readiness, placement, and play (NSP2)
- interpersonal (NSP1&2)

Behaviors decreased:

- general symptoms (NSP2)
- problem behaviors (NSP2)
- restricted, repetitive, nonfunctional patterns of behavior, interests, or activity (NSP2)
- sensory or emotional regulation (NSP2)

Detailed Description

Social Skills Package interventions can take many forms. Often, intervention packages include use of reinforcement, prompting, and modeling. A Social Skills Package intervention may occur in a one-to-one setting, in a peer dyad, or in a small group. Targets may include behaviors such as:

- Recognizing facial expressions
- Turn-taking in conversations
- Initiating an interaction and joint attention
- Problem solving

Example

Dexter was a 9-year-old attending third grade at a public elementary school. Dexter seemed to enjoy being around peers. He would follow certain peers in the classroom and on the playground and laugh at some of the silly interactions of his peers.

Dexter spent time in the typical third grade classroom, but was provided time with his behavior specialist, speech therapist, and occupational therapist. During the most recent IEP meeting, the team decided to increase time spent targeting social skills goals. Objectives included teaching Dexter how to ask a peer to play or to request joining in a group already at play.

A baseline measure over one week indicated that Dexter never asked a peer to play and did not ask to join a group of peers at play. School professionals decided to develop a Social Skills Package for Dexter that would include one-to-one work with school staff in which Dexter practiced various ways to ask a peer to play. The plan was to target play requests in a peer dyad in a structured setting, then free time in the classroom, and recess. Modeling and prompting were also used and systematically faded as Dexter demonstrated independence in his ability to ask a peer to play.

After several weeks targeting Dexter's ability to request to play, he began to independently make requests of peers in his classroom setting. The Social Skills Package developed by Dexter's IEP team members included a systematic progression toward relatively more complex social behaviors in the school environment. Dexter's parents indicated interest in replicating the success in the home setting by hosting play dates for Dexter and a classmate.

Recommended Readings

McKinnon, K., & Krempa J. L. (2002). *Social skills solutions: A hands-on manual for teaching social skills to children with autism*. New York, NY: DRL Books, Inc.

McGinnis, E. (2011). *Skillstreaming in early childhood: A guide for teaching prosocial skills* (3rd ed.). Champaign, IL: Research Press Co.

McGinnis, E. (2011). *Skillstreaming the elementary school child: A guide for teaching prosocial skills* (3rd ed.). Champaign, IL: Research Press Co.

McGinnis, E. (2011). *Skillstreaming the adolescent: A guide for teaching prosocial skills* (3rd ed.). Champaign, IL: Research Press Co.

Story-based Interventions

Established Intervention

Story-based interventions identify a target behavior and involve a written description of the situations under which specific behaviors are expected to occur. Most stories aim to increase perspective-taking skills and are written from an "I" or "some people" perspective. The most well-known story-based intervention is Social Stories™.

Basic Facts

Number of articles reviewed:

NSP1 = **21** NSP2 = **15**

Age range of participants: Children and adolescents 3-14 years

Skills increased:

- communication and learning readiness (NSP2)
- interpersonal and self-regulation (NSP1&2)

Behaviors decreased:

- problem behaviors (NSP2)

Detailed Description

Story-based interventions are a simple way to teach individuals with autism spectrum disorder (ASD) to manage challenging situations in a wide variety of settings. When using a story-based intervention, use written descriptions for:

- The target behavior
- The situations in which the behavior should occur
- The likely outcome of performing the behavior. This often includes a description of another person's perspective. Although the information included in the story will vary based on your child's cognitive and developmental level, some typical features include:
  - Information about the "who/what/when/where/why" of the target behavior
  - Being written from an "I" or "some people" perspective with the goal of increasing perspective-taking skills
  - Discussion or comprehension questions to make certain the child understands the main points
  - Pictures to enhance comprehension of the skills

Story-based interventions are often used with individuals who have acquired reading and comprehension skills, but may also be used with individuals with strong listening comprehension skills.

Example

Note: This example includes behavioral components in addition to the story-based intervention.

When Mr. Santiago tries to talk on the telephone at home, his son Alejandro has trouble waiting. Alejandro tries repeatedly to get his father's attention by climbing on him, bringing him activities, and eventually screaming and crying. Mr. Santiago wants to teach his son how to behave when someone is on the telephone.

Alejandro's father develops a story that is written from his son's perspective, and addresses the following questions:

- What is he supposed to do? The answer: select a highly preferred activity such as playing with his Army men or reading a book.
- When is he supposed to demonstrate this behavior? The answer: When his father is on the phone.
- What would likely happen if he correctly performed the behavior? The answer: He will probably be able to get extra attention when his father gets off the phone. The time has come for Mr. Santiago to practice the story with his son. Mr. Santiago reviews the story with Alejandro and asks him comprehension questions along the way to be sure he understands it (e.g., "What should you do when the phone rings?"). He role-plays the situation a couple of times with his son to be sure he understands the procedures. Alejandro's father then asks a friend to call so that he can have a brief (one minute) conversation on the phone. As soon as the phone rings, Mr. Santiago hands Alejandro the story and then picks up the phone. Alejandro begins looking at the book and then decides to pick one of the activities from it. Mr. Santiago quickly gets off the phone and praises Alejandro for playing with his Army men. He then plays with his son for the next five minutes. He knows this is only the beginning. Mr. Santiago will gradually increase the expectation that Alejandro behave appropriately while he is on the phone. He started with one minute, but he wants to work his way up to 10 minutes.

Recommended Readings

Gray, C. (2010). *The new social story book* (10th ed.). Arlington, TX: Future Horizons.

Emerging Interventions

Emerging Interventions are those for which one or more studies suggest they may produce favorable outcomes. However, before we can be fully confident that the interventions are effective, additional high quality studies are needed that consistently show these interventions to be effective for individuals with ASD. Based on the available evidence, we are not yet in a position to rule out the possibility that Emerging Interventions are, in fact, not effective.

A large number of studies fall into the Emerging level of evidence. We believe scientists should find fertile ground for further research in these areas.

The following interventions have been identified as falling into the Emerging level of evidence:

- Augmentative and Alternative Communication Devices
- Developmental Relationship-based Treatment
- Exercise
- Exposure Package
- Functional Communication Training
- Imitation-based Intervention
- Initiation Training
- Language Training (Production & Understanding)
- Massage Therapy
- Multi-component Package
- Music Therapy
- Picture Exchange Communication System
- Reductive Package
- Sign Instruction
- Social Communication Intervention
- Structured Teaching
- Technology-based Intervention
- Theory of Mind Training

Unestablished Interventions

Unestablished Interventions are those for which there is little or no evidence in the scientific literature that allows us to draw firm conclusions about their effectiveness with individuals with ASD. There is no reason to assume these interventions are effective. Further, there is no way to rule out the possibility these interventions are ineffective or harmful.

The following interventions have been identified as falling into the Unestablished level of evidence:

- Animal-assisted Therapy
- Auditory Integration Training
- Concept Mapping
- DIR/Floor Time
- Facilitated Communication
- Gluten-free/Casein-free diet
- Movement-based Intervention
- SENSE Theatre Intervention
- Sensory Intervention Package
- Shock Therapy
- Social Behavioral Learning Strategy
- Social Cognition Intervention
- Social Thinking Intervention

There are likely many more interventions that fall into this category for which no research has been conducted or, if studies have been published, the accepted process for publishing scientific work was not followed. There are a growing number of interventions that have not yet been investigated scientifically. These would all be Unestablished Interventions. Further, any interventions for which studies were published exclusively in non-peer-reviewed journals would be Unestablished Interventions.

Final Considerations

As you provide services to students with ASD, there are many interventions from which you can choose.

Although a great deal more research is necessary to determine whether numerous interventions can lead to favorable outcomes, scientists have already conducted enough research to show that many interventions are effective.

The positive news is that there are now 14 Established Interventions that have sufficient research support to demonstrate they are effective. The overwhelming majority of these interventions were developed in the behavioral literature. Importantly, several interventions were also influenced by fields such as special education and developmental psychology.

Selecting among these 14 Established Interventions may still pose challenges. This is one of the reasons professional judgment (Chapter 3) and family input (Chapter 4) are essential. We hope the upcoming chapters clarify the roles of professional judgment and family input in the delivery of evidence-based practice in the schools. It is not possible to develop systematic capacity to deliver research-supported interventions without first understanding the information contained in the present chapter.

We hope you are on your way to providing evidence-based practice to students with ASD in your schools!

Findings Related to Interventions for Adults

In spite of the burgeoning population of adults with ASD, there is little empirical research to guide intervention for this population. The overwhelming majority of research studies to date focus on interventions for children and adolescents. In our review of all the existing adult intervention literature, only 27 studies met inclusion criteria for adults. Because of the limited research on adult interventions, there was one Established intervention for adults identified in NSP2—Behavioral Interventions—as well as one intervention identified as Emerging.

More individuals with ASD than ever before are moving into adulthood and will require services, housing, and jobs. Because there is so little research on adult interventions, the autism community is currently able to provide only limited guidance related to best practices. A number of the strategies we use with children and adolescents appear to also be effective with adults, delivered in a more developmentally appropriate way.

3

Professional Judgment and Data-based Decision Making

As we go through our daily lives, we sometimes base our decisions on personal perspectives, or "gut feelings." When it comes to making intervention decisions for students with autism spectrum disorder (ASD), however, it's critical to be more systematic in our approach.

In previous chapters, we discussed the importance of making intervention decisions, in part, on the strength of scientific evidence supporting the intervention being considered. You have learned that there are a number of interventions that are known to be effective. You might ask, then, "Can't I just go to the list of Established Interventions, close my eyes, and pick one?" We never recommend this kind of "cookbook method" to selecting interventions. We believe your professional judgment is a critically important part of the decision-making process. You must play a significant role—as appropriate—in the selection, implementation, and assessment of interventions for your students with ASD.

Why is professional judgment so important?

It's important because selecting and implementing interventions is a complex process! There are so many intervention options available to school personnel when they select interventions for students with ASD. Even if you restrict your choices exclusively to interventions that have produced favorable outcomes in research, you will need to select among the field of 14 identified by the National Standards Project, Phase 2 (NSP2). This means your professional judgment will play a central role.

Your experience working with a specific child with ASD, your understanding of interventions that have been effective or ineffective in the past, and your awareness of the environment in which the intervention would be implemented—all will help you identify which intervention might be most useful.

Since research is ongoing and best practices evolve, your professional judgment also includes your awareness of additional research support beyond what is published in the *Findings and Conclusions* report of NSP2.

In summary, professional judgment is certainly more than just relying on your "gut" to tell you what to do. It involves {1} integrating information about a student's unique history, {2} an awareness of current research findings, and {3} the need to make data-based intervention decisions. In the following pages, we explore these three critical components in more depth. Understanding the importance of professional judgment will help you make your voice heard when intervention decisions are made. Without your input, the best intervention selection decisions may not be made.

Integrating Information About the Student

Your professional judgment comes into play when you have specific information that sheds light on the appropriateness of an intervention for a given student.

Consider the case of Chun, a third-grade boy diagnosed with ASD who has a history of becoming obsessed with written materials (e.g., magazines, books). He engages in high rates of self-stimulatory behavior and avoids school tasks when he has access to written materials. In addition, whenever books or magazines are taken away from him, he throws objects and hits anyone who is nearby.

Armed with this knowledge, you recommend against using a story-based intervention package. Despite its inclusion as an Established Intervention in the *Findings and Conclusions* report of NSP2, your professional judgment is that interventions requiring written materials (like a Social Story™) are not a good choice for Chun at this time.

This is not to say that a story-based intervention package will never be appropriate. In this case, you would need to develop an intervention to reduce Chun's response when written materials are taken from him. At that point, a story-based intervention package may be beneficial for other goals you have set for Chun. Throughout this process, your professional judgment (which is informed by both data and experience) should influence intervention selection.

Awareness of Additional and New Research Findings

The National Standards Project, Phase 2 (NSP2) report provides a strong foundation upon which to base intervention decisions. Even so, there will be times to look beyond the results of the report.

For example, NSP2 included articles published through 2012. We are pleased to report that additional research has been conducted and published since this date. If you are aware of additional well-controlled studies that show beneficial outcomes for an intervention, you might give serious consideration to the intervention.

Your awareness of additional research on any of the interventions for ASD will inform your judgment about which interventions will be most appropriate for a student. Articles that were excluded from the NSP2 may be one source of additional research that you might consider. Similar to other evidence-based practice guidelines, the NSP2 set clear parameters for its review and report.

For example, the following studies were excluded from the NSP2 review:

- Articles in which children and adolescents with ASD also had various co-occurring conditions (see Differential Diagnosis and Co-morbid Conditions section of Chapter 1). If {a} an individual had a rare disability and/or disorder in conjunction with ASD and {b} a study shows the intervention is not effective, it is impossible to know whether the intervention was ineffective for individuals on the autism spectrum or children and adolescents with both ASD and additional conditions.
- Articles that focused on the "change agents" (e.g., educators, therapists, or parents). The goal was to focus on intervention as it relates to the individual with ASD.

By excluding articles looking at children and adolescents with co-occurring conditions and the change agent, the number of studies reviewed for a given intervention was, at times, reduced.

As a professional, you are likely aware that many professional organizations advise against the use of Facilitated Communication, an Unestablished Intervention, due to concerns regarding "immediate threats to the individual civil and human rights of the person with autism..." (American Psychological Association, 1994). These advisements were written based on all of the research that had been published to date on Facilitated Communication. In this case, your professional judgment should also play a role in intervention selection.

You may also be aware of additional studies beyond the ASD literature that should influence your decision-making process. Whenever possible, you should make decisions about the effectiveness of an intervention based on research involving the specific population you are serving. That is, if you serve a child on the autism spectrum, you should make intervention decisions based, in part, on the scientific evidence supporting a given intervention specifically as it pertains to that population.

There may also be occasions when information from the National Standards Project or similar projects must be supplemented by research in other areas. You may have information about interventions for symptoms that can co-occur with ASD and are the source of concern for the student. For example, some children and adolescents experience anxiety or depression. There are research-supported interventions for anxiety and depression for individuals who are not diagnosed with an ASD. Your awareness of this important literature should assist in intervention selection.

We hope we have made it clear that your professional judgment can and should play an important role in intervention selection. Further, professional judgment should always be informed by data. For this reason, we spend the rest of this chapter discussing data collection procedures, strategies for analyzing data, and decision-making guidelines for modifying interventions based on data. After all, intervention selection is only the first step in a dynamic process. We should all be prepared to consider alternate intervention choices if the data show that an intervention does not result in timely progress for students' targets.

Data Collection

Data collection is essential in your work with students with ASD. It is relevant whenever you develop an intervention designed to increase skills or to decrease behaviors that interfere with life functioning. Why is data collection so critical? Collecting data before and after you put an intervention into practice helps you assess whether your student is making progress.

We all tend to rely on anecdotal evidence (e.g., what we happen to notice, what our "gut" tells us, etc.). Although it seems helpful, it is often unreliable. Therefore, we should only use anecdotal evidence alongside empirical evidence. Consider a behavioral intervention (token

systems) as an example. Token systems are commonly used in school and home settings. Token systems typically include developing a "neutral" item such as a poker chip as a valuable commodity that can be exchanged for desired items (e.g., an action figure) or activities (e.g., five minutes playing a computer game). Students can "earn" tokens for specified appropriate behaviors. These systems can be an efficient way to increase adaptive behaviors. When educators and parents meet to discuss a student's behavior, they might also discuss the use of token systems in the classroom.

In this example, John's parents ask if the token system is effective with their son. If John's teacher doesn't collect data regularly, her response might be influenced by a number of factors. If John has had a good week, she might say, "John seems to be talking out of turn much less frequently in the classroom since I started using the token system." On the other hand, if John had a particularly bad day, she might respond more negatively: "It doesn't seem like the token system has affected John's talking out much at all." We have all made observations like these from time to time.

But consider the downside of this type of anecdotal evidence:

- We are more likely to remember what has happened in the last day or two than how John has responded since the token system was introduced.
- Human beings tend to look for confirmatory evidence. If we believe the token system will be effective, we are more likely to pay attention when John is doing better. If we believe John is not likely to respond to the token system, we are likely to pay attention when John is breaking the rules.
- Educators spend much of the day multi-tasking (i.e., providing discipline, teaching lessons, grading papers). When you are this busy, you are more likely to notice when things go wrong than when things go right.

Can you really be expected to accurately recall the effectiveness of an intervention over the course of several weeks or months? No. Data collection is important because it provides you with a firm basis on which to draw conclusions and make decisions about intervention effectiveness. Before you can do so, you need a foundation in data collection procedures.

The idea of collecting data can seem overwhelming. Here are a few recommendations for building data collection into your daily activities:

- Use efficient data collection techniques. You do not typically need to collect data throughout the entire day.
- When possible, select data collection procedures that can be used while you perform your other essential duties (see Procedures for Collecting Data section).
- Get help while you perform essential duties. The school psychologist, behavior analyst, principal, or other professionals can often assist with data collection.

Setting Goals and Defining Target Behaviors

Setting Goals

School professionals typically have two goals when targeting behavior change. First, they may try to decrease maladaptive or problem behavior. Behavioral reduction interventions are put in place when students show excessive behaviors (e.g., self-stimulatory behavior, aggression, self-injury, disruptive behavior, etc.). Skill acquisition interventions are put in place when students show a deficient level of responding (e.g., adaptive, communication, social functioning, etc.). Before data collection begins, you must develop a clear goal for the intervention, irrespective of whether you plan to put a behavioral reduction or skill acquisition intervention into place. There are two rules that can help you identify an appropriate goal.

The first rule applies what is known as the "dead man's test." Whenever possible, it is best to write a target behavior so that it clearly identifies what the student should do (instead of what she should *not* do). As you develop your goal, make sure it passes this test.

The "dead man's test" is a simple one—just be sure that your goal does not include an activity a dead man might be able to accomplish. For example, let's say your student, Mario, obsessively sharpens his pencil. The constant pencil sharpening interferes with the time he spends on his assigned tasks and disrupts the students around him. You set a goal of "Mario will not sharpen his pencil in class." Unfortunately, your goal does not pass the test, since a dead man is perfectly capable of not sharpening his pencil! Instead, consider setting a goal of "Mario will sharpen his pencil only once per class." Can a dead man sharpen his pencil once per class?

The second rule is related to relevance. Before we begin the process of data collection, we need to make certain a behavior should actually be targeted for change. You can determine this by identifying whether a change in the behavior would actually produce meaningful improvements. Learning to communicate, play with peers, or study often leads to meaningful improvements in a student's life. Similarly, "reducing disruptive behavior" may lead to improvements in a student's social interaction with peers and increase the amount of time spent on task.

There are two issues to consider before you make a final determination about a goal:

1. Goals should be developmentally appropriate. A student who can label 200 pictures of objects but cannot request one of those items without beings asked "What do you want?" should not begin working on the next 200 labels until basic requesting skills have been targeted for improvement.
2. Some behaviors are only irritating to adults who share the life of an individual with ASD. A child who yawns excessively might distract the teacher at the front of the class. But if the student gets his work done and his classmates do not seem to notice, this "disruptive behavior" should not necessarily be targeted for change.

You will need to use your professional judgment to identify an achievable goal for the student. For example, you may attempt to decrease the number of times a student "talks out of turn." A baseline frequency count reveals that the student talks out of turn 100 times during an average school day. You must decide what a reasonable and achievable goal may be for the student and whether your goals should shift over time.

Your professional judgment tells you the final goal should be that the student does not talk out of turn more than the other students in the class. You collect data on the frequency of "talking out of turn" for students in your class and decide it is acceptable to talk out of turn eight times during each school day. You know that going from 100 to eight times a day is not going to happen overnight, so your first goal is to reduce his talking out to 75 times a day. Although this number is still excessively high, you want him to be successful. You are now ready to proceed to intervention, with ongoing data collection to assess its effectiveness. You will need to set a number of intermediary goals (e.g., 50, 25, 10) before you expect him to talk out eight or fewer times per day.

Defining Target Behaviors

Once you have established your goal, you will need to clearly define the target behavior. Its definition should be written with enough clarity that a stranger would be able to identify the presence or absence of the target behavior. Let's take the example of the following target behavior: "Given the choice of three pictures, the student will point to a picture of the correct animal in receptive labeling tasks." A stranger (who happens to be familiar with a speech-language pathologist's jargon) should be able to identify the presence of the target behavior (e.g., the student correctly pointed to the picture of the dog when the teacher said "Point to the dog.") or the absence of the target behavior (e.g., the student incorrectly points to the picture of a goat when the teacher said "Point to the dog.").

You will note that this target behavior is very specific, observable, and can be easily measured. There are many behaviors, however, that are written in a vague way. For example, to state the same goal as "The student will recognize the correct picture when completing receptive labeling tasks" is not very measurable. How do you know if the student *recognizes* it or not? Can you actually observe someone "recognizing" the correct picture? No. It also does not include what the parameters of the observation may involve. For example, are you supposed to show the child one picture, two pictures, three pictures, or more when completing this receptive labeling task?

As you evaluate your definition, you should be able to answer each of the following questions:

- Is the definition specific?
- Is the target behavior observable?
- Is the target behavior measurable?

Procedures for Collecting Data

There are many data collection options (Alberto & Troutman, 2003; Webber & Scheuermann, 2008). Some data collection procedures that are used most often include frequency, time sampling, duration data, and latency data.

- **Frequency**. Frequency data involve counting the number of times a behavior has occurred within a given time period.
- **Time sampling**. Time sampling data involve determining whether or not behaviors occur within a specific interval of time.

