An Overview of Educational Programs

The goals for education of children with autism and related disorders are the same as for all other children: helping develop their potential for personal self-sufficiency and independence. For children with autism spectrum disorders (ASDs), there are additional challenges. These include social–communication challenges, behavioral and sensory issues, and problems with organization and transitions. Starting in the 1950s, parents and teachers began to try to deal with these problems and educate children with autism. Some of these early attempts, particularly the ones begun by parents, resulted in schools or programs that still are very active today. These programs were started because at that time public schools were not mandated to serve all children. Another strategy had been the attempt by some well meaning but misguided professionals to "correct" what they saw as poor parenting by providing intensive psychotherapeutic interventions to children with autism; this idea rested on the "refrigerator mother" idea of what caused autism (see chapter 2), and as this idea was shown to clearly be wrong, many of these programs either closed or turned their attention to other kinds of problems.

Other factors did, however, increase interest in providing educational services to children with autism. These factors came both from research and public policy. On the research side, an awareness that behavioral interventions could improve the development of children with autism stimulated a tremendous interest in developing better methods for intervention. On the social policy side, passage of Public Law 94-142 in 1975 mandated schools to begin providing appropriate educational services to children with autism. Before this law was passed only a minority of children with autism received school based serviced. Since the passage of Public Law 94-142, more and more children on the autism spectrum have been enrolled in school programs and been able to make substantial progress. As a result of this and subsequent laws, the schools and educational intervention have assumed a central role in helping children make gains in social,

communicative, and more traditional academic areas. They have adopted and adapted many of the methods first used in research work to help children profit from school settings. For purposes of our discussion, we'll talk about several different kinds of programs. These basically fall into three general categories, although some programs include aspects of more than one.

- *Center-based programs* provide services in a special setting. This might be in a special school or clinic (possibly affiliated with a college or university program in some way). These programs may be segregated (only children with ASDs or special needs) or inclusive (include some typically developing children).

- *Home-based programs* provide services mostly within the home (although sometimes there is additional time in outside support programs or actual classroom/intervention time as well outside the home).

- *School-based programs* provide services within the schools. This might be in an integrated, inclusive classroom (a mix of typically developing children and some children with ASDs or other problems) or a specialized (segregated) autism or special ed classroom (and many variations in between).

As we discuss shortly, these programs sometimes have different theoretical backgrounds. Sometimes they make use of identical or very similar intervention techniques; occasionally, programs will have some special techniques or terms that they use. Some of the more common procedures used include the following:

- *Applied behavior analysis (ABA)* is a rather broadly used term but basically refers to the application of principles from behavioral psychology in the study and change of behavior.

- *Discrete trial teaching* is one of the more frequently used ABA techniques. Typically, what is going to be taught is broken down into smaller steps, each of which is then taught (often many times) using prompts/rewards, which are then gradually faded over time.

- *Pivotal response training (PRT)* interventions are also based on ABA procedures but focus on behaviors seen as being key to learning and other skills, An important goal of this intervention is generalization of skills (use of same skills across settings with different people or materials). PRT procedures have been used to facilitate language, play, and social skills.

There are some excellent resources (listed in the reading list for this chapter and some additional ones in the next chapter), including books written specifically for parents and teachers on ABA and behavioral methods.

Although the vast majority of children with autism are educated within school-based programs, much of the research on intervention techniques has

come from other settings. Accordingly, an awareness of all the various models of service provision is important for parents and teachers alike. In this chapter, we review some of the issues involved in providing appropriate educational programs to children on the autism spectrum. In subsequent chapters, we will discuss specific interventions. In this chapter, we begin with a discussion of model programs of service delivery and then move on to talk about how aspects of these programs can be successfully implemented in public school settings. In addition to programs designed for more "typical" children with autism, we also discuss special issues presented by students with Asperger's and higher functioning autism. In this chapter, we talk about services from several different perspectives and will give examples, in later chapters, of how some of these perspectives can be integrated in planning for students of different ages. Keep in mind, as we discussed in the previous two chapters, that assessment and planning the individualized education plan (IEP) are very much interwoven with the school program. In the ideal world, the assessment result and IEP process inform the school program.

For parents and teachers who are interested, there is an excellent and very detailed report from the National Research Council (NRC) called *Educating Children With Autism* (particulars of this book are included in the reading list[1]). This report summarizes much of what we know about what does and doesn't work in providing education to children on the autism spectrum. This report, stimulated by a request from the U.S. Department of Education, focuses on those programs that have published, peer-reviewed data to support their effectiveness. Although concerned primarily with the needs of younger children, much of what this report has to say applies to older children as well. It is very useful to begin with some of the findings that have emerged from this report about what we know works and what doesn't. As always, of course, when we are talking in a more general way, it is important to recall that one of the challenges in autism (and for the team doing the IEP) is to come up with a program tailored to the specific child. The reading list for this chapter provides a selection of the many excellent resources available to teachers (and parents) about educational interventions for children with ASD. We will mention some of these in the text, but others are listed in the reading list as well.

Model Programs

Educating Children With Autism summarized a number of the model programs around the country and focused on programs that had published data showing that they worked for at least some children with autism. This focus on programs

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[1]One of us (FRV) was one of the members of the panel that put this report together.

with a research basis is important, and, not surprisingly, given the emphasis on research, that all these programs had some connection to colleges/universities. It is important for parents to realize that it is these programs where much of the research on intervention is conducted—and this is one of the reasons these programs, which actually serve only a very small fraction of students with autism, are so well known. They also have tended to focus, and now increasingly focus, on young children. Table 5.1 (reprinted from *Educating Children With Autism*) summarizes some aspects of these programs.

These programs employ somewhat different, and occasionally mixed, models of service delivery. Some programs are primarily home based; that is, most of the child's treatment, at least initially, is done in the home by one or more service providers. At some point, these children usually will transition to a school setting. This model is the one employed originally by Lovaas and his colleagues at the University of California at Los Angeles (UCLA) but has been used by others as well. Note that many programs include a home component, but the truly home-based programs are fundamentally and primarily based in the home. In

TABLE 5.1 FEATURES OF COMPREHENSIVE PROGRAMS

Program	Mean Age at Entry (range), in Months	Hours per Week	Usual Setting*	Primary Teaching Procedure
Children's Unit	40 (13–57)	27.5	School (S)	Discrete trial
Denver Community-Based Approach	46 (24–60)	20	School (I), home, community	Playschool curriculum
Developmental Intervention Model	36 (22–48)	10–25	Home, clinic	Floortime therapy
Douglass	47 (32–74)	30–40	School (S and I), home	Discrete trial; naturalistic
Individualized Support Program	34 (29–44)	12	School (I), home, community	Positive behavior support
LEAP	43 (30–64)	25	School (I), home	Peer-mediated intervention; naturalistic
Pivotal Response Training	36 (24–47)	Varies	School (I), home, community, clinic	Pivotal response training
TEACCH	36 (24 and up)	25	School (S), clinic	Structured teaching
UCLA Young Autism Project	32 (30–46)	20–40	Home	Discrete trial
Walden	30 (18–36)	36	School (I), home	Incidental teaching

*S, segregated classroom; I, inclusive classroom
SOURCE: Reprinted from *Educating Children With Autism*, by permission of the National Academies Press.

contrast, center-based programs provide the majority of their services within a specialized (nonpublic school) setting. These programs include the Douglass Program at Rutgers and the Children's Unit at Binghamton Universities. Training for parents and family members is provided and is often focused on generalization of skills to the home setting. The goal is eventual integration of children on the autism spectrum into classes in the public school or within the center.

The majority of children with autism are given services within school-based settings. Again, there are many variations, ranging from self-contained classes within a public school to partial or full inclusion in mainstream educational settings. The Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) program is a good model of such a program where services are provided to regular schools throughout the state of North Carolina. There are many variations on these basic themes. The following provides a brief summary of a number of these programs; a web address for additional information is included at the end of each summary.