- **Duration**. Duration data involve determining the length of time over which a behavior occurs.
- **Latency**. Latency data involve the length of time that passes between when an instruction is delivered and a behavior is initiated.

The type of behavior you attempt to increase or decrease will determine the type of data collection technique you should use. The following discussion of these techniques may help you decide which option is most appropriate.

Frequency Data

When you want to record the frequency of a behavior, you make a tally mark each time the targeted behavior occurs. At the end of the observation period, you count the number of tally marks you have made and this represents your frequency count.

Before beginning frequency data collection, you need to determine the length of the observation period. Should frequency data be collected during the first or last 10 minutes of class? Should they be collected during the entire class period? Should they be collected whenever the child is in the classroom? Or, should the data be collected all day long—across every setting in which the child spends time?

Frequency data collection is typically used when a behavior has a distinct beginning and end. For example, you can use a frequency count to record number of words read aloud, math problems completed independently, or hand slaps on a desk. Figure 1 provides an example of a frequency count data sheet.

There are advantages and disadvantages to collecting frequency data. Recording frequency data is relatively easy. Unfortunately, it may not always best represent the student's problem behavior. For example, you only make one tally mark if a student displays a tantrum for 60 minutes, 30 minutes, or five minutes. If you use frequency data collection procedures for a challenging behavior like tantruming and you put an intervention in place, it is harder to see improvement when the tantrum decreases in length from 60 minutes to five minutes, since a tally mark records the *occurrence* of a behavior, but not its duration.

Figure 1} Frequency Recording Data Sheet

Student: Jose **Date:** 10/2

Record a tally mark (/) for each occurrence of the target behaviors during the specified time period. Record a 0 if no target behavior occurred during the specified time period.

- **Aggression** is defined as any occurrence of kicking, hitting, pinching, or throwing objects at another person. Attempts to kick, hit, pinch, or throw an item are also recorded.
- **Talking Out** is defined as any occurrence of Jose speaking without permission during group activities in the classroom.

	Aggression	**Talking Out**	**Staff Initials**
9-9:15 a.m.	////	//	SF
9:15-9:30 a.m.	0	0	SV
9:30-9:45 a.m.	///	0	LB
9:45-10:00 a.m.	0	////	LB
10:00-10:15 a.m.	0	///	SF
10:15-10:30 a.m.	0	/	SF
Total	**7**	**10**	

Time Sampling

Time sampling methods vary but essentially require breaking down an observation period into smaller intervals and then recording whether the behavior occurred during the interval (Sulzer-Azaroff, 2008, p. 208). For example, a five-minute observation period can be divided into 10-second intervals. There would be 30 opportunities to mark the presence or absence of the target behavior.

This data collection method is used most often when a behavior occurs at relatively high rates or does not have a distinct beginning and end.

Time sampling methods require the use of a timer to mark the beginning of each interval. Often, professionals using interval-recording procedures use a watch with an interval setting, listen to a recording or, use a smartphone app to determine when to mark every interval.

Consider the time sampling data sheet in Figure 2. Let's say you have made the decision to collect data at three different five-minute observation periods during the school day. The first five-minute observation will occur at the beginning of English class, between 9:40 a.m. and 9:45 a.m. You have clearly defined Stacey's self-stimulatory behavior and stated it at the top of the data sheet. You use a recording that clearly states the beginning of the

observation period (e.g., it says "Observation begins now."). At the end of the first 10-second interval, the recording states "1-1" to indicate the end of the first interval of the first minute. You now record the presence or absence of the self-stimulatory behavior. Since Stacey engaged in self-stimulatory behavior during observation interval 1-1, you use a plus sign "+" to record the presence of the self-stimulatory behavior. The self-stimulatory behavior occurs during the first three observation intervals.

Figure 2} Interval Recording Data Sheet

Student: Stacey **Date:** 4/9

Self-stimulatory Behavior is defined as any occurrence of Stacey rocking her upper body in a back and forth motion while seated in her chair.

Record self-stimulatory behavior during three 5-minute observations each school day.

The 5-minute period is divided into 10-second intervals. Self-stimulatory behavior is recorded during a partial interval. Record a "+" if the behavior occurs during the interval and record a "-" if the behavior does not occur during the interval.

Time Start: 9:40 a.m.						**Time Start:**						**Time Start:**					
Time End: 9:45 a.m.						**Time End:**						**Time End:**					
1-1 +	1-2 +	1-3 +	1-4 –	1-5 –	1-6 +	1-1	1-2	1-3	1-4	1-5	1-6	1-1	1-2	1-3	1-4	1-5	1-6
2-1 +	2-2 –	2-3 +	2-4 –	2-5 +	2-6 +	2-1	2-2	2-3	2-4	2-5	2-6	2-1	2-2	2-3	2-4	2-5	2-6
3-1 –	3-2 –	3-3 –	3-4 +	3-5 +	3-6 +	3-1	3-2	3-3	3-4	3-5	3-6	31	3-2	3-3	3-4	3-5	3-6
4-1 +	4-2 +	4-3 –	4-4 –	4-5 –	4-6 –	4-1	4-2	4-3	4-4	4-5	4-6	41	4-2	4-3	4-4	4-5	4-6
5-1 –	5-2 –	5-3 –	5-4 –	5-5 –	5-6 –	5-1	5-2	5-3	5-4	5-5	5-6	51	5-2	5-3	5-4	5-5	5-6
Number of intervals with + 13						Number of intervals with + _____						Number of intervals with + _____					
Number of intervals with – 17						Number of intervals with – _____						Number of intervals with – _____					
% of intervals target behavior occurred: 43						% of intervals target behavior occurred: _____						% of intervals target behavior occurred: _____					

During observation interval 1-4, Stacy stops engaging in self-stimulatory behavior. You record the absence of her self-stimulatory behavior by marking a minus sign "–" in interval 1-4. At the end of the five-minute observation period, you count the *number* of intervals in which the behavior occurred so you can calculate the *percentage* of intervals in which that behavior occurred. In this case, self-stimulatory behavior was recorded in 13 of the intervals. By dividing 13 by the total possible of 30 intervals, and then multiplying by 100, you determine that Stacey engaged in self-stimulatory behavior during 43% of intervals.

There are several different types of time sampling procedures. These procedures differ based on how you decide to record the occurrence of the target behavior.

The most common forms of time sampling procedures include:

- **Partial interval**. The observer records the presence of the target behavior (with a "+") if the behavior occurs at *any* point during the interval. The observer records the absence of the target behavior (with a "–") if the behavior does not occur during the interval.
- **Whole interval**. The observer records the presence of the target behavior if the behavior occurs during the *entire* interval. The observer records the absence of the target behavior if the behavior does not occur throughout the entire interval.
- **Momentary time sampling**. The observer records the presence of the target behavior if the behavior occurs at the *end* of a specified interval. This means the target behavior is recorded only if it is present at the exact moment the interval ends (e.g., when the recording states "1-4"). Even if the behavior occurs at other times during the interval, if it does not occur at the exact moment when the interval ends, the observer records that the behavior was absent.

There are advantages and disadvantages with each of these time sampling procedures. For example, momentary time sampling is much easier, but it may not accurately represent a target behavior. A student could spend much of her time engaged in inappropriate behaviors, yet no instances of problem behavior would be recorded because of the timing of her actions. On the other hand, partial interval recording may easily result in recordings of inappropriate behavior, but it might not be very sensitive to improvements because behaviors are recorded even if they are fleeting.

There is no perfect data collection system! You simply need to consider these points to minimize your greatest concerns about the accuracy of the data.

Duration

A measure of duration simply means that you record the "start" and "stop" of a behavior (e.g., the length of a tantrum). This generally requires the use of a stopwatch. An advantage of duration recording is that you manage to capture *all* of the problem behavior. That is, you record every moment of the problem behavior. However, it also has its limitations. For example, completing other activities while you collect data can be challenging. Also, in some instances, it is hard to know when the beginning and the end of a target behavior occurs.

You can clarify exactly what should be considered an instance of a target behavior by writing a very careful definition. Let's use our tantrum example to consider the question, "What is a continuous tantrum?" That will require you to answer various questions to arrive at a specific definition.

- Do you stop recording when the child has to take a breath to inhale? He did stop screaming at that point.
- Do you stop recording if the child stops flailing for two seconds but then starts up again?
- Do you stop recording when the child's volume reaches a low level even though she is still "whining" and arching her back?

Let's consider an example. Maria is in first grade and demonstrates tantrum behavior when prompted to transition out of the classroom. Behavior specialists and teaching staff would like to develop a behavior plan to decrease the duration of tantrums behavior and increase Maria's ability to tolerate transitions. Maria's tantrums consist of crying (tears running down her face), verbal refusal (saying "no, no, no"), and dropping to the floor. Her behavior specialist and teaching staff decide to begin timing the tantrum when crying has persisted for 20 seconds and stop timing the tantrum when Maria stands up and takes two steps in the desired direction. Obviously, the protocol to start and stop time required some behavioral observation and a solid definition of Maria's tantrum behavior. This recording system will allow Maria's team to determine whether or not the behavior intervention plan is having the desired impact on Maria's tantrum behavior.

Latency

Like duration data, latency data are directly related to the concept of time. While duration recording focuses on the length of time a behavior actually occurs, latency recording focuses on the length of time that passes between when the instruction is delivered and a target behavior occurs. Recording latency data, like recording duration data, usually requires the use of a stopwatch.

Why would we want to focus on the length of time before a target behavior occurs? In order for most people to be successful, they need to be able to quickly respond to demands in their environment. Many students (including those on the autism spectrum) do not jump to complete an activity the moment they receive an instruction. Some students spend a lot of time looking at materials instead of getting started with a project, or delay turning to the right page until a minute or two after the other students do. These students are more likely to miss out on instructional time and be unable to keep up when they do initiate the task. Latency recording is a perfect tool in these situations.

Additional Data Collection Considerations

The data collection procedures we have addressed thus far are extremely versatile. You may use the same data collection methods (i.e., frequency, time sampling, duration, and latency) for behavioral reduction or skill acquisition.

An often-overlooked way of collecting data is to monitor permanent products such as completed worksheets or homework assignments. Permanent products are ideal for the classroom setting because a good deal of academic work lends itself to these measures. Like the other data collection procedures we have described, these permanent products can be used both as baseline and intervention data. Permanent products are used for skill acquisition interventions (i.e., to increase academic success).

Self-monitoring is another data collection method that often works well in a classroom setting. Self-monitoring systems require the student to record the occurrence of his own target behaviors. This data collection method can be applied with behavioral reduction and skill acquisition interventions. There are many studies suggesting that self-monitoring systems can be effectively implemented in the classroom setting (e.g., Asaro-Saddler & Saddler, 2010; Cole & Bambara, 1992; Holifield, Goodman, Hazelkorn, Heflin, 2010; Loftin & Odom, 2008; Mithaug & Mithaug, 2003; Shogren, Lang, Machalicek, Rispoli, & O'Reilly, 2011).

There are several advantages to self-monitoring. For example, self-monitoring is efficient for the smooth running of the classroom. If the teacher, paraprofessional, or school psychologist does not need to consistently spend time collecting data on a student's progress, their professional skills can be used in other essential ways. Further, learning to monitor their own activities is an important skill for all students. To best support students with ASD, we need to take advantage of any strategies that lead to greater independence.

Please see the self-management table in Chapter 2 for a more detailed description of self-monitoring procedures and the process of teaching students self-management skills.

You will also learn why self-monitoring data are not the ideal baseline data. (Hint: You might need to collect the baseline data because students are not very accurate when they first learn to record their own behavior!)

Using Data to Establish Baselines

We recommend that data be collected before you implement an intervention. The data you collect before beginning intervention are called "baseline" data.

Without collecting baseline data, it will be impossible to clearly show that the intervention you put in place has led to student improvement. Baseline data collection need not be tedious or time-consuming once you have a system in place.

We recommend the following steps:

- First, decide on the type of data you will collect (e.g., frequency, duration, etc.).
- Second, decide the time of day or the type of activity for which you will collect data. Also determine the minimum number of days you will collect baseline data. At least three data points are required to identify a trend (see data analysis section for details).
- Third, gather the tools you will need to collect the data (e.g., data sheet, timer, pencil). Educators can access a number of examples of data collection sheets online or in various textbooks and manuals (e.g., Alberto & Troutman, 2003; Luiselli, 2011; Luiselli, 2014; Webber & Scheuermann, 2008).

Intervention Data

Once you have identified your goal, it's time to implement the intervention. You will have selected the intervention based on research findings (see Chapter 2), the professional judgment of staff involved (this chapter), family input (see Chapter 4), and the capacity to correctly implement the intervention at this time (see Chapter 5). You will need to collect data during the intervention phase so you can determine whether the intervention you are implementing is working.

There is no doubt that it takes time and energy to accurately implement an intervention. This can take time away from some of your usual activities, but it's worth it if the student makes progress. If you do not collect data during the intervention phase, it might be hard to

know if the intervention is working. Your time and energy are too valuable to waste. More importantly, you do not want to continue using an ineffective intervention for the students in your care. For the student who talks out an average of 100 times per day, what are the odds you will notice if it drops to 90 or increases to 112 unless you collect data?

You must analyze and compare data between baseline and intervention conditions to determine what to do next. You may decide to continue with the intervention if you see improvements based on the comparison of baseline and intervention data. Or you may decide to revise the current intervention or implement an entirely new intervention if it becomes clear things are not improving or are getting worse!

Ongoing data collection helps you to determine how changes in the intervention affect the targeted behavior. It is important to use the same data collection procedure during both baseline and intervention phases.

Graphing Data

Once you have collected baseline and intervention data, what do you do with them? Is there an easy way to see if the intervention worked? There is. Graphing is a useful tool that can help you make decisions and use your professional judgment (Alberto & Troutman, 2003; Cooper, Heron, & Heward, 2007).

Looking at tally marks on a data sheet can be informative. But what happens when you need to look across 5, 10, or 20 data sheets? Putting the data into a graph allows for easy interpretation. Line graphs are commonly used to track changes in behavior over time (e.g., Carr & Burkholder, 1998). Basic computer software such as Microsoft Excel™ can be used to generate a simple but effective graph (Dixon, Jackson, Small, Horner-King, Nicholas, Garcia, & Rosales, 2009).

On a line graph, each data point represents one data collection session (e.g., one school day, one class period, etc.). A vertical line (i.e., phase line) can be drawn between the baseline and intervention phases to indicate the introduction of the intervention. All data points in the same phase are connected by a line, but data points are not connected across phases (see Figure 3).

Phase lines can also be drawn at various points to indicate where a change in the intervention occurred. For example, if you learned that a student started on a new medication while you were implementing a new intervention, you would draw another phase line to show the new intervention phase (intervention 2: school intervention + medication). This would reflect the multi-component aspects of intervention that may be influencing the student's behavior (see Figure 4).

Graphing: Terminolgy

PHASE LINE} This is the solid or dashed line that denotes a change from baseline to intervention, a change in the intervention, or a change from intervention to follow-up. Often, solid lines indicate a major change such as moving from baseline to intervention or intervention to follow-up. Dashed lines are used to indicate relatively minor changes within a condition or phase. For example, a dashed line may be used to indicate moving from using a token system to using a token system + verbal prompting procedure. The lines are important as they signal to the reader that "something changed" in the environment.

BASELINE} This term is used to indicate that a measure of the target behavior was recorded prior to the introduction of any intervention. In some situations, an educator or practitioner may "return to baseline" during an intervention. This indicates that the intervention is withdrawn and a measure of the behavior is recorded.

INTERVENTION} This term indicates that a set of procedures or strategies is implemented in order to change behavior in the desired direction.

DATA POINT} This term refers to the actual mark or symbol (e.g., ■, ◆, ❖) indicating the behavioral data recorded for that point in time.

Cooper, Heron, & Heward, 2007; Horner et al. 2012; Martin & Pear, 1999

Figure 3} Graphical Representation of Data

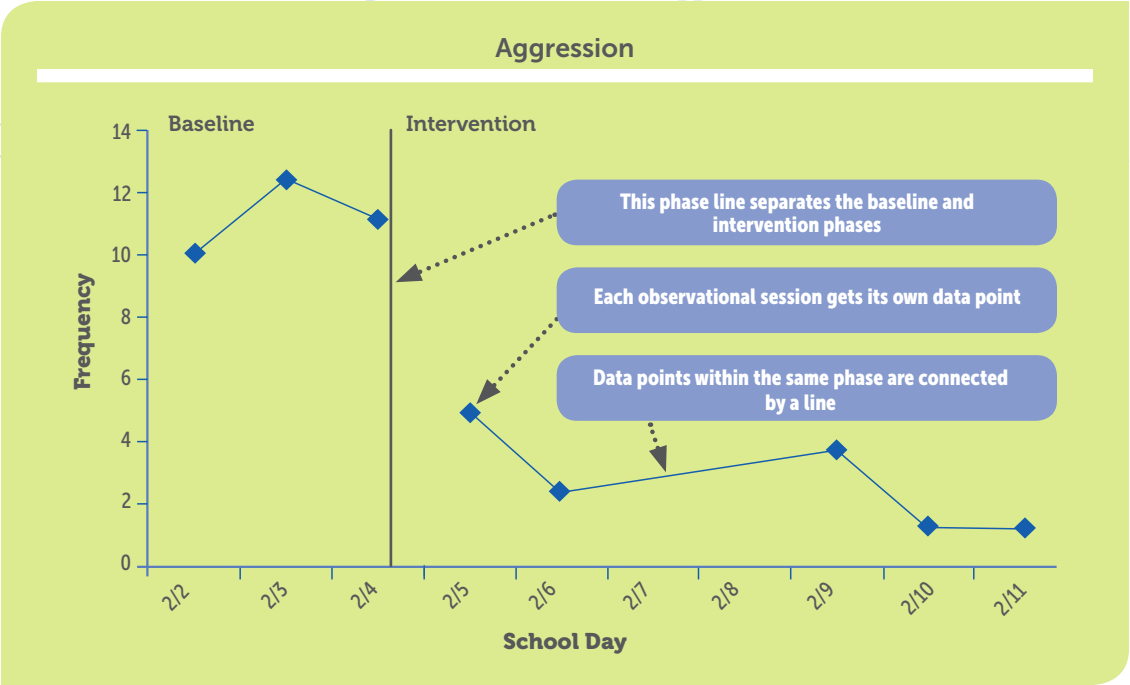
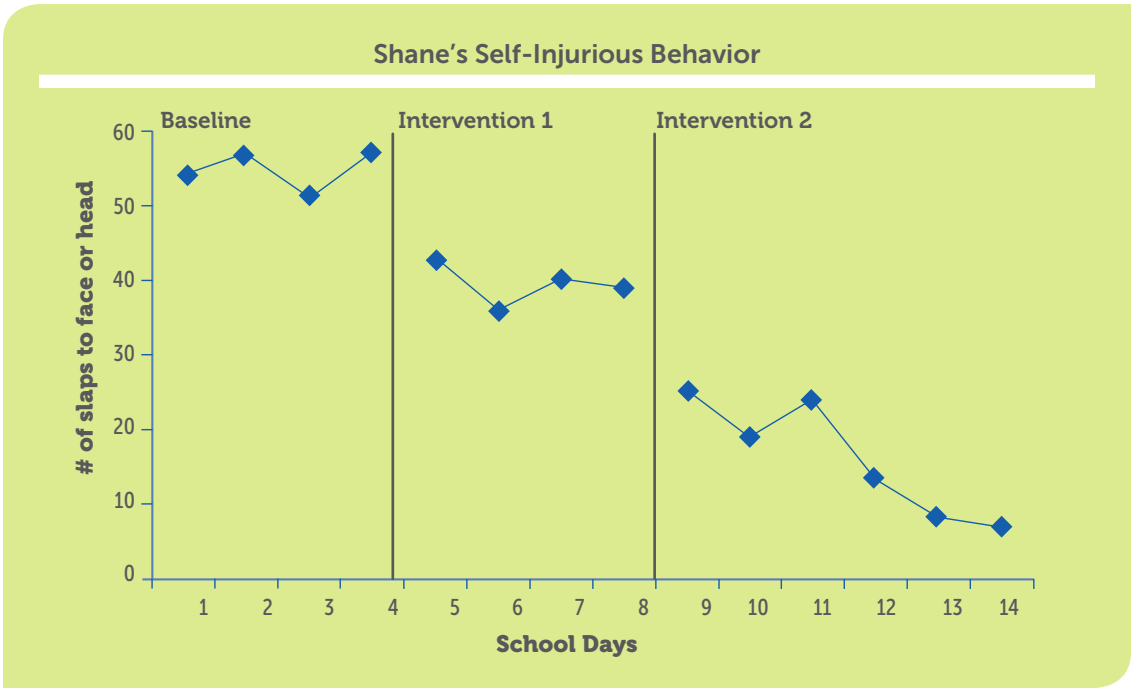


Figure 4} Showing Changes in Phases When Modifications to Interventions are Made



Visual Analysis of Data

Once you've graphed your data, you can begin to visually analyze your results. When you look at it, what do you see?

You will want to inspect the line graph to determine whether the behavior is changing and, if so, whether the change occurred in the desired direction. Ideally, the change from baseline to intervention is so fast and dramatic that the improvement will just jump out at you.

Unfortunately, that may not always be the case. Interpreting the graphed data is easier if you account for stability, trends, and level in the data (e.g., Alberto & Troutman, 2003; Horner et al., 2012). We will discuss each of these concepts in more detail.

Stability

Stability simply refers to how consistent the behavior is over time. Let's apply the concept of stability to James, a fifth grade student with ASD. James is capable of doing his work when you can get him on task. Unfortunately, you believe he "stares off" (e.g., looks out the window, gazes at the ceiling, etc.) too much during his social studies class. You decide you need baseline data on James' off-task behavior and you select a partial interval recording system. The school principal completes five-minute observations during social studies for a week because she does not want data collection to interfere with your teaching.

You determine that James was off-task during:

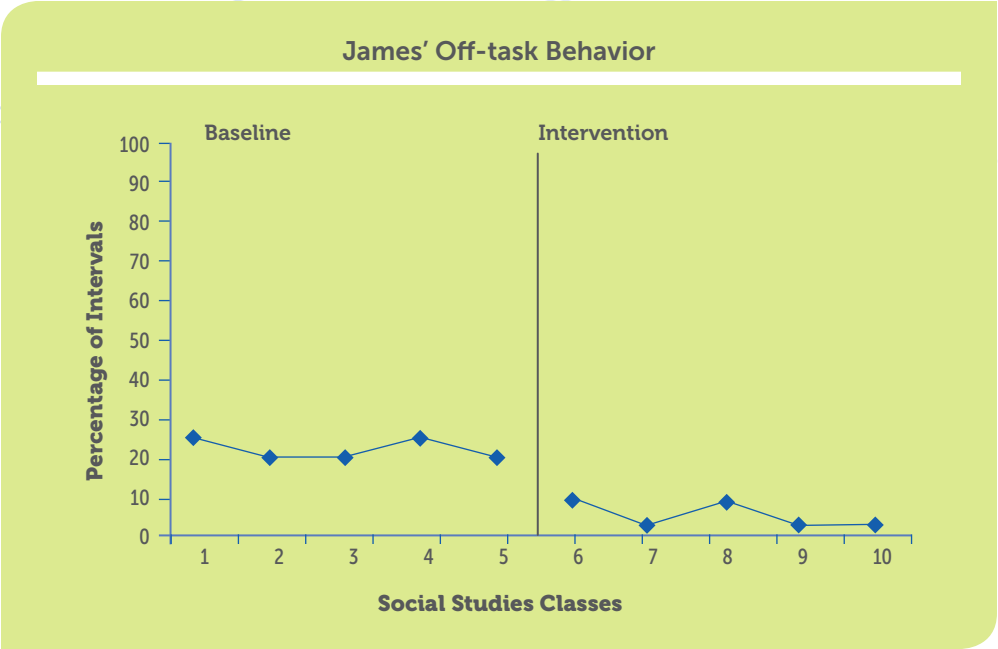
- 23% (7 out of 30) of the intervals on Monday
- 20% (6 out of 30) of the intervals on Tuesday
- 20% of the intervals on Wednesday
- 23% of the intervals on Thursday
- 20% of the intervals on Friday

When you implement your intervention, the principal collects the following data and you determine James was off-task during:

- 7% (2 out of 30) of the intervals on Monday
- 3% (1 out of 30) of the intervals on Tuesday
- 7% of the intervals on Wednesday
- 3% of the intervals on Thursday
- 3% of the intervals on Friday

You graph your data (see Figure 5) and see that there is great stability in James' off-task behavior in both baseline and intervention phases. It is easy to see that the intervention was effective because James' behavior has been so consistent in both baseline and intervention phases. The good news is that he is clearly improving.

Figure 5} Graphical Representation of James' Off-task Behavior



You then contrast James' performance with another student in the class. Kelly is another student with ASD who also experiences problems with concentration. While collecting data on James, the principal also collected data on Kelly's off-task behavior. Her data are graphed in Figures 6a and 6b. You see that there is little stability in the time she spends off-task.

High variability may indicate an unidentified environmental variable that affects the target behavior on some days but not others. You see that Kelly had a relatively high percentage of on-task behavior on Tuesday and Friday during the baseline condition. You remember that she asked to use the restroom before class began on each of these days.

Armed with that information, you develop an intervention in which you give Kelly the opportunity to use the restroom each day before social studies. The lack of stability in Kelly's baseline data makes it a little more challenging to interpret the outcomes. If you based your decision exclusively on stability, you might interpret the data to mean that the intervention was not effective (because there is still not a perfectly stable pattern of responding). But you realize there are more indicators that aid in interpretation of visually presented data. You also see that she spends more time on-task at the end of the first week of intervention. You decide to consider one of the other key indicators of intervention effectiveness—trends—before interpreting these data.

Figure 6a} Graphical Representation of Kelly's Off-task Behavior (without trend line)

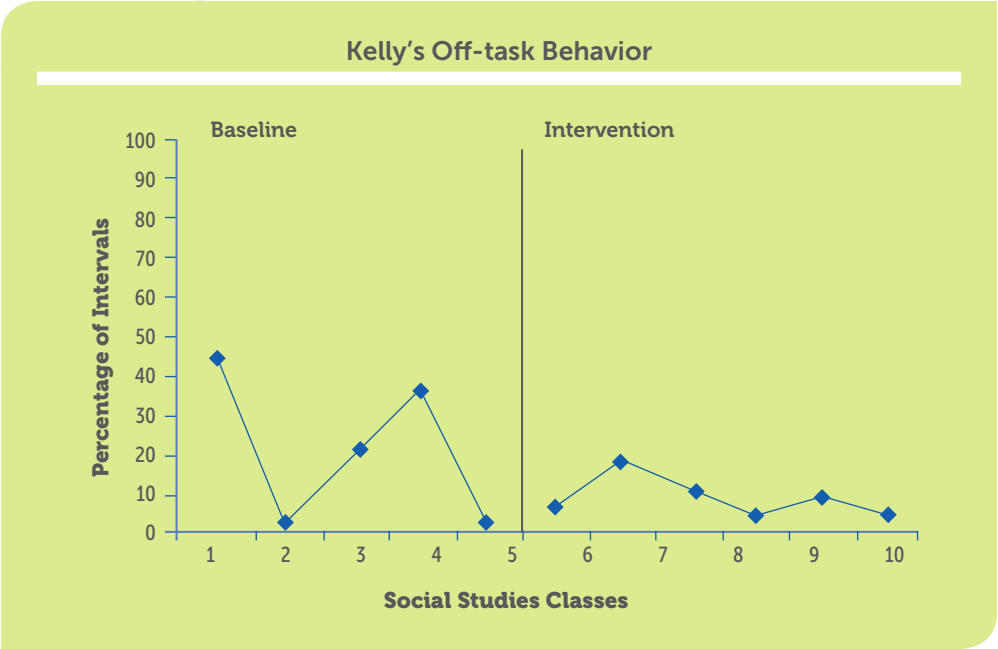
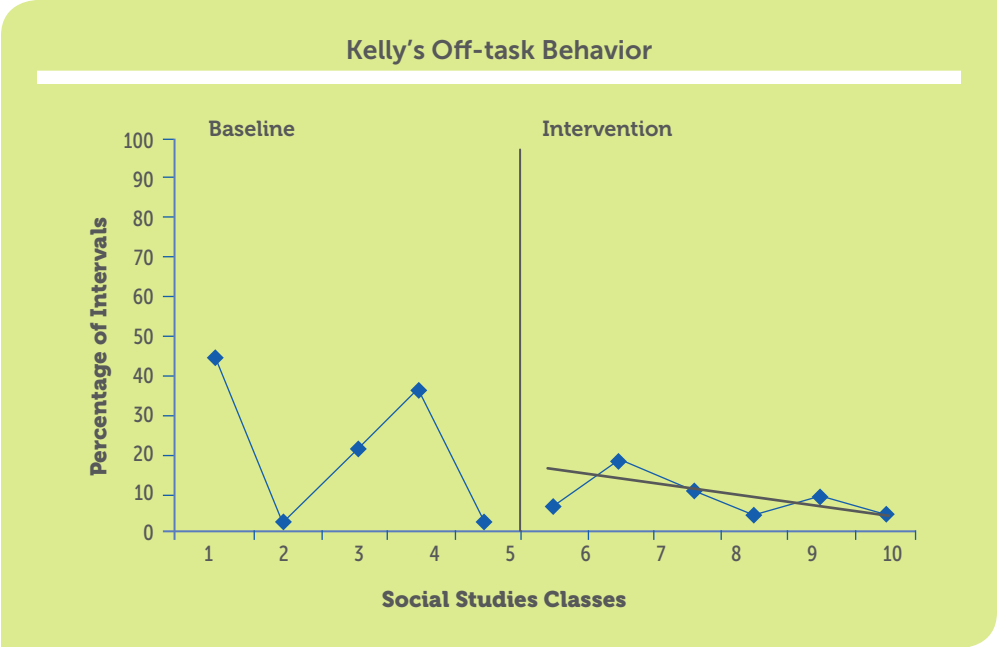


Figure 6b} Graphical Representation of Kelly's Off-task Behavior (with trend line)



Trend

Trend refers to the direction of change across data points within a phase (e.g., during baseline or the period of time in which an intervention is being implemented). There are several ways to show a trend. The easiest way is to visually determine what line best "describes" all of the data. You can "draw" this trend line using a program like Microsoft Excel™. If you would rather use a mathematical approach to calculating the trend line, we recommend the chapter on single-subject designs in *Applied Behavior Analysis for Teachers* (Alberto & Troutman, 2003).

Analyzing trends in the data will help determine if behavior change is moving in the desired direction. Ideally, when implementing a behavior reduction intervention, the desired effect would be a decreasing (or descending) trend relative to baseline. In contrast, when implementing an intervention to increase behaviors or skills, the desired effect would be an increasing (or ascending) trend relative to baseline. As mentioned earlier, you will need to collect at least three data points per condition. Identification of a trend requires at least three data points and often may require five or more. It can be difficult to identify a trend when the increase or decrease in behavior is gradual over time.

Let's look back at Kelly's off-task behavior (see Figures 6a and 6b). If you were to draw a line that best represents all of the data in the intervention phase, you would see a descending trend. Because our goal is to decrease off-task behavior, the descending trend tells us our intervention is leading to favorable outcomes.

Level

Level refers to the mean range of the data points in a given condition or phase. To calculate the mean range of data points in a condition (Horner et al., 2005; Kratochwill et al., 2010):

1. Use the number (frequency, duration, latency) that each data point represents in a given phase and calculate the sum.
2. Divide the sum of data points by the total number of data points in that phase.
3. Draw a horizontal line through the phase at the mean point identified.

In the following graphical example, the mean frequency identified using the ten baseline data points is 5.5.

Identify where 5.5 is on the vertical axis and simply draw a horizontal line across the baseline phase to indicate the mean level of behavior. Now let's take a look at the intervention phase. The mean of the five data points in the intervention phase is 14.5. From the vertical axis, locate 14.5 and draw a horizontal line at that point across the intervention phase.

Identifying the level from one phase to another is an additional element of analysis that can help to determine the magnitude

of change from one phase to another. At times, you may be interested in looking at the level when there are subtle yet meaningful behavior changes occurring or when you are determining a change between intervention phases.

Challenges in Visual Analysis

As we have stated previously, stability, trend, and level are indicators of intervention effectiveness. However, visual analysis often requires that you give lesser importance to one or more of these indicators.

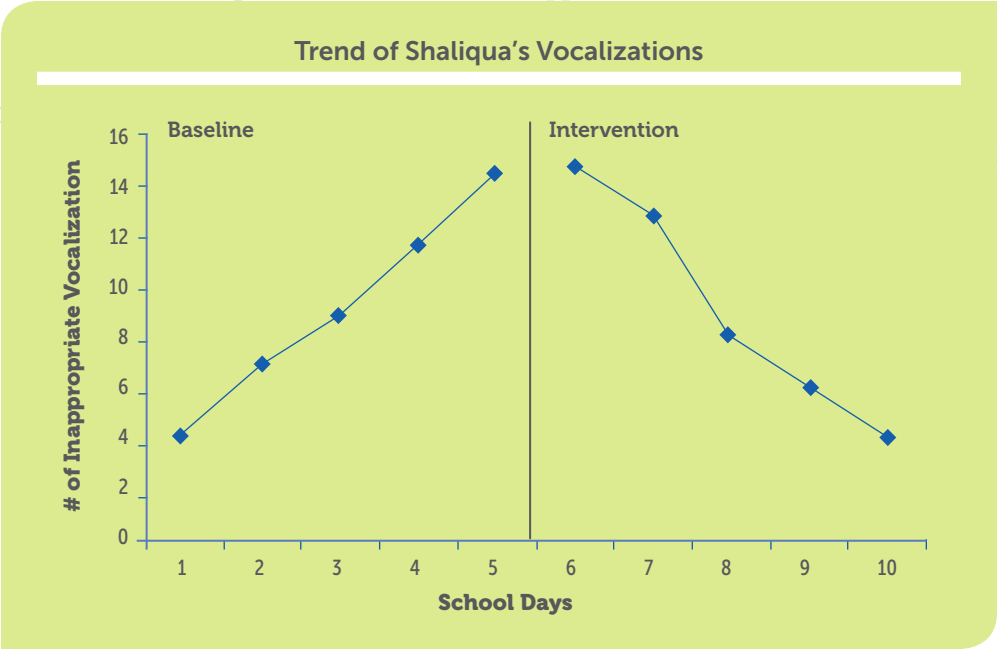
For example, Figure 5 shows James' off-task behavior during baseline and intervention phases. It's clear that there is a great deal of stability in the data that makes it easy to see the intervention was effective. But what about trend? We do not need to see a descending trend in this case because the stability of the data clearly demonstrates improvements in James' off-task behavior.

Interpreting Kelly's data is more challenging (see Figures 6a and 6b). The baseline condition is not stable. But when you examine the data in the intervention phase, it is clear there is a descending trend. Kelly's off-task behavior is very low by the end of the intervention phase, which suggests she is improving. When these indicators are taken into consideration, you decide that you may need to collect additional data so you can be certain about the effectiveness of the intervention.

Consider the following example. Shaliqua is a fourth-grade student with ASD. She has recently started making inappropriate vocalizations that interrupt the students around her. You begin collecting baseline data and find that the frequency of these inappropriate vocalizations seems to be increasing (see baseline phase of Figure 7). You decide to put a self-management intervention in place. Shaliqua learns to correctly record the frequency of her vocalizations and to get access to reinforcers if she remains quiet. The frequency of inappropriate vocalizations quickly begins decreasing (see intervention phase of Figure 7). You can see by examining the trend lines that significant differences exist between baseline and intervention phases. That is, inappropriate vocalizations just kept becoming a bigger problem in baseline and they consistently became less problematic in intervention.

A final challenge to visual data analysis relates to the length of time it takes for an intervention to produce a desirable outcome. You will serve some students with ASD who quickly respond to the intervention you select and others who will take time to learn to change their behavior or develop their skills. The examples we have provided thus far reflect typical data for students who respond quickly to an intervention.

Figure 7} Significant Differences in Trend

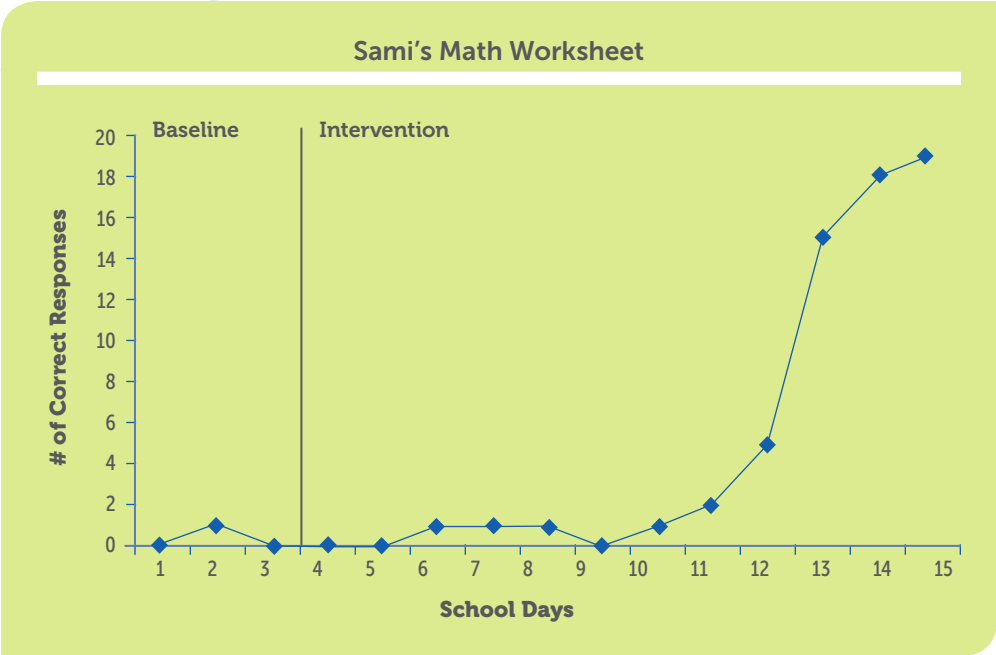


Let's consider the example of Sami, a sixth-grade student with ASD. She did not master multiplication and division of fractions during her fifth grade year, so her sixth-grade teacher decides to begin with these skills at the beginning of the new school year. Not surprisingly, Sami had not learned how to multiply or divide fractions over the summer!

After collecting baseline data, Sami's teacher puts a reinforcement system into place and begins teaching her essential concepts related to multiplication and division of fractions (see Figure 8). Over time, Sami begins developing these skills. Eventually, there comes a point at which she really begins mastering these skills. Note that this did not happen the moment her teacher put the intervention into place. The teacher understood that Sami needed time to develop sufficient skills to show significant improvements.

Because visual analysis can be very challenging, we recommend all school staff should consult with a professional (e.g., behavioral analyst, psychologist, special education teacher, etc.) with expertise in single-subject research design. We explore this research design in the following pages.

Figure 8} Example of an Intervention that Requires Time Before Change is Produced



Is the Intervention Effective?

In order to really know if an intervention is effective, you need to compare two or more baseline conditions with two or more intervention conditions. A single-subject research design allows comparison of an individual's response to an intervention over time.

This research design is used by scientists, but it is often used by practitioners as well. Practitioners like single-subject research design because it can be applied to one individual. It can also be applied to a small group of students or an entire classroom.

One of the most commonly used single-subject designs is the reversal design. It is also known as an ABAB design. Don't be intimidated by terms like "research design." These kinds of designs occur naturally in our daily lives. We encourage you to harness the strength of this research design to answer the questions you have about your students.

Reversal (ABAB) designs most often involve a baseline phase followed by an intervention phase—and then another baseline phase followed by an intervention phase. This type of design demonstrates the relationship between the intervention and the target behavior. Here is an example of ABAB research design from everyday life.

Do you have an email account for work? At times, do you avoid checking email? Then you may be familiar with the following scenario:

A (Baseline): The number of emails can increase quickly. You have 25-50 new emails each day. Left unchecked, you have a pile-up of more than a hundred emails at the end of the week. You would like to develop a manageable way to deal with work emails and reduce your stress.

B (Intervention): You develop a weekly schedule to check/respond to all emails each day. As you follow the schedule for the week, the number of emails each morning is manageable. You experience relief.

A (Baseline): The holidays come around and you take a few days off. Upon returning to work, you fail to post your scheduled time to check/respond to emails. Each morning become increasingly stressful as the number of emails to open becomes overwhelming.

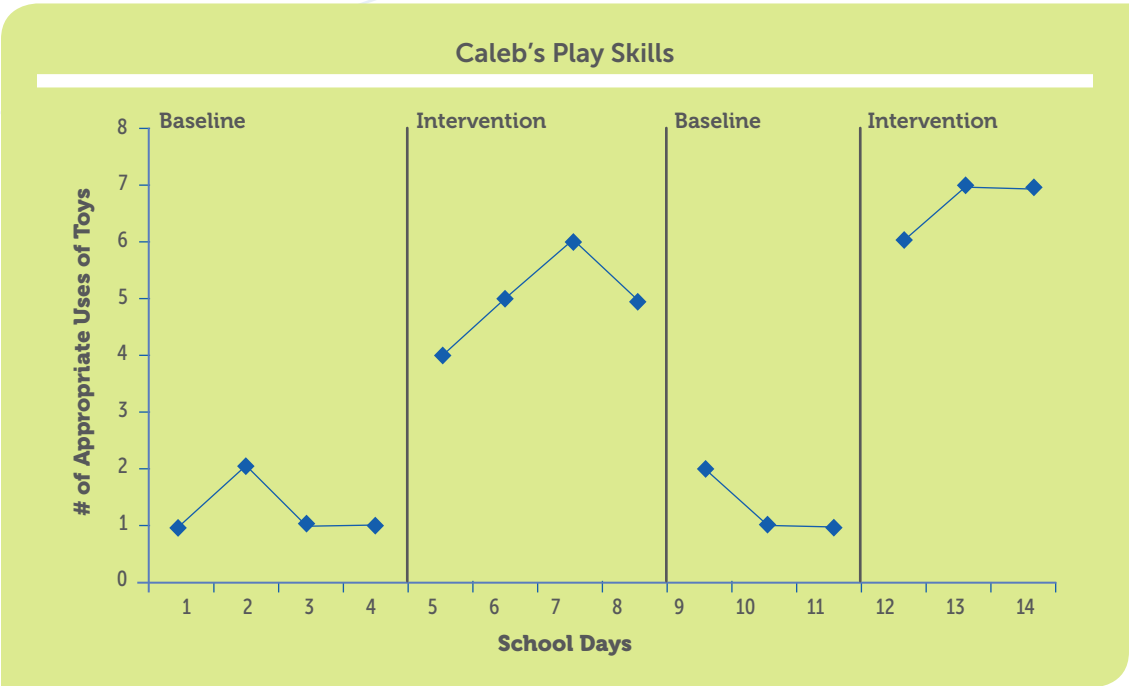
B (Intervention): You take time one Monday morning to set up your check email schedule once again. Within a couple of days, checking email in the morning isn't so overwhelming.

Now let's apply this research design to Caleb, a four-year-old with ASD who is learning to play. You have decided to use video modeling to teach Caleb new play skills. You collect data in one baseline and one intervention phase. You look at the stability, trend, and level and conclude the intervention is effective. Some people would rather skip the second baseline and intervention phases and might wonder why they would need to repeat them.

There is a very good reason. Often, a number of environmental variables change in the classroom at the same time. Let's say a new student is introduced into the classroom and befriends Caleb at the same time you begin the video modeling intervention. If both of those events occur at the same time, how can you determine whether the video modeling intervention is responsible for the behavior change? By using an ABAB design, you can see a clear relationship between the intervention and the behavior.

With Caleb, you saw an improvement in play skills during the video modeling intervention phase. Although you would like to see those play skills continue to improve, you decide that you can take a few days to re-introduce a baseline phase. This will help you determine whether the intervention is really effective. After graphing your data (see Figure 9), it becomes apparent that removing the intervention has resulted in a substantial decrease in Caleb's play skills. You quickly re-introduce the intervention and his play skills just as quickly begin improving again.

Figure 9} Graphical Representation of Caleb's Play Skills Based on Reversal Design



You are now confident that you should continue using the video modeling intervention.

You may think, "But I already thought the intervention was effective. Was it really necessary to remove the intervention?" We would argue that, in this case, it *was* necessary. The data could have just as easily shown that the intervention was not the reason Caleb's play skills improved. Perhaps his new classmate was showing Caleb how to play and his skills were improving due to live modeling. If this was the case, spending all of the time it takes to make videos is not the best use of your time!

Although the reversal (or ABAB) design is the most commonly used single-subject research design, there are actually many others that might work better for your needs. Sometimes you need to implement an intervention with more than one student and you can use a "multiple baseline across students" design. In this case, the intervention is staggered (i.e., introduced one at a time) across students. If you need to implement an intervention for one student across numerous settings, you can use a "multiple baseline across settings" design. In this case, the intervention is staggered across different situations (e.g., classroom, then cafeteria, then playground).

Identifying and providing sufficient descriptions of all research designs that might be useful to you is beyond the scope of this manual. One book we have found that clearly describes research designs as they apply to school settings is *Applied Behavior Analysis for Teachers* (Alberto & Troutman, 2003). This book can be an excellent resource to you in other ways as well (e.g., knowing how to develop the best operational definitions before starting to collect data, etc.).

Final Considerations

Although single-subject designs and the various data collection methodologies are well defined in the literature, use of these strategies requires professional judgment during each phase.

For example, you must decide the following:

- How long to continue baseline and intervention phases
- The point at which your team has the capacity to implement the intervention accurately (see Chapter 5 on capacity building)
- If environmental variables are influencing the stability of your data
- Whether the intervention is effective (based on your visual analysis)

In a perfect world, student behavior would respond to all interventions in the desired direction. In reality, professional judgment is essential when things don't go as planned. So, what do you do when an intervention fails to produce the desired behavior change? While this can be frustrating and discouraging, there are problem-solving steps that will help you assess the situation:

1. **Be clear about definitions**. Review the definition of the target behavior. It is not uncommon to have an operational definition that does not reflect the actual targeted behavior. This can result in inaccurate or misleading recording of data—especially if you have multiple data collectors (e.g., teacher, speech-language pathologist, paraprofessional, etc.).
2. **Identify relevant variables**. Determine if there are environmental variables that could influence the daily recordings. If so, you may be able to "gain control" over them, or at least predict when they will occur. It may be that you have to add another research-supported intervention to your existing behavioral intervention on days when the environmental variable (e.g., lack of sleep) occurs.

3. **Use available expertise**. Be sure to draw on the expertise of all school professionals. Perhaps the speech-language pathologist determines that your target behavior is not appropriate given the student's communication delays. Similarly, the psychologist or behavior specialist might help you identify the function or purpose of challenging behavior. (A challenging behavior may function to gain attention, to escape or avoid a person or activity, or to gain access to a preferred item or activity; or the behavior may be automatically reinforced [e.g., self-stimulatory behaviors].) The psychologist or behavior specialist could help identify the function(s) of the behavior to develop more effective interventions.

4. **Implement interventions accurately**. You should ensure the intervention is implemented accurately. We all deviate from the way an intervention is supposed to be implemented from time to time, and often we are unaware of the changes we have put in place (see Chapter 5 on intervention fidelity).

Problem-solving strategies rely heavily on professional judgment. As mentioned earlier, it is important to avoid using a "cookbook" method in intervention selection. Problem solving through a difficult case is not just dropping the current intervention for another intervention. It is case conceptualization with a critical eye. This requires your training, your experience, and your professional judgment.

Recommended Readings

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Gulick, R. F., & Kitchen, T. P. (2007). *Effective instruction for children with autism*. Erie, PA: Dr. Gertrude A. Barber Educational Institute, Inc.

Dixon, M. R., Jackson, J. W., Small, S. L., Horner-King, M. J., Nicholas, M. K. L., Garcia, Y., & Rosales, R. (2009). Creating single-subject design graphs in Microsoft Excel™ 2007. *Journal of Applied Behavior Analysis, 42*, 277-293

Fisher, W. W., & Piazza, C. C. (2011). *Handbook of applied behavior analysis*. New York, NY: The Guilford Press.

Horner, R. H., Swaminathan, H., Sugai, G., & Smolkowski, K. (2012). Considerations for the systematic analysis and use of single-case research. *Education & Treatment of Children, 35*, 269-290.

Luiselli, J. K. (Ed.) (2011). *Teaching and behavior support for children and adults with autism spectrum disorder: A practitioner's guide*. New York, NY: Oxford University Press.

Luiselli, J. K. (Ed.) (2014). *Children and youth with autism spectrum disorder (ASD): Recent advances and innovations in assessment, education, and intervention*. New York, NY: Oxford University Press.

References

Alberto, P. A., & Troutman, A. C. (2003). *Applied behavior analysis for teachers*. Upper Saddle River, NJ: Pearson Education, Inc.

Asaro-Saddler, K., & Saddler, B. (2010). Planning instruction and self-regulation training: Effects on writers with autism spectrum disorders. *Exceptional Children, 77*, 107-124.

American Psychological Association. (1994). *Resolution on facilitated communication by the American Psychological Association*. Adopted in Council, August 14, 1994, Los Angeles, CA. Retrieved from http://www.apa.org/divisions/div33/fcpolicy.html (accessed April 16, 2015).

Carr, J. E., & Burkholder, E. O. (1998). Creating single-subject design graphs with Microsoft Excel. *Journal of Applied Behavior Analysis, 31*, 245-251.

Cole, C. L., & Bambara, L. M. (1992). Issues surrounding the use of self-management interventions in the schools. *School Psychology Review, 21*, 193-201.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Dixon, M. R., Jackson, J. W., Small, S. L., Horner-King, M. J., Nicholas, M. K. L., Garcia, Y., & Rosales, R. (2009). Creating single-subject design graphs in Microsoft Excel™ 2007. *Journal of Applied Behavior Analysis, 42*, 277-293.

Holifield, C., Goodman, J., Hazelkorn, M., & Heflin, L. J. (2010). Using self-monitoring to increase attending to task and academic accuracy in children with autism. *Focus on Autism and Other Developmental Disabilities, 24*, 230-238.

Horner, R. H., Carr, E. G., Halle, J., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Council for Exceptional Children, 71*, 167-179.

Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2010). Single-case designs technical documentation. Retrieved from What Works Clearinghouse website: http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf

Loftin, R. L., & Odom, S. L. (2008). Social interaction and repetitive motor behaviors. *Journal of Autism and Developmental Disorders, 38*, 1124-1135.

Luiselli, J. K. (Ed.) (2011). *Teaching and behavior support for children and adults with autism spectrum disorder: A practitioner's guide*. New York, NY: Oxford University Press.

Luiselli, J. K. (Ed.) (2014). *Children and youth with autism spectrum disorder (ASD): Recent advances and innovations in assessment, education, and intervention*. New York, NY: Oxford University Press.

Martin, G., & Pear, J. (1999). *Behavior modification: What it is and how to do it* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

Mithaug, D. K., & Mithaug, D. E. (2003). Effects of teacher-directed versus student-directed instruction on self-management of young children with disabilities. *Journal of Applied Behavior Analysis, 36*(1), 133-136.

Shogren, K. A., Lang, R., Machalicek, W., Rispoli, M. J., & O'Reilly, M. (2011). Self-versus teacher management of behavior for elementary school students with Asperger syndrome: Impact on classroom behavior. *Journal of Positive Behavior Interventions, 13*, 87-96.

Sulzer-Azaroff, B. (2008). *Applying behavior analysis across the autism spectrum: A field guide for practitioners*. Cambridge, MA: Sloan Publishing.

Webber, J., & Scheuermann, B. (2008). *Educating students with autism: A quick start manual*. Austin, TX: PRO-ED, Inc.

4

Incorporating Family Preferences and Values Into the Educational Process

As we noted in the introduction, federal legislation requires that schools use research-supported interventions for students. Educational legislation also supports the involvement of family members in the educational process.

Parents are experts on the strengths and needs of their children with autism spectrum disorder (ASD) (Danya International & Organization for Autism Research, 2004). As such, parents should actively participate in decisions about their children's education. Parents should be involved both in their child's assessment and in decisions that are made regarding service needs. In addition, parents and teachers should collaborate when identifying skills to target for development (IDEIA, 2004).

Family choice is one of the most important components of a family-centered approach. It recognizes the partnership of parents with school personnel and other professionals in decision making (Murray et al., 2007). The family-centered model of service delivery acknowledges that interventions and supports for children with disabilities are most successful when the family's concerns, priorities, and strengths are considered (Peterson & Speer, 2000). Ask yourself, "How often do I fully engage the family in a discussion about the educational and intervention services I provide?" and "How intently do I try to include the student's perspective when developing intervention targets or selecting interventions?" Many of us can improve in these areas.

If we want to renew our efforts to apply a family-centered service delivery model for students with ASD, we need to begin by understanding the unique challenges faced by the families of children with ASD.

Here are a few points to consider:

- Parenting stresses and social restrictions are common difficulties for families with a child with ASD. Parents of children with disabilities say they experience challenges in activities such as: enjoying family outings; going to other people's homes; leaving their child with a babysitter; and shopping with the child (Cassidy, McConkey, Truesdale-Kennedy, & Slevin, 2007).
- Children with ASD are often involved with several different therapy activities that take up a tremendous amount of the family's time. Maintaining this level of support for the child requires a great deal of time from parents, and often has financial implications for a family as well (Kohler, 1999).
- Many students with ASD take prescription medication or are on special diets, both of which require additional resources from parents.
- Parents may experience stress as they decide how to allocate their attention and energy across family members. Parents may feel the strength of their marriage is challenged or they may feel guilt about the limited time they spend with their other children when so much of their attention is focused on the child with ASD.
- Parents worry they lack sufficient information. They grapple with their child's disability, uncertainty about their child's future, and the physical and mental difficulties associated with raising a child with a disability.

Considering these challenges, it seems clear that supporting a family member with ASD can place heavy demands on the family and tax its physical, financial, and emotional resources.

The good news is that appropriate family supports can reduce these kinds of stressors. Appropriate supports enhance the well-being of both parents and children. When schools use a family-centered approach and work to increase parental involvement, not only do the parents and children benefit, but so do school personnel. For instance, parents can provide information to help staff better understand their students. Improved communication can also promote opportunities for generalization of skills in settings outside of school (Davis-McFarland, 2008). Given the fact that generalization represents one of the greatest challenges to individuals on the autism spectrum, the advantages of family-centered care are quite strong. In addition, students who participate in the educational process are better prepared to participate in intervention decisions in adulthood.

Supporting Family Involvement in Evidence-based Practice

Encouraging parental involvement can include activities in the school, home, and community.

Examples of parental participation and student involvement include activities such as:

- **Serving as a classroom volunteer**. Parents can be involved in everything from supervising during a field trip to collecting data in the classroom (see Chapter 3).
- **Maintaining frequent communication with teachers**. School-home notes that help everyone focus on the student's increasing school successes can be useful.
- **Attending school-sponsored events**. These can include things like support groups or educational seminars. For instance, if a school autism program implements discrete trial instruction (DTI) as part of its educational model, parents often receive education and training on DTI from school personnel. Training may be followed by parents observing DTI with their child in the classroom, as well as frequent communication regarding the child's progress based on data collected during DTI.
- **Incorporating learning activities into a student's daily routines**. This can include tasks such as working on greeting skills at the grocery store or prior to religious activities, identifying shapes and colors while driving, and encouraging independence during the bedtime routine. Working collaboratively across settings provides better supports to everyone and benefits the student the most.
- **Securing student input**. Whenever possible, it is important to secure input from students regarding their target behaviors and intervention options. Not all students on the autism spectrum are capable of actively participating in the educational process. But there is a danger in assuming all students are unable to help identify educational and behavioral targets for improvement. Further, many students may hold opinions about which interventions they prefer. If we can work collaboratively with students in target identification and intervention selection, they are more likely to actively participate in their own development throughout their lifetime. Leaving students out of these processes is a lost opportunity for schools striving to help all students reach higher levels of independence prior to graduation.

There are several factors a school must consider in order to effectively implement a family-centered care approach. These include cultural variables, socioeconomic status, family composition and availability, severity of symptoms, and school factors. Each of these considerations can directly influence the level of parental involvement.

Cultural Variables

We can serve all students better when we improve our awareness of cultural variables. Certainly, having successful family-school collaboration requires an appreciation of the views held by both groups. These views can be heavily influenced by the cultural experiences of the parties involved.

Research suggests that cultural values often influence a person's views on disabilities. In order to best serve families from diverse cultural backgrounds then, educators must be willing to learn about a family's customs, belief systems, communication styles, and other factors that may impact parental involvement and their level of acceptance of various intervention options.

You can take several steps to increase the likelihood that research-supported interventions will be successful for learners from diverse backgrounds:

- Take cultural values into consideration when the school team and the family select intervention targets. For instance, many young students with ASD do not make eye contact with the frequency of their peers or, when they do, the eye contact is fleeting. We often target eye contact in the course of educational services because {a} it is a socially important skill for most individuals in our culture to develop, and {b} it is often one of the first skills taught within the context of some research-supported interventions (e.g., Comprehensive Behavioral Treatment for Young Children) in order to improve responding. However, in some Native American and Asian American cultures, avoidance of eye contact with adults is considered a sign of respect (Lian, 1996; Wilder et al., 2004).

  Similarly, many of us would consider reduction of self-stimulation to be a critical educational goal to target. Self-stimulatory behaviors take many forms and may include hand-flapping, body-rocking, or vocalizations. Many neurotypical individuals engage in self-stimulatory behavior, such as hair-twirling or foot-tapping, but are better able to self-monitor and continue with work or social interactions. These types of behaviors, however, are largely ignored by Navajo parents of children with disabilities, who tend to focus more on the strengths of their children rather than behavioral excesses or deficits (Connors & Donnellan, 1998). Consideration should be given to both cultural variables and educational implications when developing intervention targets for students with ASD.

It is important to understand cultural variables, identify behaviors that actually need to be targeted, and then work to develop an open and ongoing dialogue when differences in perspective emerge. For example, is the family comfortable with the student having eye contact in a limited number of settings (e.g., when seated at a table across from an educator in the school)? Can the school ignore self-stimulatory behavior unless it interferes with teaching (e.g., when the child cannot divert his attention away from self-stimulatory behavior to complete his work)?

- Educators and service providers may need to be willing to modify teaching and intervention strategies as appropriate to meet the needs of students with cultural values and experiences different from the dominant culture. Consider the following examples:
  - Let's say the teacher and paraprofessional use DTI as a means of teaching a broad array of skills to a student with ASD. They may find it helpful to supplement DTI with strategies such as {a} English as a Second Language (ESL) instruction from the child's school district (Winzer & Mazurek, 1998), {b} alternative communication systems such as pictures (Snell & Brown, 2000), or {c} teaching materials in the most relevant language for the student (Baca & Cervantes, 1998).
  - Imagine that support staff have recommended the use of another research-supported intervention, such as Schedules. Steps should be taken to ensure that symbols and pictures are culturally meaningful for the child, as well as for persons with whom the child interacts in the home and school settings (Trembath, Balandin, & Rossi, 2005).
  - Social development should be targeted for all individuals on the autism spectrum. The school may have developed a Peer Training Package (another research-supported intervention) to facilitate social skill development. When selecting peer models, efforts should be made to identify peers from similar cultural backgrounds to that of the child with ASD (Wilder et al., 2004).
- Like professionals in all other settings, school staff may have biases that can inadvertently enter the educational process. As with any intervention approach, educators must examine their personal biases and expectations in relation to service delivery for their students who come from a different cultural background than the dominant culture (Wilder et al., 2004).

  Biases may enter our interactions in the most unexpected ways. For example, we may over-generalize information we learned in a course on multiculturalism! Consider the issue of collectivism. Collectivism describes a particular outlook that stresses the group over the individual, and interdependence of group members. Some (but not all) cultures adhere to a collectivist perspective.

Several studies have indicated that people from the dominant culture assume that collectivist aspects of certain cultures can lead to strong family support (Bailey et al., 1999; Gatford, 2004). This may be true for some families, but it is certainly not true for all.

In some cultural minority populations, having a child with a disability can be a source of shame for a family. Also, cultural norms may discriminate against individuals with disabilities, or can undermine the likelihood that parents will seek information about disability issues. So, while knowledge of common cultural norms is helpful, school professionals must keep in mind the individual needs of each family.

Socioeconomic Status

A family's socioeconomic status has been shown to have a significant impact on parental involvement in education. Many low-income families report that they have limited access to information and professional supports for their child's disability (Baxter & Kahn, 1999; Diamond & Kontos, 2004). This means the quality of total care may be compromised and a child's progress may depend almost exclusively on supports he receives through the school system.

Even when you try to establish a collaborative relationship with the family, financial issues may present a problem. For example, families are often asked to make certain their children practice skills at home. But some families do not have the necessary financial resources to obtain the materials required for the learning activity.

Financial resources can also impact issues such as transportation. Schools should consider a family's transportation needs when scheduling team meetings or other school-based activities.

Employment and Family Issues

Employment can impact financial resources and the amount of time parents have available for participating in the educational process (Brotherman & Goldstein, 1992; Bluth, Roberson, Billen, & Sams, 2013; Serrata, 2012).

For two-parent households, one parent may stay home to coordinate the various services that are required for the child with ASD. A mother or father may also make the decision to stay home because no childcare is available for their child, or may become one of the primary out-of-school "therapists" for the child.

Complicating matters still further, it is not unusual for parents to have more than one child with some type of disability or educational need. In this case, the stressors are increased as parents try to make certain each of their children receives sufficient support.

The choice for one parent to stay home can be a double-edged sword. Although it resolves some issues, it may create others (e.g., limited financial resources). Parents who make the decision to stay home to address service delivery concerns for their child with ASD may bring unique expertise to the table when you engage in evidence-based practice.

Military activity may temporarily affect family composition. Military families who are served in your school system may face unique challenges.

Consider the following circumstances that are unique to military families:

- One parent may be deployed and may have very limited contact with family members at home.
- Military families experience frequent moves which results in limited support systems such as family members or friends to help with childcare or to provide emotional support.
- Restarting services in a new area means a new school, new service providers (speech therapist, occupational therapist, behavior specialist), new pediatrician, new dentist, etc.
- Military personnel face challenges such as dealing with Post Traumatic Stress Disorder, depression, and anxiety related to military service, and physical injury when wounded during service.
- Military families face uncertainty regarding where they will live year-to-year and when a deployment may occur.

We have provided a list of resources specific to military families at the end of this chapter.

While involvement by extended family members, such as grandparents, can be a source of emotional and practical support, it can also present significant challenges. Parents may be pressured by relatives to modify the intervention strategies used to help the child with ASD. Some extended family members may deny the fact that the child is on the autism spectrum, whereas others impose their views about child rearing when the family is already under severe stress.

These factors reinforce the need for and usefulness of building a collaborative relationship between family and school. By working together, the stressed family member may be better prepared to address skills you have taught in the school setting and generalize them to the home and community.

Severity of Symptom Presentation

Has a student on the autism spectrum ever worn you down by the end of the day? Imagine how challenging it is to care for this child for all non-school hours of the day, year-round. No matter how much parents love their children, they, like all of us, have limited energy.

Parental participation in the educational process may be affected by a child's problem behaviors, and the severity of those behaviors. Research has shown that maternal involvement in educational activities in both home and school settings is related to the severity of the child's behavior problems (Benson et al., 2008). In other words, a mother whose child with ASD exhibits severe behavior problems is more likely to identify lack of time and limited energy as barriers to participating in educational activities.

Severity of symptoms may also affect how welcome parents feel in the school. It is always difficult for parents to learn their child is not successful in school. It is still more challenging when parents find out their child is disruptive or creates an unsafe environment for himself, other students, or school staff. Imagine how difficult it is to face this news over and over again. Unless we work hard to understand how tough this is for families, it will be difficult to create an environment in which they feel welcome to openly discuss the need for specific intervention procedures.

Finally, the severity of a student's symptoms has a significant effect on his ability to participate in the educational process. Parents of students who can participate in the selection of appropriate intervention targets and interventions may be more hopeful about their child's ability to manage his own affairs in adulthood.

School Factors

It is important to note that school factors can also influence family participation in the educational process for children with ASD.

Consider the following:

- School personnel often feel they are unable to provide emotional support for parents because of large caseloads and ambiguity regarding their ability to provide such support (Canary, 2008).
- Many parents perceive school personnel as authority figures, and are uncomfortable voicing an opinion that may be in conflict with the opinions of these individuals.
- A mother's involvement in the education of her child with ASD is affected most by the attempts of school personnel to encourage and provide opportunities for active involvement in her child's education (Seitsinger et al., 2007). What you do really does make a difference!
- School systems do not always involve the student in the selection of appropriate intervention targets, or of interventions designed to improve student skills.

Social Validity

Even a potentially effective intervention will not work for some families unless they feel it is appropriate.

Social validity can be broadly defined as approval of or satisfaction with a specific intervention. Social validity is usually evaluated by someone who works with, or shares the life of, the student with ASD. Interestingly, social validity can influence whether or not the interventions are being implemented accurately. It should come as no great surprise that parents who do not approve of an intervention are less likely to implement it accurately in their home or community. You are less likely to meet your goal of a having a child generalize a skill across settings if parents report low social validity.

For many years, only one factor was considered when researchers conducted intervention studies—an objective measurement of the target behavior. This is understandable, but it falls short of what is necessary. We do need objective measurement of whatever behavior we are targeting, but we also need to have data on social validity.

Although extensive literature has been devoted to identifying effective interventions for students with ASD, few of these studies have examined the social validity of these interventions. That is, there is limited information regarding parents' perceptions of the effectiveness of strategies that may be implemented in school settings.

Callahan et al. (2008) examined the social validity of several educational strategies (including individualized programming, data collection, research-supported interventions, active collaboration, and a focus on long-term goals).

These yielded some interesting outcomes to consider:

- On a positive note, high parental social validity was reported for all the strategies, with the highest ratings for strategies falling under the data collection category.
- While still rated as socially valid interventions, research-supported interventions received the lowest rating by parents. Several of the procedures included in this category were interventions (e.g., modeling, prompting, DTI) that have been shown to be effective based on the results of the National Standards Project.

  Parents who had more training in these procedures were likely to rate them as highly socially valid. This underscores the importance of having an ongoing dialogue with parents about effective interventions.

Assessment of social validity should be extended to the student with ASD whenever feasible. Ask the student directly if she believes the intervention is leading to improvements in her communication, social interactions, or independence in life skills.

Recommendations for Incorporating Family Preferences and Values

People often think evidence-based practice is about the research—and it is! But it is not about the research alone. The values and preferences of family members, including the individual with ASD when appropriate, must be respectfully addressed. Otherwise, we are not engaging in evidence-based practice.

Even if you have data to show that a current intervention results in improvements for a student, it does not mean that your work is done. Your goal is also to create a welcoming environment so parents can participate in their child's education. Further, school staff must receive training to understand that, whenever feasible, the student should participate in the educational process as well.

You already know that families are more likely to be involved in educational programming when it includes collaboration among parents and school personnel (Canary, 2008). You also understand the importance of using active strategies to incorporate the values and preferences of families into the educational process for children with ASD. Translating that knowledge and understanding into our daily activities, however, requires effort.

Schools are most likely to engage in evidence-based practice if they have explicit strategies for addressing family preferences and values. We offer recommendations as a guide for schools in developing these strategies.

These recommendations include:

- data collection
- ongoing communication
- parent education and training
- tackling barriers to family participation
- informing families of their choices and options

- addressing conflicting views
- establishing appropriate family supports
- supporting parents in helping their children to generalize skills

Data Collection

The first step in incorporating family preferences and values into the intervention process is ensuring that the educational team has a clear understanding of those values and preferences. You should gather information on a family's motivation to participate in their child's educational progress. You are already familiar with collecting data on student outcomes (see Chapter 3), but data collection must be extended to the perspective of family members as well.

It is easy to misinterpret what it means when parents are not actively participating in the education of their child with ASD. Some people assume that parents are satisfied with the supports their child receives. Others believe that parents are uninterested in their child's educational progress. Yet it should be clear by now that there are barriers that may impede parent participation in the process. You may find that you can increase family participation by considering the barriers they face and offering supports to families (Davis-McFarland, 2008). Directly assessing the family's motivation to participate is a great way to begin the process.

Don't restrict your information-gathering to the parents. Providing the student with ASD the opportunity to voice his opinion about intervention goals or options is also important.

Several tools are available to assess factors that affect a family's motivation to participate in the educational process:

- The *Family Needs Survey* (Bailey & Simeonsson, 1990) can provide information related to current stressors in the life of the family, and the need for support to manage those stressors (see Table 1).
- Instruments such as the Child Preference Indicators (Moss, 2006) allow a family to share personal knowledge and expertise about their child with the educational team. This offers parents the opportunity to provide valuable input related to strategies for reinforcement, self-calming skills, and other information needed for a successful educational plan.

- In order to gather information regarding parents' specific needs related to the implementation of research-supported interventions, you may need additional tools. Hunter and Wilczynski developed the *Autism Spectrum Disorder–Parental Participation Questionnaire* (ASD-PPQ) for this purpose and it was revised to reflect the findings of the NSP2 (see Table 2). You can use the ASD-PPQ to gather information regarding parent knowledge and acceptability of research-supported interventions. It is important to gain insight into parents' views regarding their intervention options before you begin serving new students. For children who are already receiving services, parents can complete this form prior to regularly scheduled meetings or other interactions.
- Student participation in the educational process should occur whenever possible. It can be helpful to identify the skills the student believes should be targeted as well as her interest in learning about different research-supported interventions. Wilczynski and Hunter developed the *Autism Spectrum Disorder–Student Participation Questionnaire* (ASD-SPQ) for this use (see Table 3). You can use the ASD-SPQ to gather information from students who are capable of participating in educational decisions that support their progress. Students who can complete this form are most likely older students with stronger communication skills.

  Please note: Comprehensive Behavioral Treatment for Young Children is not listed as an intervention on this form as the focus is on young children for whom the ASD-SPQ is not appropriate.

You should make it clear to the family that, should they decide to complete the survey, the information will be kept in strict confidence, and that their participation in this kind of survey is purely voluntary.

Parent and student input is important, so gathering information is essential. However, there are dangers in gathering this information if you do not use it in the educational process. Here are several reasons why:

- Families may believe you do not think their time is valuable. After all, it takes time to complete these forms.
- Families may feel alienated.
- Families may be less likely to share relevant information with you in the future.

Table 1} Family Needs Survey

Family Needs Survey

(Revised, 1990b)

Child's Name: _____ Person Completing Survey: _____

Date Completed: _____/____/_____ Relationship to Child: _____

Dear Parent:

Many families of young children have needs for information or support. If you wish, our staff are very willing to discuss these needs with you and work with you to identify resources that might be helpful.

Listed below are some needs commonly expressed by families. It would be helpful to us if you would check in the columns on the right any topics you would like to discuss. At the end there is a place for you to describe other topics not included in the list.

If you choose to complete this form, the information you provide will be kept confidential. If you would prefer not to complete the survey at this time, you may keep it for your records.

	Would you like to discuss this topic with a staff person from our program?		
TOPICS	**No**	**Not Sure**	**Yes**
Information			
1. How children grow and develop			
2. How to play or talk with my child			
3. How to teach my child			
4. How to handle my child's behavior			
5. Information about any condition or disability my child might have			
6. Information about services that are presently available for my child			
7. Information about the services my child might receive in the future			
Family & Social Support			
1. Talking with someone in my family about concerns			
2. Having friends to talk to			
3. Finding more time for myself			
4. Helping my spouse accept any condition our child might have			
5. Helping our family discuss problems and reach solutions			
6. Helping our family support each other during difficult times			
7. Deciding who will do household chores, child care, and other family tasks			
8. Deciding on and doing family recreational activities			
Financial			
1. Paying for expenses such as food, housing, medical care, clothing, or transportation			
2. Getting any special equipment my child needs			
3. Paying for therapy, day care, or other services my child needs			
4. Counseling or help in getting a job			
5. Paying for babysitting or respite care			
6. Paying for toys that my child needs			

Family Needs Survey. Donald B. Bailey, Jr. & Rune J. Simeonsson. FPG Child Development Institute, The University of North Carolina at Chapel Hill.

TOPICS	Would you like to discuss this topic with a staff person from our program? No	Not Sure	Yes
Explaining to Others			
1. Explaining my child's condition to my parents or my spouse's parents			
2. Explaining my child's condition to his or her siblings			
3. Knowing how to respond when friends, neighbors, or strangers ask questions about my child			
4. Explaining my child's condition to other children			
5. Finding reading material about other families who have a child like mine			
Child Care			
1. Locating babysitters or respite care providers who are willing and able to care for my child.			
2. Locating a day care program or preschool for my child			
3. Getting appropriate care for my child in a church or synagogue during religious services			
Professional Support			
1. Meeting with a minister, priest, or rabbi			
2. Meeting with a counselor (psychologist, social worker, psychiatrist)			
3. More time to talk to my child's teacher or therapist			
Community Services			
1. Meeting & talking with other parents who have a child like mine			
2. Locating a doctor who understands me and my child's needs			
3. Locating a dentist who will see my child			

Other: Please list other topics or provide any other information that you would like to discuss .

_____

_____

Is there a particular person with whom you would prefer to meet?

_____

_____

Thank you for your time.
We hope this form will be helpful to you in identifying the services that you feel are important.

Family Needs Survey. Donald B. Bailey, Jr. & Rune J. Simeonsson. FPG Child Development Institute, The University of North Carolina at Chapel Hill.

Table 2} *Autism Spectrum Disorder – Parental Participation Questionnaire* (ASD-PPQ)

Parental Participation Questionnaire

Dear Parents and other Family Members:

Thank you for taking the time to read and respond to this questionnaire. We encourage you to use it as an opportunity to tell us what services you believe your child needs. It also helps us to know your family better.

We believe we can provide better services for your child if we understand your views about intervention and know more about your family. We understand that not all families like to share this information. Filling out this form is completely voluntary. If you do not feel comfortable answering any of the questions below, please leave them blank.

Student's Name: _____ **Date:** _____

Family Characteristics:

1. Please tell us about the people currently living in the child's home.

Name	Age	Relationship to Child

If your child lives in more than one home (e.g., as a result of joint custody), please tell us about the people currently living in your child's second home.

Name	Age	Relationship to Child

Autism Spectrum Disorder–Parental Participation Questionnaire (ASD-PPQ). Melissa Hunter & Susan M. Wilczynski. National Autism Center.

2. Are there other family members or friends who care for your child? If so, please tell us their names and roles.

3. What language is primarily spoken in your home? Would you like an interpreter for meetings with your child's school team?

4. For the purpose of scheduling team meetings, what days/times typically work best for you and your family?

5. How would you prefer we contact you? Email? Phone? Written notes? Other? Please provide the relevant contact information below, and circle the mode of communication you prefer.

    a. E-mail address(es):

    b. Phone number(s):

    c. Fax:

    d. Webpage:

6. We have a few questions about other services your child receives.

    a. Does your child receive additional intervention or support services from other providers? If so, which ones?

    b. Would you like to invite other providers to attend educational meetings for your child? If so, you can invite them yourselves or we can provide you consent forms so we can contact them. Please let us know what method of notification you would prefer.

Autism Spectrum Disorder–Parental Participation Questionnaire (ASD-PPQ). Melissa Hunter & Susan M. Wilczynski. National Autism Center.

Research-Supported Interventions

This table identifies interventions for ASD that have been shown to be effective through research. We would like to know your views on these interventions. Please place a check mark in the appropriate box if you agree with any of the statements in the left column. You may check more than one box in each column.

	Behavioral Intervention	Comprehensive Behavioral Treatment for Young Children	Cognitive Behavioral Intervention Package	Language Training (Production)	Modeling	Naturalistic Teaching Strategies	Peer Training Package	Pivotal Response Treatment	Schedules	Self-Management	Story-based Intervention	Parent Training	Scripting	Social Skills Package
I am not familiar with this intervention.														
I would like to learn about this intervention.														
I would like to discuss this intervention option for my child.														
My child receives this intervention outside of the school.														
This intervention has been effective with my child in other settings.														
This intervention has been ineffective with my child in other settings.														
If it is available, I would like to receive training in this intervention.														
I do not want this intervention used with my child.														

Other Interventions: You may be aware of additional interventions that should be considered for your child. Use this space to identify additional interventions you would like to discuss with school staff. Please write on the back of this form if you need additional space.

Available School Support Services

Each student we serve has different needs. We have a range of support services available to help our students. We would like to know your views on these support services. Please place a check mark in the appropriate box if you agree with any of the statements in the left column. You may check more than one box in each column.

	Speech Services	Occupational Therapy	Physical Therapy	Academic Support	Autism Support	Emotional Support	Title I
I am not familiar with this support service.							
I would like to learn about this support service.							
I would like to discuss this support service with school staff.							
My child receives this service outside the school.							
This support service has been effective in the past.							
This support service has been ineffective in the past.							
I do not want this support service for my child.							

Final comments: We are interested in any information you can provide us that will lead to appropriate educational services for your child. Use this space to identify any additional information you believe will help us meet that goal. Please write on the back of this form if you need more space.

Autism Spectrum Disorder–Parental Participation Questionnaire (ASD-PPQ). Melissa Hunter & Susan M. Wilczynski. National Autism Center.

Table 3} *Autism Spectrum Disorder – Student Participation Questionnaire* (ASD-SPQ)

Student Participation Form

Student's Name: _____ **Date:** _____

Thank you for taking the time to read and respond to this questionnaire. It gives you the chance to tell us important information that could affect the way we teach you in this school. We believe your opinion is important. Not all students want to complete this questionnaire. You do not have to complete this form if you do not want to. Also, some students like help in filling out this form. Please let us know if you would like someone to help you complete this form.

Skills to Target
Schools try to teach students many things. Like other students in this school, we know there are things you can learn at school. Here is a list of skills students sometimes need to learn. Please put a check mark next to the skills you think you need to learn.

1. Completing homework _____
2. Paying attention in class _____
3. Talking to other students _____
4. Talking to your teachers _____
5. Taking care of yourself _____
6. Academics (class work) _____

If you need help with academics, please write down the names of the classes you would like help with.

7. Spending time with other students _____
   a. If you need help spending time with other students, is it because other students pick on you? Please circle "yes" or "no."

      YES NO

   b. If you need help spending time with other students, is it because you are not sure how to hang out with other students? Please circle "yes" or "no."

      YES NO

Autism Spectrum Disorder–Student Participation Questionnaire (ASD-SPQ). Susan M. Wilczynski & Melissa Hunter. National Autism Center.

8. Please tell us what other skills you think you need to learn. You can write on the back of this form if you need more space.

Selection of Strategies

There are many different ways to teach students new skills. Some students like to learn about the strategies school staff will use to teach you new skills.

1. Are you interested in learning more about strategies school staff may use to teach you new skills? Please circle "yes" or "no."

   YES NO

2. If you answered yes to question 1 above, let us know if you would like to learn more about any of the following strategies that are used to teach students. Put a check mark next to the strategies listed below. Most students are not familiar with these strategies. If you are not sure which one to check, please check them all. Then we can help you learn more about all of these strategies.

Behavioral Intervention	_____	Peer Training Package	_____
Comprehensive Behavioral Treatment for Young Children	_____	Pivotal Response Treatment	_____
Cognitive Behavioral Intervention Package	_____	Schedules	_____
Language Training (Production)	_____	Self-Management	_____
Modeling	_____	Story-based Intervention	_____
Naturalistic Teaching Strategies	_____	Parent Training	_____
		Scripting	_____
		Social Skills Package	_____

3. Please tell us if there is any additional information you would like your teachers or other school staff to know.

Autism Spectrum Disorder–Student Participation Questionnaire (ASD-SPQ). Susan M. Wilczynski & Melissa Hunter. National Autism Center.

Ongoing Communication

Students transition in and out of school systems. School staff are most likely to engage families when students first come in contact with schools. But continued collaboration between the home and school is critical for long-term success. Families should have frequent opportunities to share their opinions and concerns.

School staff need to create an open and ongoing dialogue with families. Parents should be encouraged to share both their agreements and disagreements with the educational team. This is the only way to be confident that family preferences and values are respected (Davis-McFarland, 2008).

School professionals are often so busy in their daily routines that they forget to create such an open environment. There are, however, many opportunities to maintain parent involvement in the educational process (see Table 4).

Table 4} Strategies for Maintaining Parent Involvement

Opportunities for Maintaining Parent Involvement	Opportunities to Consider
Informal meetings	• Parents may pick up their children for medical appointments • Parents may attend special class activities (e.g., birthday parties) • Parents may be involved in sports activities
Formal meetings	• IEP meetings • Parent-teacher conferences
Information sharing	• School-home notes • E-mail or phone conversations
Volunteering	• School outings • Fundraisers • Data collection in the classroom • Classroom assistants
School-based support groups	• Autism support groups • Disability support groups
Advisory board	• Capacity Development Team (see Chapter 5) • Parent-Teacher Association
Information-gathering forms	• Family Stress Survey • Child Preference Indicators • *Autism Spectrum Disorder–Parental Participation Questionnaire* • *Autism Spectrum Disorder–Student Participation Questionnaire*

Parent Education and Training

Students are best supported when their educators and parents work together. Think of the years of education and training you completed before serving students with special needs. After that, you received ongoing training through the school system and support from your colleagues. Still, most of us who provide services to children with special needs will find ourselves uncertain about how best to proceed from time to time.

Parents deserve the opportunity to receive training and ongoing support as well. Parents who are knowledgeable about their child's disability are more likely to be involved in their child's education, and are better able to extend the improvements you achieve with the student at school into the home or community. Thus, your students' successes may be maximized when parents receive sufficient education and training.

School staff can arrange for frequent training opportunities for interested parents who are able to participate. These trainings can be formal or informal, led by teachers, school-based therapy providers, school administrators, or outside consultants. In addition, educators can inform parents about independent training opportunities that may be available to them (see Chapter 5 for additional recommendations).

Schools can set a regular schedule (e.g., once per month) to provide families with frequent educational and training opportunities. Suggestions for training topics can be gathered by reviewing parent responses to the *Autism Spectrum Disorder—Parental Participation Questionnaire*. In addition, schools may wish to video or audiotape trainings so they can make them available for parents who are unable to attend.

Tackle Barriers to Family Participation

As noted above, there are several factors that affect the likelihood that families will be involved in their children's education. These barriers should be identified and addressed during the educational process.

Consider these efforts toward reducing barriers to parental participation:

- Finding the time to participate in the educational process is often very difficult for parents, particularly when the school day is usually shorter than their workday. To counteract this challenge, schedule educational meetings around times that work for the family. Ask families to identify what days/times work best for them (see Parental Participation Questionnaire). Also, give families plenty of notice for scheduled meetings.
- Provide parents with advance draft copies of materials that may be discussed in meetings. For example, draft copies of Individualized Education Programs (IEPs) can be provided to the family for review as early as possible.

- Of course, it is imperative to explain to the family that the materials they receive are "working documents" that can be modified in the meeting based on family or professional input. You will want to share information about the school's views in advance, and avoid leaving families with the impression that all decisions have already been made.
- Both parents and students can be overwhelmed by the jargon and acronyms that professionals frequently use. Avoid the use of educational jargon to the extent possible and, when unfamiliar terms are used, ensure that attempts are made to explain the meaning to families. Providing parents and students with a short "dictionary" of commonly used educational terms may be helpful.
- When the primary language spoken in the home is not English, you should develop a plan to ensure clear communication between school and home. For example, consider providing an interpreter, offering parent training in a language other than English, and/or writing documents in the family's primary language.
- Transportation may be a challenge for some families. For example, parents may rely on public transportation, which may influence their arrival time. Meeting times may need to revolve around these schedules. If families arrive well ahead of a scheduled meeting, efforts should be made to make them comfortable. Transportation may also affect which days parents might be available. For example, a mother or a father may have access to a family car only one day of the week.
- Parents may be concerned about their ability to find childcare for the student with ASD, or their other children. School staff may need to arrange for childcare at the school so parents can participate in meetings.
- Unfortunately, students with ASD are often taught to passively respond to adults in the environment. School personnel will need to encourage students to voice their opinions about intervention goals and options.

Inform Families of Choices and Options

Recognizing the family as the primary decision maker for a child is important. But families will be active participants in the educational process only if you provide the support they need to make informed decisions (Davis-McFarland, 2008).

You already know that school personnel are responsible for making parents aware of educational options that are available for their child. But translating this knowledge into practice is more challenging than many people realize. How often do we assume that the

parents have already seen and read their rights, so we hand them a written copy without discussion? If parents in this situation don't understand their rights, they are unlikely to admit it when surrounded by a group of professionals anxious to begin the meeting.

We offer a brief list of issues and strategies that may empower families:

- Encourage parents to ask questions. For example, when placement decisions are made, provide parents with information regarding different placement options. They may have questions about what these options mean for their child.

  Will their child be pulled from the regular classroom? If so, for how long? How much time will she spend in support services (e.g., speech-language therapy) each week? What are the benefits and risks of the different types of service options available to her? What social opportunities does she lose when she is in a more restrictive environment?

  Parents are likely to have many additional questions, but they may be too intimidated to raise them in the group. Despite the fact that it will extend the length of these meetings, school staff should encourage parents to ask questions.

- Invite parents to observe their children in the school. Often, students act very differently in home and school settings. This may be even more true for students on the autism spectrum because they have difficulty generalizing skills from one setting to another.

  Sometimes educators and parents accuse each other of exaggerating or underestimating a child's skills. Very often, the difference in perspectives stems from true differences in skill performance across home and school settings.

  By inviting parents to observe their child in the classroom, at lunch, or on the playground, it becomes easier to have an open dialogue about the student's skills and needs in the school setting. Parents may have suggestions for handling challenging behaviors that will benefit educators. Similarly, parents may be open to recommendations for generalizing a skill to home and community settings because they have seen it as a real strength when observing in the school.

- For parents who are interested, help establish communication with other families who are facing similar challenges. Parents benefit from the opportunity to ask each other questions and discuss their concerns. Parents can help each other understand the options that are available to them both in and out of the school system.

Address Conflicting Views

Even when you have established strategies for obtaining parental input and created a welcoming environment that allows for open and ongoing dialogue, parents and schools will not always be in agreement. Conflicting perspectives can be uncomfortable for all parties involved. This can create a challenging but not insurmountable problem for the educational team and the family.

Consider the example in which a parent might identify an intervention for her child that is in conflict with the educational approach suggested by school professionals. For instance, a mother may request that her child be on a special diet while in school. Your school system has reviewed the scientific literature on the diet and does not recommend the approach because harmful medical side effects (e.g., nutritional deficiencies, loss of bone density) have sometimes been reported. How do you proceed?

In a situation like this, we would recommend moving forward together by taking the following steps:

- Show continued respect for parental expertise regarding a child's needs.
- Effectively communicate your concerns for the child's health. Provide the family with a copy of the *Findings and Conclusions* report of NSP2 so they can be familiar with current research in this area.
- Recommend that the family discuss medical aspects of the diet with a qualified physician. It is important to collaborate not only across home and school, but also with outside professionals.
- Encourage a data-based approach for all interventions (see Chapter 3 on professional judgment). Model the use of single-subject research design with other school-recommended interventions that are implemented. Show the parents how this can be used to evaluate the effectiveness of the interventions the family puts in place (e.g., the diet). Provide support for parents who are interested in using single-subject research design to identify the effectiveness of the intervention for their child.

In the end, as the primary caregivers for their children, parents have unique expertise related to their children's strengths and needs. Their opinion should be carefully considered and highly valued (McNaughton, 1994).

Establish Appropriate Family Supports

You can establish family supports within your building or district, and/or provide families with information about supports that are available elsewhere. Some schools establish parent support groups to offer additional support to families. These groups create opportunities for families to share information and get to know other families in similar positions.

If a school does not feel there is enough need to warrant a support group in their building, collaborating with other schools in the district or providing parents with information on community resources may be better options. Parents should not feel "pushed" into participating in a support group, however. A sizeable number of parents prefer privacy, have limited time, or feel that a support group would not be helpful.

Support Parents in Generalizing Skills

Given that children with ASD experience difficulties generalizing skills across environments, it is essential to coordinate efforts to teach skills across multiple environments. Many learning opportunities naturally occur at home or when the family is in the community. Parents can continue their involvement in their child's education by engaging in activities at home. These can include child-directed play, creating opportunities for social interaction with other children, educational leisure activities such as trips to a museum, and the development of adaptive skill goals such as toilet training, self-care, and community safety skills (Benson et al., 2008).

Schools can facilitate skill development in the home and community by:

- Providing materials that parents may need in order to work on specific skills
- Providing parents with ideas and training related to skill development in naturally occurring learning environments
- Communicating with parents about a child's current goals and progress in her educational programming
- Stressing your awareness of the importance of learning opportunities at home (When possible, teachers or therapists can make home visits to demonstrate specific strategies for parents in the home.)

Final Considerations

As noted earlier, a school's efforts to encourage parental involvement are strongly related to the parents' level of involvement in their child's education. When school staff make clear efforts to contact parents and include them in their child's education, parents report more positive experiences with the school and are more likely to reach out to the school (Seitsinger et al., 2007).

Everyone on the educational team (e.g., teachers, specialty services, paraprofessionals, etc.) should learn how to create a welcoming environment in the school. Administrative support is critical to creating school- and district-wide goals related to parent involvement (Benson et al., 2008). School personnel will also need to consider their own feelings related to parent participation in education, and address concerns or biases as needed. Also, schools should develop training for school staff who are not accustomed to the idea of a student fully participating in the educational process, if the student has the capacity to participate.

When parents are knowledgeable about the needs of their children and receive appropriate support from school personnel, the children perform better academically (Seitsinger et al., 2007) and are likely to experience benefits in other areas of their lives. Schools must take an active role in incorporating family preferences and values into the educational process for children with ASD.

The following case example illustrates the importance of incorporating family preferences and values into the educational process. It also demonstrates the benefit of gathering information related to family preferences and values prior to the implementation of interventions.

CASE EXAMPLE

Emma is a 6-year-old girl who will begin first grade at a small elementary school in the Northeast United States in the fall. She previously attended kindergarten in a different district, and her parents have moved over the summer due to new employment for her father. The family-centered approach described below was initiated prior to the first meeting of Emma's educational team.

Emma's parents called the special education director of the new school district, Dr. Smith, to inform her of their move and Emma's special education needs. Dr. Smith set up an informal, face-to-face meeting with the family to introduce herself and describe the process that the district would undertake to develop an appropriate educational program for Emma. During this meeting, Emma's parents expressed concern about her previous placement, indicating that they believed services were not intense enough to meet her needs.

Emma has a complex developmental history and currently has diagnoses of cerebral palsy, seizure disorder, and autism. She is primarily nonverbal, although she does produce some sounds and says a few common words such as "mama" and "open." Her primary mode of communication is sign language, and her mother is fluent in sign. In her previous school, she received several support services, including speech-language therapy, occupational therapy, and learning support services. Emma also had a paraprofessional who was with her in the classroom throughout the day. Her parents reported that her previous school encouraged the use of an augmentative and alternative communication device. However, they noted they were unhappy with this suggestion, given that Emma was already using sign language to communicate. Further, the communication device was cumbersome for her because of motor difficulties with one side of her body related to cerebral palsy. They also expressed concern that she would become "too dependent" on her paraprofessional.

Dr. Smith acknowledged their concerns, and explained the district's family-centered approach. She also discussed the concept of research-supported interventions. At the end of the meeting, Dr. Smith asked Emma's parents to complete a family stress survey, the Child Preference Indicators, and the Parental Participation Questionnaire to gather more information related to their values and preferences. (They did not ask Emma to complete the Student Participation Questionnaire because it is not developmentally appropriate for a 6-year-old.) Dr. Smith gave the parents a stamped, self-addressed envelope in which to return the forms.

In the meantime, she invited the family to observe various educational options that may be available to Emma, including a classroom for students with autism, a regular education first grade classroom, learning support services, speech-language therapy, and occupational therapy. Dr. Smith gathered the necessary consent signatures from other families to allow these observations to occur.

The responses of Emma's parents to the questionnaires revealed several sources of stress for the family, with three children under the age of seven, including one child with multiple disabilities. Other stressors included their recent move to a new home, beginning new jobs, and lack of family support in the area. Other responses indicated an interest in Comprehensive Behavioral Treatment for Young Children and a number of other

behavioral interventions. They also wished to increase Emma's speech-language services to promote her continued development of sounds and language skills. Based on their observations in the school, they cited the potential benefits of both the regular education classroom and the autism classroom for Emma. They did, however, report concerns about Emma's ability to interact with her same-age peers in the autism classroom.

The district conducted a comprehensive evaluation of Emma and used those results, along with the information described above, to develop a program for her. First, the autism support teacher for the district visited Emma's family at home to provide more information about the interventions which interested Emma's parents. The teacher also shared the data the school had collected to show these interventions were being implemented accurately by school personnel. With this additional information, Emma's parents were excited about using these strategies with her.

Because the autism classroom utilized behavioral interventions, the family expressed an interest in having Emma spend a portion of her day there. They were pleased to know their concerns had been addressed when the school suggested Emma should spend a portion of her day in the regular education classroom; this would support social skills development and provide opportunities for generalization of skills. However, both the parents and the district were concerned that, although the special education teacher and staff were fluent in sign language, her regular education teacher was not. They decided to provide an interpreter for Emma in the regular education classroom to facilitate her ability to communicate effectively.

The educational team then discussed the family's need for additional speech-language services. They authorized 30 minutes of speech-language therapy for Emma four days a week. The family also received information about additional speech-language providers in the area. Finally, Emma's parents were invited to attend monthly district-sponsored trainings on various issues related to meeting the needs of children with autism. They were also offered weekly updates on Emma's progress toward educational goals.

This case example demonstrates the process school personnel can utilize to ensure that family preferences and values are incorporated into the educational process. Emma's parents reported high acceptability of her educational programming because they were involved in decision making from the very beginning. They noted the willingness of Dr. Smith to meet with them personally and that of the autism support teacher to come to their home. These supports eased their concerns and helped them to feel valued. School staff also reported that a good relationship had been established with Emma's family and were positive about her educational progress.

Resources for Military Families

Autism Care and Treatment for Military Families
http://acttodayformilitaryfamilies.org/default.aspx

AMFAS: American Military Families Autism Support
amfas.org

National Military Family Association
http://www.militaryfamily.org/your-benefits/efmp-special-needs/

Operation Autism: A resource guide for military families
http://www.operationautismonline.org

Recommended Readings

Callahan, K., Henson, R. K., & Cowan, A. K. (2008). Social validation of evidence-based practices in autism by parents, teachers, and administrators. *Journal of Autism and Developmental Disorders, 38*, 678-692.

Canary, H. (2008). Creating supportive connections: A decade of research on support for families of children with disabilities. *Health Communication, 23*, 413-426.

Cassidy, A., McConkey, R., Truesdale-Kennedy, M., & Slevin, E. (2007). Preschoolers with autism spectrum disorders: The impact on families and the supports available to them. *Early Child Development and Care, 178*, 115-128.

Seitsinger, A. M., Felner, R. D., Brand, S., & Burns, A. (2008). A large-scale examination of teachers' practices to engage parents: Assessment, parental contact, and student-level impact. *Journal of School Psychology, 46*, 477-505.

Trembath, D., Balandin, S., & Rossi, C. (2005). Cross-cultural practice and autism. *Journal of Intellectual and Developmental Disabilities, 30*, 240-242.

References

Baca, L. M., & Cervantes, H. T. (1998). *The bilingual special education interface* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

Bailey, D. B., & Simeonsson, R. J. (1990). *Family needs survey*. Chapel Hill, NC: The University of North Carolina, FPG Child Development Institute.

Bailey, D. B. J., Skinner, D., Correa, V., Arcia, E., Reyes-Blanes, M. E., Rodriguez, P., et al. (1999). Needs and supports reported by Latino families of young children with developmental disabilities. *American Journal on Mental Retardation, 104*, 437-451.

Baxter, A., & Kahn, J. V. (1999). Social support, needs and stress in urban families with children enrolled in an early intervention program. *Infant-Toddler Intervention, 9*, 239-257.

Benson, P., Karlof, K. L., & Siperstein, G. N. (2008). Maternal involvement in the education of young children with autism spectrum disorders. *Autism, 12,* 47-63.

Brotherman, M. J., & Goldstein, B. L. (1992). Time as a resource and constraint for parents of young children with disabilities: Implications for early intervention services. *Topics in Early Childhood Special Education, 12*, 508-27.

Bluth, K., Roberson, P. N. E, Billen, R. M., & Sams, J. M. (2013). A stress model for couples parenting children with autism spectrum disorders and the introduction of a mindfulness intervention. *Journal of Family Theory & Review, 5*, 194-213.

Callahan, K., Henson, R. K., & Cowan, A. K. (2008). Social validation of evidence-based practices in autism by parents, teachers, and administrators. *Journal of Autism and Developmental Disorders, 38*, 678-692.

Canary, H. (2008). Creating supportive connections: A decade of research on support for families of children with disabilities. *Health Communication, 23*, 413-426.

Cassidy, A., McConkey, R., Truesdale-Kennedy, M., & Slevin, E. (2007). Preschoolers with autism spectrum disorders: The impact on families and the supports available to them. *Early Child Development and Care, 178*, 115-128.

Connors, J. L., & Donnellan, A. M. (1998). Walk in beauty: Western perspectives on disability and Navajo family/cultural resilience. In H. I. McCubbin, E. A. Thompson, A. I. Thompson, & J. E. Fromer (Eds.), *Resiliency in Native American and immigrant families* (pp. 159-182). Thousand Oaks, CA: Sage Publication.

Danya International & Organization for Autism Research (2004). *Life journey through autism: An educator's guide* [Compact disc]. Arlington, VA: OAR.

Davis-McFarland, E. (2008). Family and cultural issues in a school swallowing and feeding program. *Language, Speech, and Hearing Services in Schools, 39*, 199-213.

Diamond, K. E., & Kontos, S. (2004). Families' resources and accommodations: Toddlers with Down's syndrome, cerebral palsy, and developmental delay. *Journal of Early Intervention, 26*, 253-265.

Gatford, A. (2004). Time to go home: Putting together a package of care. *Child: Care, Health, and Development, 30*, 243-246.

Hieneman, M., & Dunlap, G. (2001). Factors affecting the outcomes of community-based behavioral support: II. Factor category importance. *Journal of Positive Behavior Interventions, 3*, 67-74.

Individuals with Disabilities Education Improvement Act of 2004, Pub. L. 108-466.

Kohler, F. (1999). Examining the services received by young children with autism and their families: A survey of parent responses. *Focus on Autism and Other Developmental Disabilities, 14*, 150-158.

References

Lian, M. (1996). Teaching Asian American children. In E. Duran (Ed.). *Teaching students with moderate/severe disabilities, including autism: Strategies for second language learners in inclusive settings* (2nd ed., pp. 239-253). Springfield, IL: Charles C. Thomas Publisher, Ltd.

McNaughton, D. (1994). Measuring parent satisfaction with early childhood intervention programs: Current practice, problems, and future perspectives. *Topics in Early Childhood Education, 14*, 26-48.

Moss, J. (2006). *Child Preference Indicators* (Publication No. CA298.jm). Oklahoma City, OK: University of Oklahoma Health Sciences Center, College of Medicine, Center for Learning and Leadership/UCEDD.

Murray, M. M., Christensen, K. A., Umbarger, G. T., Rade, K. C., Aldridge, K., & Niemeyer, J. A. (2007). Supporting family choice. *Early Childhood Education Journal, 35*, 111-117.

No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq. (2002).

Peterson, A., & Speer, P. W. (2000). Linking organizational characteristics to psychological empowerment: Contextual issues in empowerment theory. *Administration in Social Work, 24*(4), 39-58.

Quah, M. M. (1997). Family-centered early intervention in Singapore. *International Journal of Disability, Development and Education, 44*, 53-65.

Seitsinger, A. M., Felner, R. D., Brand, S., & Burns, A. (2007). A large-scale examination of teachers' practices to engage parents: Assessment, parental contact, and student-level impact. *Journal of School Psychology, 46*, 477-505.

Serrata, C. (2012). Psychological aspects of parenting a child with autism. *Journal of Applied Rehabilitation Counseling, 43*, 29-35.

Snell, M. E., & Brown, F. (Eds.) (2000). *Instruction of students with severe disabilities* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Trembath, D., Balandin, S., & Rossi, C. (2005). Cross-cultural practice and autism. *Journal of Intellectual and Developmental Disabilities, 30*, 240-242.

Vardi, G., & Merrick, J. (2003). Barriers to home care and social support for an adolescent with disability. *International Journal of Adolescent Medicine and Health, 15*, 85-87.

Wilder, L. K., Dyches, T. T., Obiakor, F. E., & Algozzine, B. (2004). Multicultural perspectives on teaching students with autism. *Focus on Autism and Other Developmental Disabilities, 19*, 105-113.

Winzer, M. A., & Mazurek, K. (1998). *Special education in multicultural contexts*. Upper Saddle River, NJ: Prentice Hall.

5

Building and Sustaining Capacity to Deliver Interventions that Work

Throughout this manual, we have endeavored to provide you—front-line interventionists—with the most current and accurate information available on research-supported interventions for children and adolescents with autism spectrum disorder (ASD).

Each of the preceding chapters focused on the elements we identified as critical to the development of evidence-based practice: the history and evolving understanding of autism; the Established Interventions identified by the findings in both reports of the National Standards Project; the importance of your professional judgment and data-based decision making; and the need to incorporate the values and preferences of families in intervention plans.

Keep in mind that evidence-based practice is the framework of decision making and implementation. Evidence-based interventions are only one component of evidence-based practice. In this final chapter, we discuss the need to build capacity for implementing effective interventions in the schools. We offer our strong recommendation to build capacity using a comprehensive, systemic approach.

Let us be clear at the outset about one very important point. We understand the "real world" situations and challenges you face, every day. We acknowledge your commitment to excellence with the students you serve. This manual, and the recommendations herein, are meant to support the work you do and to further our mutual goal of providing appropriate services by increasing the use of evidence-based interventions in the schools. We know the implementation of evidence-based interventions requires significant time and resources. We also know that it will enable educators and schools to provide more efficient and effective interventions, with better outcomes for your students with ASD.

There are two approaches you may use to build the capacity to implement effective interventions for students with ASD. Specifically, you might adopt a grassroots approach or a systemic approach to creating change.

The grassroots approach typically begins and ends with one professional's dedication to meeting the needs of an individual student. As is often the case, a teacher (or speech-language pathologist, psychologist, or other professional in the school) may try to develop her own capacity to meet the needs of one or more of her students. This grassroots approach places tremendous pressure on individual service providers! Unfortunately, we know that this approach to developing capacity is the reality many educators face. The grassroots approach has several inherent weaknesses which will be familiar to front-line interventionists and administrators.

Developing the capacity to offer interventions to one student at a time made more sense when a diagnosis of autism spectrum disorder was viewed as "rare." After all, if most educators would never have the opportunity to work with a student on the autism spectrum, why build systemic capacity? In the 21st century, however, autism and its related disorders are all too familiar in our classrooms. There is no question that the number of diagnosed cases of ASD has increased steadily for nearly two decades (Centers for Disease Control and Prevention (CDC), 2014; Hertz-Picciotto & Delwiche, 2009). Schools now must prepare all staff to serve all children with ASD—including students with varying communication, social, cognitive, and adaptive skills. The grassroots approach is simply not an efficient strategy for meeting the needs of this increasingly large and diverse student population.

The complicated nature of intervention decisions requires the participation and input of all involved. As noted in Chapters 3 and 4, both initial intervention selection and the decision to continue using an intervention are complicated. When one person is solely responsible for intervention selection and continuation, decisions are more likely to be based on incomplete and potentially erroneous information. A teacher may have heard that an intervention was effective when, in fact, it has no evidence of effectiveness. A principal may invest training dollars in a workshop for the entire staff based on the opinion of one parent. This parent may report that the intervention worked for his son, but there may not be evidence the intervention should be applied to all students on the autism spectrum. It is always best to make intervention selection and continuation decisions in a systematic fashion with input from all key stakeholders.

Another inherent weakness to the grassroots approach is that it does not address the need for strategic planning. The accurate implementation of interventions often requires time, energy, and fiscal support beyond those immediately available to the front-line interventionist. Marshalling such resources requires strategic planning. This plan may involve identifying barriers to intervention implementation, preparing training materials and intervention guides, completing the groundwork necessary for training to occur, and evaluating essential outcomes. Strategic planning and allocation of necessary resources are best handled by a team that is dedicated to producing systemic change.

Therefore, we recommend that the most efficient way to build capacity for implementing effective interventions for students with ASD is to take steps that will produce systemic change. The systemic approach addresses the needs of the entire population of students with ASD, and provides support to school service providers as a team.

Development of a strategic plan for building capacity takes time, as does any endeavor requiring the participation of a group. But it is time well spent. It is only as a team of capable, competent professionals that you can overcome the barriers you will face. Once capacity to implement effective interventions has been developed, school professionals—working in collaboration with families—will be in a far stronger position to quickly provide interventions that have evidence of effectiveness (Adelman & Taylor, 1997).

We present five key steps to consider as you build sustainable capacity in your school:

- **Step 1**: Establish the Planning Team
- **Step 2**: Problem Clarification and Needs Assessment
- **Step 3**: Evaluating Outcomes
- **Step 4**: Developing a Training Plan
- **Step 5**: Sustainability

We will explore each of these steps for producing systemic change in further detail.

Producing Systemic Change

The autism spectrum is very broad, and includes students with a wide range of skills and needs. These students are served in general and special education classrooms throughout the country.

Given the diversity in the ASD student population, school professionals will not always feel adequately prepared to provide necessary supports to these students. What strategies does your school system have in place to develop systemic capacity to support these students?

As you assess your current capacity, you may begin by asking:

- Have many school personnel attended the same workshops? If so, who made the decision about securing training in this area?
- Are school professionals in agreement about when and how interventions should be implemented?
- Is there a system in place to evaluate accuracy of implementation and assess the outcomes for students?
- Is there a sense among school professionals that new ASD interventions come and go like fads?
- Has there been an organized effort to ensure all school staff have access to necessary resources?
- Who has planned to ensure this intervention can be sustained in the school?

The planning process will raise these questions, and many others. The first step is to establish a well-functioning and representative team that is committed to increasing the use of evidence-based interventions.

This team holds many responsibilities including, but not restricted to, the following:

- Evaluating their current capacity
- Determining how many different groups of students will be affected and how this relates to capacity building
- Identifying barriers that may undermine the plan (e.g., availability of resources, resistance from school personnel, lack of training, etc.)
- Problem-solving collaborative strategies for reducing the impact of these barriers (Although the process of reducing barriers can be time-consuming, it cannot be rushed.)
- Establishing the training process
- Developing necessary resources
- Advancing a plan to provide ongoing support to school staff

The remainder of this chapter describes a methodology for producing and sustaining the kind of systemic change that will build capacity to accurately implement interventions.

Step 1: Establish the Planning Team

> "Never doubt that a small group of thoughtful, committed individuals can change the world. Indeed, it's the only thing that ever has."
>
> — Margaret Mead

In order to effectively produce system-wide changes, many people must contribute to and feel ownership for the change process. A planning team should be developed to begin preparation for systemic change. The diverse perspectives of planning team members are a real advantage. The planning team will need to anticipate unique barriers to building capacity. Diverse experiences and perspectives will produce different solutions to these challenges. In addition, all school staff will likely benefit from a collaborative planning team that brings distinctive strengths to the table. Recognizing the roles and responsibilities of various school staff members is the first step in the process of capacity building, which is a continuing exercise in problem solving.

Each member of the planning team will bring specialized training and experiences to the group. In addition to their training in specific content domains (e.g., teaching, speech-language therapy, etc.), the most effective team will also include members with process-specific skills.

These skills may include, but are not restricted to, the following areas:

- **Data collection**. Data collection will be critical to the mission. So, at least one team member should understand efficient and effective strategies for measuring change. Team members with experience in data collection will help determine whether interventions are being implemented accurately and are leading to improved outcomes for students.
- **Leadership**. It can be beneficial to include team members with different leadership skills. For example, one member might be skilled in fostering collaborative relationships, while another might help direct the team forward in the decision-making process. As is the case in any team endeavor, different leadership styles may lead to conflict if a collaborative and respectful environment is not regularly fostered by all team members.

- **Generalization**. At least one team member should be charged with ensuring the plan to build capacity is extended across relevant environments (e.g., hallways, playground, cafeteria, etc.). Ideally, this staff member will have experience providing services across multiple environments.

While there will be a natural division of responsibilities on the team, it is important from the outset for everyone to have a shared sense of commitment to the process and responsibility for a successful result.

The two main functions of the team are planning and evaluation. The steps required for planning for capacity building are laid out in detail in this chapter; evaluating outcomes is also addressed.

Your planning team should represent all of the professionals who will deliver the intervention. In addition, the team should include representatives of any group that is responsible for ensuring the intervention is implemented accurately and sustained over time. This will include instructional agents as well as support services, personnel development, and administrative services staff.

Each of these groups is discussed below.

Instructional Agents

Individuals who regularly provide educational services to students with autism should be well-represented on the school-wide planning team.

Keep the following points in mind as you develop your team:

- There are benefits to including paraprofessionals as well as teachers. Paraprofessionals often spend a good deal of instructional time with the student with ASD. As front-line interventionists, they may also provide unique insight about barriers to capacity building.
- At least one instructional agent on the team must have expertise in how to modify curricular materials if new interventions are implemented.
- Another instructional agent must be able to determine how the new intervention will impact existing goals. For example, how will the new intervention relate to academic, behavioral, and social goals?

Support Services Staff

In addition to instructional agents, support services are often necessary for individuals on the autism spectrum. Support services personnel often play a crucial role in helping students meet their Individualized Educational Program (IEP) goals.

The following professionals may offer valuable perspectives to the team:

- **Behavior analysts, counselors, and psychologists**. Behavioral or mental health support is often necessary for students with ASD. In addition to the behavior problems (e.g., self-injury, aggression) that some children on the autism spectrum demonstrate, issues of depression or anxiety may present a significant impediment to successful life and school functioning for older students on the spectrum. These professionals often have training on how to increase developmentally appropriate skills as well.
- **Physical therapists**. Students with ASD may require physical therapy if they have motor limitations that interfere with their ability to function effectively in their environments. Their targets may include improvements in motor skills, balance, and coordination.
- **Occupational therapists**. Occupational therapy may be necessary to help students on the autism spectrum participate fully in school-related activities. Occupational therapists can design programs to assist students with writing skills (pencil grasp), self-care (holding a hair brush), and daily living skills (using eating utensils).
- **Speech and Language therapists**. Most individuals with ASD experience some difficulties with communication. As noted in Chapter 1, these difficulties may include deficits in verbal and nonverbal communication. Even when students on the autism spectrum do not have measurable deficits in receptive or expressive skills early in life, social pragmatic skills are often impaired and become an obstacle to success for children.
- **Transportation professionals**. Like their typically developing peers, many students with ASD receive transportation services from their school system. Some of these students will require intervention plans for the transportation process. For example, students on the autism spectrum often have severe social challenges. Waiting with other children to board the bus, or riding the bus, may present difficulties for these students. Sometimes, a student with ASD is bullied or victimized in some way. Behavioral issues may also present challenges during transportation. In all of these instances, staff members require training and supervision in the use of approved management strategies

consistent with those provided in other educational environments. A bus driver may be able to provide critical input on whether or not a student with ASD or his peers are responding to interventions implemented during transport.

- **Family resource specialists**. These specialists work with the families of students with ASD to make them aware of services available in the school system, including after-school services. They often help families connect with additional services in their communities. Support services for family members contribute to effective and durable intervention outcomes. These services offer much-needed respite and help ensure that families have the stamina and resources necessary to meet intervention goals in the home and community. Family resource specialists can also facilitate the family involvement described in Chapter 4.
- **Youth service specialists**. Some school systems have a wide variety of youth services available. These may include tutoring programs, recreational services, or health services programs.

Training and Professional Development Staff

These individuals are dedicated to developing capacity to meet the school's goals by providing training to school professionals. They offer a range of services, including pre-service trainings, in-service trainings, direct trainings, and post-training follow-ups. Because these professionals often have significant expertise in developing capacity in schools, it's important to include this group in the planning team process.

Administrative Services Staff

Of course, administrators are essential to developing systemic change. Most people widely recognize the role of the administrator in securing necessary resources. However, the role of the administrator should extend far beyond issues of resource allocation.

The planning team must address a broad range of issues; it is important for administrators to understand what is required to produce systemic changes, and why. This will be essential as they implement a plan to develop and sustain capacity. School administrators typically have more experience in managing systemic changes than any other school professionals. Their unique insight will likely ground the planning team so that real change can occur.

Administrators are accountable for—and should be involved in—evaluating whether the efforts to produce systemic change in the implementation of evidence-based interventions actually lead to improved outcomes for students with ASD.

Administrators, along with all other members of the planning team, must be familiar with the following:

- The interventions that are selected
- The steps that must be completed in order to build capacity to implement those interventions
- The key components of determining if the intervention is being accurately implemented
- The methods for evaluating whether an intervention is producing favorable outcomes

Step 2: Problem Clarification and Needs Assessment

> "There are moments...when it is incumbent upon those known for their wisdom and clarity of vision to survey the problem, with all its complexities...in a bold drive toward new horizons."
>
> — Anwar Sadat

Problem Clarification

Once the planning team is in place, its work begins with problem clarification. The team must clarify the exact nature of the problem it faces as a system.

It does so by moving through the three components of problem clarification:

1. **Current capacity evaluation:** Determine the extent to which the school currently has sufficient capacity to implement effective interventions.
2. **Problem definition:** Describe the nature and the scope of the problem.
3. **Systemic identification:** Identify which systems will be affected by their efforts to produce systemic change.

Let's consider each of these components in more detail.

Current Capacity Evaluation

When you transition from a grassroots approach to a systemic approach, your planning team will need to evaluate each member of the school staff who serves students with ASD. It's important to understand the perceived knowledge, skills, and intervention integrity (i.e., extent to which an intervention or interventions are being accurately implemented) of each of these staff. We developed the *Research-Supported Interventions–Teacher Report Form* (RST-TRF) to help you collect this information from staff members (see Table 1).

Keep in mind that self-reporting may not accurately identify the exact level of knowledge, skill, or intervention integrity for research-supported interventions in the school. Service providers in all agencies may sometimes incorrectly believe that they {a} know the essential components of an intervention or {b} accurately implement these interventions. Despite this fact, the RST-TRF can be useful; it can help you identify perceived strengths or weaknesses in your school's capacity. The RST-TRF can also help identify essential resources for developing system-wide capacity (e.g., candidates who may serve as a master teacher or consultant). If school staff consistently report that they lack knowledge about research-supported interventions, you have identified deficits that must be addressed.

The RST-TRF is helpful for school systems that use a grassroots approach to building capacity. It may also be helpful when a school has adopted what we call a "train-and-hope" strategy to systemic capacity building. Consider the following example. A school wants to build capacity among its staff. As part of its plan, it sends a few school personnel to a two-day workshop. The goal is for these staff members to become experts on the intervention; they can then serve as consultants to other school staff. So, these staff members were "trained," and then everyone "hoped" the school's capacity would improve. Unfortunately, capacity building often requires more than attendance at a workshop. You must ensure that staff who are given the responsibility to implement an intervention (or to teach others to accurately provide intervention services) actually have the capacity to do so. The RST-TRF can help identify areas where past or current training resources are insufficient to produce appropriate levels of mastery of interventions.

If your school system has already adopted a systemic approach like the one described in the rest of this chapter, you already have a clear understanding

of the school's capacity to implement selected interventions. The RST-TRF may still be beneficial to secure input from new staff entering the system, or to monitor staff self-assessments on a regular basis.

Problem Definition

Your planning team was convened to increase the school's capacity to use research-supported interventions. Now, the team must clearly define the nature and scope of the task ahead.

Consider these questions as you explore how to identify which interventions to develop:

- Do you plan to develop school-wide capacity to provide many or all of the research-supported interventions? Fourteen Established Interventions have been identified (see Chapter 2). Developing capacity to implement many or all of these interventions is a major commitment for educational systems. It will require a detailed plan for its implementation, and may take an extensive period of time to complete.
- Will you build capacity in more than one area simultaneously, or sequentially? If you build capacity simultaneously, are there sufficient resources to develop the capacity to implement all the interventions with a high degree of accuracy? If you build capacity sequentially, can the needs of the students with ASD be adequately addressed while you await the second, third, or fourth intervention?
- Will different school professionals develop capacity with two or more research-supported interventions? If so, will they be expected to serve as consultants or master teachers for other school staff? What supports are in place to encourage their development as trainer-of-trainers?

Another important consideration in capacity building involves whom you serve. Which populations will you target with the selected interventions?

- Should the intervention be targeted for all students with ASD?
- Should the intervention be targeted for students of a particular age?
- Should the intervention be targeted for students with specific skill deficits?
- Should the intervention be targeted for students with behavioral excesses?
- Are there any additional variables that might influence the scale on which these interventions might be applied?

Many interventions may be applied with the vast majority of students on the autism spectrum. However, you may need to use your professional judgment along with the information provided in the National Standards Report II (National Autism Center, 2014) report to identify the best strategy for building capacity in your school. For example, you may know that joint attention skills are often targeted with the youngest students with

Table 1} *Research-Supported Interventions – Teacher Report Form* (RSI-TRF)

Research-Supported Treatments – Teacher Report Form

This table identifies treatments for autism spectrum disorder that have been shown to be effective through research. We would like to know more about your knowledge and use of these treatments. Please check the box for the statement that most accurately describes your level of familiarity or competence with each of these ASD interventions.

The last item is for teachers to identify appropriate staff. Please use the back of this form if you need additional room.

	Behavioral Intervention	Comprehensive Behavioral Treatment for Young Children	Cognitive Behavioral Intervention Package	Language Training (Production)	Modeling	Naturalistic Teaching Strategies	Peer Training Package	Pivotal Response Treatment	Schedules	Self-Management	Story-based Intervention	Parent Training	Scripting	Social Skills Package
I am not familiar with this treatment.														
I know how to use this treatment but have not used it before.														
I know the "basics" about this treatment but could not explain it to others.														
I know this treatment well enough to teach others the "basics."														
I could implement this treatment tomorrow.														
I could teach someone to implement this treatment.														
I have data to show that I can accurately implement this treatment.														
The following people can accurately implement this treatment in my classroom.														

Other Treatments: You may accurately implement treatments that are not identified on this form. Please identify any additional treatments for which you could provide training to others in the school system.

Research-Supported Treatments–Teacher Report Form (RSI-TRF). Melissa Hunter & Susan M. Wilczynski. National Autism Center.

ASD. Your planning team may make the decision to develop capacity to implement Behavioral Interventions to increase joint attention for preschool teachers and support staff. In contrast, educators working with middle-school students with ASD may be more interested in developing capacity to implement Self-Management Interventions. Your planning team may determine that all educators in the school should have the capacity to implement Behavioral Intervention strategies.

System Identification

After the team evaluates current capacity and clearly defines the problem, it must determine which systems will be involved in the intervention. For example, the team must identify which instructional services, support services, professional development staff members, or administrators will be most affected by the decision to increase capacity. You began this process when you established your team. But you must re-examine this issue because not all of the individuals most affected on a daily basis will be represented on the planning team. Strategies for securing input and developing collaboration between the planning team and the professionals on the front line are essential. This is why a needs assessment is a necessary process.

Needs Assessment

Before beginning formal staff training, it's important for your planning team to conduct a needs assessment. This will identify barriers to implementing the interventions you have identified. A needs assessment allows the team to systematically review the school staff's perceived needs and barriers. A needs assessment may be completed through a survey or interviews. In the end, it should provide an indicator of what will be required to move the school forward toward an evidence-based approach to intervention.

The needs assessment helps front-line interventionists provide critical input into the capacity-building process. Without getting buy-in from a broad range of front-line interventionists, it will be difficult to produce meaningful long-term change (Sims & Sims, 2004).

What follows is a review of possible barriers to consider as your planning team completes a needs assessment. Although the purpose of the needs assessment is restricted to evaluating current perspectives, we have also offered strategies for reducing these barriers.

Trainer of Trainers

Master teachers or consultants often follow a training-of-trainers (TOT) model. The TOT model involves building capacity through training and technical assistance. A trainer fosters a collaborative learning environment. The trainer must be able to prepare training materials, deliver instruction, and provide follow-up sessions (e.g., coaching and booster sessions) to support the teacher's generalization of knowledge and skills to the students he serves.

Training extends beyond lecture to structured experiential learning (e.g., role-plays, direct delivery of instruction with individualized supports from the trainer, etc.). The trainer must be culturally sensitive and able to provide constructive feedback that promotes a positive learning experience.

The TOT model is often applied in educational settings. Trainers often have knowledge and skills regarding the implementation of an effective intervention prior to their interest in serving in this role. However, knowledge and skills are not enough. Trainers must themselves receive sufficient training to develop appropriate materials, teaching activities, and strategies for fostering a collaborative teaching environment.

- **Barrier 1: Differences between the existing and proposed interventions**. Barriers to intervention implementation are more likely when a greater discrepancy exists between the intervention being utilized and the intervention being adopted. Most of us are more likely to complete training and then implement an intervention with a high degree of accuracy if the effort required is minimal. We should expect the same to be true for all front-line interventionists. The planning team should evaluate the degree of change required with any new intervention, and then identify meaningful ways to acknowledge or reward the increased demands placed on school staff.

  For example, consider the difference between using Schedules and simple Self-management systems. Both involve {a} breaking a task into component parts, {b} having students indicate when a task component has been completed, and {c} delivering reinforcers at the conclusion of the task. The two interventions differ in that the student monitors his own progress and self-reinforces when Self-management is used. Given how minor the difference is between these interventions, school staff

members already using schedules are not likely to resist adding Self-management to their repertoire of Established Interventions.

But now consider how different Peer Training is from Schedules. Peer Training requires identifying socially skilled peers and then teaching them to facilitate social and play interactions with a child with ASD. In addition to implementing a teaching protocol with the typically developing peers, this process requires ongoing monitoring of both the peers and the student with ASD. In this case, it is likely that school staff will be more resistant to adding an intervention such as Peer Training, given how different this process is from their previous experience with Schedules.

- **Barrier 2: Additional time required to implement new interventions**. We all feel that we have too much to do and too little time to do it. The needs assessment must consider how training and implementation requirements will add to an educator's time demands. Ignoring this reality can undermine plans to introduce new interventions.

  Consider the following factors that may influence resistance from school staff:

  - Who would be involved in implementing the intervention? What training would they require? Remember, the amount of training necessary will be related to the amount of previous experience staff members have in implementing a given intervention. It will obviously take longer to train staff with less experience.

    Training often involves a didactic component, an experiential component, and sustained coaching from a consultant or master teacher. School staff are more likely to be resistant if they are expected to complete all their regular activities while receiving this training. The planning team may need to develop a strategy for addressing the staffing needed to manage everyday tasks while all components of training are delivered.

  - What would be involved in preparing the materials? Preparation of materials may be very time-consuming. Materials may involve pictures, objects, worksheets, checklists, or any other stimuli used to teach students. If the school develops multiple sets of materials that are readily available to all educators involved in implementing a new intervention, it will require less time for the front-line interventionist, and will likely reduce resistance.

    The planning team may also need to consider what modifications to materials may be necessary for students with additional disabilities (e.g., cerebral palsy) or co-morbid conditions (e.g., pica, the ingestion of inedible objects). Staff may also need to evaluate materials for developmental appropriateness (e.g., the toys used

in Peer Training may be very different in a preschool classroom than in a second grade classroom). Note that you may not be able to anticipate all modifications. Establishing a consultation team can help front-line interventionists address modifications of materials on an ongoing basis.

Transportability and "replaceability" (how easy it is to replace materials) are two more issues to consider when materials are prepared. Materials may need to be transported across settings within the school system, or across home and school environments. The planning team should anticipate that materials may be lost or destroyed when they are transported. More than one copy of materials will be necessary because {a} more than one staff member may need to use the same materials and {b} materials may be lost or destroyed.

- **Barrier 3: Intervention acceptability**. It is important to know if front-line interventionists find a new intervention acceptable. If a staff person doesn't approve of a new intervention, how likely will she be to implement it accurately? When making plans to produce systemic changes, it is best to evaluate the acceptability of a new intervention for all individuals who will be implementing it.

  There are several tools you can use to assess intervention acceptability. For example, the Intervention Rating Profile–15 is a 15-item questionnaire designed to evaluate the acceptability of interventions in school settings (Martens, Witt, Elliott, & Darveaux, 1985). Each item is rated on a six-point scale ranging from "strongly disagree" to "strongly agree." Scores above 52.5 indicate an intervention is acceptable. A variety of intervention acceptability measures have been developed (Carter, 2007) and schools may elect to use one or more of these tools based on teacher preference for these instruments.

  There are several reasons an intervention might be considered unacceptable. For example, some interventions may be considered unacceptable on ethical grounds or because they are inconsistent with school policy. However, interventions are sometimes deemed unacceptable based on insufficient or inaccurate information. You can address resistance related to intervention acceptability by ensuring that front-line interventionists have an accurate understanding of the essential components of any intervention they may be expected to implement. Remember that it is important to openly discuss all intervention acceptability concerns.

- **Barrier 4: History of intervention delivery**. School staff may have a natural resistance to new interventions based on their history of delivering interventions. First, school

staff may already have a commitment to the interventions they currently implement. Second, front-line interventionists may be skeptical if novel intervention approaches have been adopted in the past (without sufficient support) and then discarded. More discussion follows on these two reasons for resistance.

- **Commitment to current interventions**

  School professionals often have specialized training for the children they serve. Some professionals may be trained in specific educational techniques during their formal coursework and later continue their education through additional coursework or training seminars.

  When front-line interventionists have extensive training in an intervention that has evidence of effectiveness, it works to the school's advantage. Why would they resist further use of this intervention? Consider a situation in which previous training involved an intervention that does not have research support.

  Front-line interventionists tend to believe in the interventions they have been trained to use—whether or not there is any evidence of effectiveness. This may be particularly true when the intervention has been used in the past and the educator had a "sense" that it was effective. This is one of the reasons data collection is so important (see Chapter 3). Without collecting high-quality data, we have only our beliefs on which to base our decisions. We are all inclined to believe that our efforts produce favorable outcomes. We should not be surprised, then, when we find resistance among front-line interventionists.

  Our history in using specific techniques makes us more biased against alternatives—even when there is evidence the intervention is truly effective. In order to convince someone that he should switch from a current educational practice to a new Established Intervention, you must provide clear and compelling evidence. We hope the findings of the National Standards Project assist you with this task.

- **Skepticism**

  Some professionals are resistant to change because they have "been through this before." Unfortunately, many school professionals have seen numerous interventions become popular and then fade away over time. It's hard to be convinced that you should modify the educational services you are comfortable providing if you think the "new" intervention is a fad. This is one reason to avoid fads altogether. But it is an entirely different matter when Established Interventions are identified as the goal of systemic change. There are now evidence-based practice guidelines like

Effort as a Barrier

Change is hard!

Changing from an existing treatment to a new treatment always requires more effort than sticking with what is already in place. We first need to assess how much effort will be required to change from the current educational practices to the new treatment.

It takes time to become proficient at implementing a new intervention, and it taps into your energy reserves as you become an expert. Until they become proficient, front-line interventionists will feel fatigued from the additional effort required to put a new intervention in place. The planning team may need to estimate the length of time it takes for the average staff member to become proficient at implementing the new intervention.

You may be able to reduce resistance if you initiate a motivational system for school staff who are developing new skills. This may involve a formal recognition of the sustained effort front-line interventionists are investing, or something as simple as informally mentioning your respect for an individual educator's efforts.

those in the findings of the National Standards Project that can help you determine which interventions should be a primary focus of systemic change.

The findings of the National Standards Project may not be enough to address entrenched resistance based on skepticism. In this case, staff may become motivated to use Established Interventions (i.e., those that are demonstrated to be effective) to avoid naturally occurring negative outcomes. For example, what school professional is not motivated to avoid a due process hearing? School professionals who do not use Established Interventions will be more likely to find themselves in the uncomfortable situation of trying to defend the use of interventions with no quality scientific evidence to support their use. Although most school professionals will be motivated to increase their capacity to implement effective interventions in order to improve student outcomes, we recognize that nearly everyone is motivated to avoid a legal dispute.

Further, engaging in evidence-based practice is now legally mandated and a part of the ethical and training guidelines for many professionals. The No Child Left Behind Act (2001) includes over 100 references to using educational services that are based on scientific research. The Individuals with Disabilities Education Improvement Act

(2004) also states that instructional practices should be scientifically supported. In addition, ethical guidelines like those put out by the National Association of School Psychologists (NASP) or training guidelines like those developed by the Network of Autism Training and Technical Assistance Programs (NATTAP) may also influence staff willingness to embrace the changes required to engage in evidence-based practice for students on the autism spectrum.

- **Barrier 5: Organizational Climate**. Organizational climate refers to the "atmosphere" within the school system. Is there an open and ongoing dialogue among professionals representing different service systems in the school? We know that many different systems will be affected by systemic change—are these systems really ready to change?

  Convening the planning team is the first step in building capacity. But the team alone does not guarantee the systemic change you will need to engage in evidence-based practice for students with ASD. If the meeting of the newly established planning team is the first time a diverse group of professionals has come together to produce change in the school, you should expect that the planning stage will take some time.

  If the tone of the school system is one of open dialogue, the needs assessment is likely to result in accurate information that your planning team can act on. On the other hand, if the school system is closed to change, school professionals may not feel as comfortable acknowledging their limitations. In addition, your planning team will probably have a more difficult time working together effectively to address the barriers to intervention implementation identified during the needs assessment.

  How do school professionals respond to the needs assessment? Does it spur conversation among individuals outside the planning team? Are the planning team members motivated to address the concerns and needs of their colleagues?

  Cultivating an open organizational climate often begins with the administrators. It is nearly impossible to create a more open organizational climate if administrators do not seek feedback from the bottom up, or if they are not open to suggestions for improving educational services. When administrators actively participate on the planning team, they send a clear message—administration is interested in the concerns raised by front-line interventionists.

  However, the responsibility for an open system does not lie exclusively with administrators. All school professionals contribute to a sense of openness. There is an entire field of study devoted to modifying organizational climates. Although we cannot do justice to the topic here, we can make a few recommendations for improving the

organizational climate of a school system that is not yet sufficiently open to the idea of change.

Moving an organizational climate toward acceptance of systemic change begins with the planning team. Take the time to assess the value that each planning team member places on transitioning from existing educational services to research-supported interventions. The team must be able to openly discuss resistance to change and work collaboratively to problem-solve strategies before it can address barriers outside the group.

We have already identified a number of reasons why school professionals may be resistant to making systemic changes to their schools. You can begin improving the organizational climate by acknowledging that these reasons {a} are often legitimate and {b} may be motivated by a desire to provide the best educational services available (e.g., a teacher who is concerned that teaching a self-management system to a student will take time away from teaching that student other new skills). Without recognizing the very real challenges school professionals face in their efforts to improve services for their students, you will not be able to have an open dialogue about how to develop a sustainable plan.

In addition to encouraging open dialogue about the potential barriers to implementing Established Interventions, and developing solutions to those barriers, there are a number of other ways to improve the organizational climate. So many school professionals are truly dedicated to helping their students reach their greatest potential. However, even the most committed educators can become worn down by daily demands. You may sometimes need to remind one another why you entered this profession. You can often reduce barriers to producing systemic change by simply asking each other to remember that you will improve student outcomes by using interventions that have evidence of effectiveness.

Finally, think of the entire school staff as a team. This will allow you to adopt strategies that promote effective team-building.

According to Webber and Scheuermann (2008), the following strategies encourage effective communication:

- Listen well.
- Speak in a lively way, fluently, and with confidence.
- Use self-disclosure to help build relationships and keep communication lines open.
- Interpret behavior and use body language to enhance your message.
- Express open-mindedness.

- Give constructive feedback.
- Genuinely reinforce people when they do what you asked.

Webber and Scheuermann (2008) also advise against the following communication strategies:

- Being overly punitive
- Displaying impatience
- Expressing over-concern
- Arguing
- Ridiculing or belittling
- Making false promises
- Rejecting the individual

Step 3: Evaluating Outcomes

> "If you can not measure it, you can not improve it."
>
> –Lord Kelvin

Before the planning team develops a training plan, you should establish your intended goals. Why are you developing the capacity to implement the new Established Intervention? This process should involve evaluating changes for students and for the entire school organization.

Evaluating Outcomes for Students

The reason to go through all the effort of producing systemic changes is to help students reach their potential. The planning team members should develop a process for evaluating whether student outcomes actually improve as a result of implementing the new interventions. Strategies for evaluating student outcomes are covered in depth in Chapter 3. Here, we will merely point out that measuring change requires that you operationally define your intended outcomes. The target goals should be defined in a specific, observable, and measurable form. In addition, systematic application of single-subject research design will be necessary to determine if the intervention is effective with given students.

These strategies can be used to determine if a given student improves once an intervention has been put into place. In addition to building systemic capacity for implementing effective interventions, the planning team should develop systemic capacity for evaluating student outcomes. Student outcomes must be measured individually, and decisions about intervention continuation or modification should be made on a case-by-case basis. However, the planning team should aggregate the results across students to determine if an intervention is producing improvements for students with ASD throughout the school.

When student outcomes are not favorable, one of the first questions you should ask is, "Are these interventions being implemented with a high degree of accuracy?" This question is explored below.

Evaluating Outcomes for the School Organization

One of the reasons to implement system-wide changes is to enable educators to provide Established Interventions with a high degree of procedural accuracy. Procedural accuracy is also known as intervention integrity, intervention fidelity, or procedural fidelity. No matter what term you use, the goal is to determine the extent to which you are correctly implementing an intervention. There are several reasons to assess procedural accuracy.

First, if school staff deviate from the way an intervention is supposed to be implemented, they are no longer using the agreed-upon intervention. Professionals sometimes feel they should modify an intervention based on what is convenient, what seems reasonable given the available resources, or for a variety of other reasons.

It's helpful to ask ourselves, "Would I feel comfortable if my healthcare provider modified a necessary medical procedure based on convenience or availability of resources?" Most of us would not feel comfortable with the healthcare system adjusting the dialysis machine or the chemical composition of chemotherapy interventions for the reasons stated above. Similarly, most parents don't feel very comfortable if educators make a decision to modify an Established Intervention.

Second, the school made the decision to build capacity for implementing research-supported interventions for a reason—there is evidence that they work! Is there any evidence that the modified strategy works just as well? If not, it is generally best not to make modifications to the intervention. This is not to say that modification can never be considered. Should modifications to an intervention be needed, consider the suggestions in "Accommodations" in the upcoming Sustainability section.

The planning team should develop a strategy for evaluating procedural accuracy. The goal of evaluating procedural accuracy is to improve performance (Fixsen et al., 2005).

Procedural accuracy assessments involve breaking down an intervention into its component parts. A list of activities that are required for accurate implementation is then generated. Intervention integrity checklists can be completed as self-assessments (e.g., the teacher records his own implementation behavior) or by another professional (e.g., the school psychologist records the teacher's implementation).

You can find some intervention integrity checklists in books (Leaf & McEachin, 1999) or on websites (www.autisminternetmodules.org/user_mod.php); please note that you must sign in before you can access the modules which contain implementation checklists. However, these intervention integrity checklists may not reflect the way your school will be adopting an intervention. These tools are a useful starting point, but internal collaboration with ongoing support from consultants is recommended (Sanetti & Kratochwill, 2009).

All professionals will deviate from the way they are supposed to implement an intervention from time to time. None of us is perfect. Anyone who has ever implemented an intervention has drifted away from the way the intervention is supposed to be implemented—even when they are giving it their best effort. That's one of the reasons why intervention integrity protocols are important. In addition to developing these protocols, schools can also improve procedural accuracy by regularly reviewing the guidelines or manuals developed by the planning team (as discussed on the previous page).

Development of intervention integrity checklists and intervention guidelines or manuals often occurs (and should occur) simultaneously with training (see Step 4). That is because it is hard to develop these tools with the level of specificity required to answer all intervention-related questions until you have sufficient training.

Step 4: Developing a Training Plan

> "It's all to do with training: you can do a lot if you're properly trained."
>
> – Elizabeth II

Developing Guidelines/Manuals

Some Established Interventions have guidelines or manuals commercially available (i.e., Story-based Interventions, Gray (2010)); others do not (i.e., Naturalistic Teaching Strategies and Modeling). The planning team must develop treatment guidelines or manuals that provide instruction to all of the professionals in the school system on how to deliver the treatment.

Intervention guidelines or manuals should clearly explain the procedures that will be used, and they should do so in accessible terms. Procedures should be broken down into component parts so that {a} educators can implement the intervention and {b} another school professional can assess the extent to which the procedures are being accurately implemented. Ideally, the intervention is supplemented with scripts and/or video. The procedures may include practical examples of situations front-line professionals are likely to face.

These guidelines or manuals should clearly outline the materials needed to implement the intervention. They should also identify the roles and responsibilities of all front-line interventionists.

As noted previously, educators should make every effort to implement an intervention exactly as it was put into practice in the studies that support its use. However, we have also acknowledged that individual modification may be necessary on rare occasions. You should anticipate permissible modifications of the procedures outlined in the guidelines or manuals. You should also develop a plan to address the need for further modifications that were not anticipated. For further details, see "Accommodations" in the upcoming Sustainability section.

When a school system first determines that it must address capacity issues in order to implement interventions, training is often the first step considered. Hopefully, you can now see that a great deal of work must occur before a training plan is developed. While all these steps (previously described) are important and necessary, they do not in any way minimize the need for a complete training plan, which is crucial for success. The training plan should include two phases: {a} obtaining initial training and {b} providing coaching.

Obtaining Initial Training

Unless members of the school staff have expertise in a particular intervention (e.g., they have completed certification in the intervention, received extensive training in graduate school, etc.), the planning team should arrange for additional training through outside consultants or specialists. These professionals should be able to clearly identify the level of training necessary for the school to produce the desired systemic changes.

More complex interventions require more extensive training. Less complex interventions will require less training time, but will still require a great deal of attention to detail.

The literature on the training of adult learners tells us that simply engaging an outside consultant to talk to the staff about an intervention will not result in the level of proficiency needed—even if the consultant provides a good deal of detail. Adults benefit from direct training, and this should be a component of every training plan. Hands-on training is essential.

Initial training may require multiple sessions. For example, some trainers will progressively introduce new and more complicated strategies only after front-line professionals have practiced skills learned in the earlier phases of training in the actual school setting.

Developing a plan for initial training may be easier for some interventions than for others. For example, if you are interested in Pivotal Response Training® (PRT), a quick web search leads you to the Koegel Autism Center at the University of California—Santa Barbara. Much of the information you need about training can be accessed on this website. You can find training materials, video clips, and the PRT certification process.

In contrast, there is no single source for a number of the Established Interventions (i.e., self-management training, peer training, and modeling). You may need to begin by identifying a list of professionals with experience training school staff to use behavioral strategies. You can then contact these individuals to determine their expertise in training school staff or parents on joint Established Interventions.

Coaching

If only we could develop capacity to accurately implement effective interventions after attending a one- or two-day workshop! Unfortunately, the adult learner literature suggests this is unlikely. Didactic training alone is insufficient if the goal is to develop a high degree of mastery in educational settings (Fixsen et al., 2005). More experiential learning with ongoing feedback is necessary.

Coaching refers to the availability of an expert to provide on-site feedback based on real-world application of a new intervention. The coach assesses the front-line interventionist's use of the intervention in practice, then provides feedback and support. As noted previously, learning to implement new interventions can be exhausting. It requires significant time and effort, and may be emotionally draining. Good coaches provide more than constructive feedback; they also support the front-line interventionist!

Step 5: Sustainability

> "Sustainability requires cooperation."
>
> – Tom Seager

The planning team's responsibilities do not end once they have developed a strategy for building capacity. The process we have described is time- and labor-intensive. However, it will not produce the needed outcomes for students with ASD if efforts are not made to sustain these system-wide changes.

We have already noted the ongoing need for training. The planning team must either make a long-term commitment to work to sustain these changes, or develop a second "sustainability committee" dedicated to this purpose.

The sustainability committee must:

- Identify ongoing training needs. Even though educators have received initial training and coaching support, the training plan should include "booster" training sessions. This will increase the likelihood that school staff will implement interventions with a high degree of procedural accuracy.
- Identify resources required to address ongoing training needs and maintain a high degree of procedural accuracy in the implementation of the intervention. The process of identifying necessary resources may evolve over time. The sustainability committee must establish a system for evaluating ongoing needs. It is not unusual to discover that additional resources are necessary once an intervention is actually put in place.
- Identify new barriers to intervention implementation. The sustainability committee must also determine if existing barriers are being addressed. Barriers may emerge in surprising ways. Sometimes, people who like the idea of producing change in the abstract begin resisting when the efforts required to improve service delivery impact their daily activities.
- Ensure that changes have resulted in positive outcomes for the students.
- Determine how to manage requests to deviate from the procedures outlined in the procedural guidelines/manuals. The sustainability committee must have the technical skills to either {a} ensure that procedural modifications that were not anticipated are later addressed in a manner that is consistent with the identified intervention or {b} identify when outside consultation is necessary.

Developing Timelines

Developing a plan to produce system-wide improvements in school services cannot happen overnight. In addition to developing a plan to {a} address barriers, {b} measure intended outcomes, {c} produce a procedural guideline, and {d} establish a training plan, the planning team must produce a timeline for developing the capacity to implement Established Interventions. Each step of the process should be clearly tied to an expected deadline. Without a timeline, most training plans will either be unnecessarily delayed or rushed to completion without sufficient consideration given to accurately completing each step.

Ongoing leadership paired with sustained ownership of the systemic changes are necessary to meet the long-term goal of providing better educational services to all students (Adelman & Taylor, 1997).

Unique Considerations

Each school system is unique. For example, in some parts of the country, a single school may provide services for students of all age groups in the region who have been diagnosed with ASD. In a different part of the country, a school may be one of dozens serving students in a restricted age group (e.g., elementary school).

Each of these schools must adapt the capacity-building strategies identified in this chapter, based on their unique needs. For example, a large school district may build capacity across multiple schools simultaneously. In this case, it may be necessary to establish an internal planning team that sends representatives to a larger district-wide planning team. This school's planning team will need to collaborate with the district-wide planning team throughout the capacity-building process. We encourage all planning teams to identify distinctive factors and unique challenges they may face.

We hope the capacity-building example that follows clarifies the ways a school system can meet the unique needs of its constituents while building the capacity to implement interventions that work!

Accommodations

In almost all cases, an intervention can be implemented with individual students using exactly the same procedures which were employed in the research that demonstrated the intervention was effective. However, this does not mean that accommodations should never be made.

As noted in Chapter 3, an educator may implement an intervention that does not produce favorable results. If procedural accuracy has been calculated and the intervention has been implemented with a high degree of accuracy (e.g., greater than 80%), it becomes clear that something must be changed. In some cases, a different intervention may be selected. Or, school professionals may identify modifications to the intervention that should be considered based on their professional judgment and/or parental input.

In other cases, modifications must be made based on factors that are unique to the child. For example, modifications may be required for a child with physical limitations.

The planning team should anticipate reasons for which accommodations may be necessary and develop a plan for addressing these accommodations. As noted previously, the manual or guideline developed for each intervention should address acceptable deviations and the exact conditions under which these accommodations should be considered.

A team of school professionals with expertise in the initial intervention and/or the proposed accommodation can be assembled. The team can review the proposed accommodation and then offer support to the staff implementing the modified intervention. The data-based approach advocated in Chapter 3 should then be applied to the modified intervention. In this way, an ineffective intervention will not be maintained and a strong rationale is provided for sustaining an effective modification.

Case Study: Developing Capacity — Elizabeth Public School District

Systemic changes have been documented in educational systems using the proposed methods outlined in this chapter. Many of these methods were applied in the Elizabeth Public Schools (EPS) system to improve service delivery for students with ASD (Hernandez, 2008).

EPS had been sending its most challenging students with ASD to out-of-district placement facilities. The school system made major modifications to the way it served students on the autism spectrum starting in 2004.

EPS underwent this process in four phases:

- **Phase 1**: Needs Identification *(November 2004–May 2005)*
- **Phase 2**: Development *(May 2005–August 2005)*
- **Phase 3**: Implementation *(September 2005–August 2006)*
- **Phase 4**: Growth *(September 2006–December 2006)*

During the Needs Identification phase, school personnel reached the conclusion that developing an ASD model classroom would be a viable option. This phase was strongly influenced by the school system's recognition that it may not be providing the most appropriate program to all students within the system and that effective intervention options could be developed. The creation of a district behavior specialist position increased resources and identified a vehicle for regular input from staff regarding student needs.

In the Development phase, the school system identified a strategy for developing a model classroom. This process included everything from budget and educational cost considerations to evaluating staff willingness to participate in the new classroom. The school system also addressed the need to establish clear training procedures. Training sessions included teachers, speech-language pathologists, Child Study Team members and administrators. A plan was established to develop capacity beyond the model classroom and to include educators in different classrooms. This allowed the team to focus not only on the immediate needs of students in its care, but to plan for transitioning out of the model classroom and providing services to students with different needs.

The Implementation phase focused on the challenging realities of implementing a complicated intervention program. As a result of good planning earlier in the process, a consultation system was available to front-line interventionists. Not only did these consultants provide ongoing

training, but they also helped educators better address the concerns of parents. Cultural awareness of staff was supported during this phase because more than half of the students were from homes in which English was not the primary language. Case managers met with staff and built a sense of solidarity as problems were identified and solutions to barriers were addressed. During this phase, the school system also recognized the need to plan for further growth. Staff were trained in data collection procedures that fit smoothly into the daily activities of the classroom. Procedural accuracy was emphasized in a supportive way.

In the Growth phase, additional classrooms were developed. Efforts were made to continue supporting staff, being responsive to family needs, maintaining a high degree of procedural accuracy, and recognizing the needs of individuals with ASD in the district.

The staff identified and overcame a large number of barriers that could have delayed or derailed their plans to implement a research-supported intervention program. By establishing a collaborative tone, staff continued to address those barriers as effectively as possible. Although new challenges will continue to present themselves, the school system accomplished systemic changes to support students with ASD.

Final Considerations

You have learned that evidence-based practice requires the {a} integration of research findings with {b} professional judgment and data-based decision making, {c} the values and preferences of families, including the student with ASD, and {d} developing capacity to implement interventions with a high degree of integrity. The majority of the chapter discussed only one component of evidence-based practice, integration of research findings in the form of evidence-based interventions.

Building capacity is a complicated process, and it's not easy to accurately implement Established Interventions. When necessary, we can build capacity to implement effective interventions one child at a time. After all, we do have an obligation to use research-supported interventions for each and every student with ASD we serve. Given the reality of an ever-growing number of students with ASD, approaching our need to provide interventions that work on a large-scale (systemic) basis is likely to be the most efficient strategy.

School systems will be best served by establishing a strong team to plan for system-wide improvements in service delivery. The team must take a systemic approach that considers the needs of all parties involved. It must address barriers that result from staffing concerns, and respond to the need for appropriate resources. The team must also establish clear procedural guidelines, along with a plan to sustain improvements.

Systemic efforts to improve services for students on the autism spectrum are possible—as demonstrated by the Elizabeth Public School District of New Jersey!

Recommended Readings

Fixsen, D. L., Naoom, S. F., Blasé, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network (FMHI Publication #231).

Sims, S. J., & Sims, R. R. (2004). *Managing school system change: Charting a course for renewal*. Greenwich, CT: Information Age Publishing.

Weinkauf, S.M., Zeug, N. M., Anderson, C. T., & Rosales, S. A. (2011). Evaluating the effectiveness of a comprehensive staff training for behavioral interventions for children with autism. *Research in Autism Spectrum Disorders, 5*, 864-871.

References

Adelman, H. S., & Taylor, L. (1997). Toward a scale-up model for replicating new approaches to schooling. *Journal of Educational and Psychological Consultation, 8*, 197-230.

Carter, S. L. (2007). Review of treatment acceptability research. *Education and Training in Developmental Disabilities, 42*(3), 301-316.

Centers for Disease Control and Prevention. (2014). Autism. Retrieved from http://www.cdc.gov/ncbddd/autism/data.html

Fixsen, D. L., Naoom, S. F., Blasé, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network (FMHI Publication #231).

Gray, C. (2010). *The new social story book* (10th ed.). Arlington, TX: Future Horizons.

Hertz-Picciotto, I., & Delwiche, L. (2009). The rise in autism and the role of age at diagnosis. *Epidemiology, 20*, 84-90.

Individuals with Disabilities Education Improvement Act of 2004, Pub. L. 108-466.

Martens, B. K., Witt, J. C., Elliott, S. N., & Darveaux, D. X. (1985). Teacher judgments concerning the acceptability of school-based interventions. *Professional Psychology: Research and Practice, 15*, 191-198.

No Child Left Behind Act of 2001, 29 U.S.C. § 4301 et seq. (2002).

Sanetti, L. M., & Kratochwill, T. R. (2009). Treatment integrity assessment in schools: An evaluation of the Treatment Integrity Planning Protocol. *School Psychology Quarterly, 24*, 24-35.

Sims, S. J., & Sims, R. R. (2004). *Managing school system change: Charting a course for renewal*. Greenwich, CT: Information Age Publishing.

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