The UCLA Young Autism Project

This program was begun by Lovaas based on some of his earlier research on autism in the 1970s, which was followed by his work on early intensive intervention services provided to young children with autism in their homes (Lovaas, 1987). This program has, in many ways, been the inspiration for a number of other programs, particularly those providing services in the home but extending to center- and school-based programs as well. In his original (1987) report, Lovaas provided intensive (40 hours a week) instruction for a prolonged period using trained undergraduates. Parents were also given training so that there was an intensive teaching/intervention environment throughout the child's day. This model relied on ABA interventions with an emphasis, during the first year, on dealing with problem behaviors, and then, during the second, a focus on verbal language and play skills helped children relate to peers and community settings with the introduction of preschool exposure. By the third year, the focus was on learning through observational and preacademic tasks. There was a strong emphasis on moving children into mainstream school settings. Children who participated were compared to two other groups, including one where a much smaller amount of ABA was provided each week. The original results of the study were very positive, with almost 50% of the intensively treated children reported to be in regular educational settings and to have normal cognitive ability, as compared to 2% of control children. The findings persisted on follow-up. Two of the more controversial aspects of this program had to do with the substantial time commitment from parents and the use of aversives (negative consequences or punishment). A replication, in part, of this work was undertaken by

Smith and colleagues (2000). The study was less intensive (25 hours/week), and parents were required to spend only about 5 hours a week engaged in the treatment. Aversives were also less frequently used. A comparison group included parents who had participated in some ABA training. Again, progress was greater in the children who went through the more intensive treatment, but the degree of progress was not as great as in the original study, with only 27% of children able to attend regular education classes. Several factors may have affected the results, including a somewhat greater degree of cognitive impairment in the treated cases and the reduced intensity of treatment. Visit www.lovaas.com for more information.

Princeton Child Development Institute (PCDI)

Begun in 1970 by McClannahan & Krantz (2001), this program now includes service programs for preschool, school-age, and adult individuals with autism. The program is based on an ABA approach. Strengths of the program include high levels of staff training and supervision. The program has been well known for the use of activity schedules to structure teaching around relevant, meaningful activities (see chapter 6). The web site for PCDI is www.pcdi.org.

Pivotal Response Training University of California at Santa Barbara

This program began in 1979 and was developed by Lynn and Robert Koegel (see Koegel and Koegel 2006)8 at UCSB. Originally somewhat more broadly focused, the program now primarily works with younger children. The early stage of this program uses a behavior analytic approach with discrete trial training but with a shift to more naturalistic approaches. Some areas are particularly targeted, including communication, self-help, social, academic, leisure time, and so forth. The focus on certain critical areas (e.g., motivation, self-management, initiation) is a central theme, with the goal of enabling the child to participate in, and learn from, more normative settings. The program includes work both at home and at the center, along with participation in the public school intervention program. For additional information on the UCSB Koegel Autism Center, visit http://education.ucsb.edu/autism/.

Children's Unit for Treatment and Evaluation (Children's Unit)

This program, based at the State University of New York at Binghamton, was established in 1975 (Romanczyk et al., 2000). It serves a range of children with

serious difficulties (not just those on the autism spectrum). There are preschool and school-age programs that run year-round. The emphasis of the program is on identifying factors that interfere with learning. The program uses both more traditional ABA and more naturalistic methods as children move through the program. The program is highly individualized, with close monitoring of data obtained on the child's progress. For additional information, visit the program's web site: http://icd.binghamton.edu.

Douglass Developmental Disabilities Center (DDDC)

Established in 1982 at Rutgers University by Dr. Sandra Harris (2001), the DDDC has expanded from the original school to include preschool and adult services. Services include home-based intervention as well as center-based learning in small classes. Both integrated and segregated classes are available. The approach is guided by ABA methods, using a discrete trial format and then moving to more naturalistic procedures. The curriculum is developmentally sequenced. Basic skills are initially targeted, for instance, aspects of socialization, communication, compliance, self-care, and behaviors that interfere with learning. For additional information, visit the program's web site: http://dddc.rutgers.edu.

Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) at the University of North Carolina

This statewide program was begun in 1972 under the leadership of Eric Schopler (1997) and now Gary Mesibov. This program provides a range of services to individuals with autism and their families. In addition to its main office at the University of North Carolina, TEACCH has a number or regional centers across the state that implement special classrooms within the public schools. TEACCH is a program that is both developmentally and behaviorally based with an emphasis on several areas, including an awareness of areas of strength and vulnerability for individuals with autism with a focus on structured teaching with careful attention to the learning environment. There is a strong parent and family component and commitment to skill development and individualized planning. There is also explicit respect for supporting people and their differences rather than only on eliminating behavioral differences. The program has a long history of careful attention to teaching methods and ways the environment can be used to support learning and acquire communication skills (Mesibov, 1997). The web site for this program (www.teacch.com) has valuable information on autism in general as well as on the specifics of the TEACCH approach.

Walden Early Childhood Programs (Walden)

Originally established at the University of Massachusetts–Amherst in 1985, the program moved to Emory University in Atlanta in 1991 (McGee et al. 2001). Walden provides a range of services to young children with autism as well as to typical peers. There is a strong emphasis on incidental learning as well as on social and language development. Parents are actively involved. Visit www.psychiatry.emory.edu/PROGRAMS/autism/Walden.html for more information.

Learning Experiences, an Alternative Program for Preschoolers and Their Parents (LEAP)

Originally based in 1982 at the University of Pittsburgh (Strain & Cordisco, 1994), this program now is based at the University of Colorado School of Education and operates within the Denver Public School system. This program emphasizes the importance of supported integration and the potential for peer teaching. It includes both classroom-based work and parent training. Although ABA methods are used, the program is strongly developmentally based. For additional information, visit http://depts.washington.edu/pdacent/sites/ucd.html.

Denver Model at the University of Colorado

This program began in 1981 with a grant to Sally Rogers based on her developmental model of autism (see Rogers and Lewis, 1988 and other papers by Rogers in the reading list). In this approach, interventions are designed to address core problems in social skills such as imitation, perception of other people, and understanding their feelings and intentions. The intervention uses play, other learning activities, and relationships to increase communication and build capacities for symbolic thinking). The program aims to minimize the negative effects of social difficulties and provides consultation to school districts with children with autism treated in inclusive settings. Although strongly based in a developmental approach, the model uses behavioral methods and structured teaching as well. For additional information, visit www.jfkpartners.org/Content/PDF/39982Parent%20guideline%20-%20DM.pdf.

Individualized Support Program—University of South Florida

This parent training program originated in West Virginia before it was moved to Florida in 1987 (see papers by Dunlap & Fox in the reading list). This program is provided in home and community settings with a period of intense involvement and then ongoing follow-up. The program is meant to be added to ongoing

daily special education intervention. Goals include helping the family become more knowledgeable about their children's needs and fostering communication and social skills. The emphasis on family support is an important aspect of this program.

Developmental Intervention Model (Floortime)

In this model, developed by Stanley Greenspan, the emphasis is on relationships and is strongly developmentally oriented. Individual sessions are used, in which the adult follows the child's lead in play and social interaction. Children also receive other therapies. The program focuses on several areas in particular: shared attention and regulation, reciprocity of affects, social engagement, communication, and development of symbolic thinking and use of ideas (Greenspan & Wieder, 2009) (www.icdl.com/dirFloortime/overview).

What Do These Models Tell Us About Intervention for Autism?

Each of the models we've just reviewed has its stronger and weaker points. But one of the most important things about these programs is their commitment to research, in terms of changes made over short and long time frames. Work of this kind has advanced and will continue to advance the field. As the NRC report *Educating Children with Autism* makes clear, a number of things can be said about the importance of intervention in the lives of children with autism and related conditions. All this being said, what are the limitations of what we know?

Clearly, the research base for each of these treatments is highly variable. In some cases, there has been elegant and rigorous research, although often with a small number of subjects. Most of the work has, probably understandably, focused on very young children. One of the problems is that we don't have much research that compares different approaches; to put the issue another way, how do we know what approach works best for what child?

Weighing the Pros and Cons of the Various Treatment Models

There are pros and cons to the various treatment models. Home-based treatments have some advantages for preschool children. The child is already in the environment where learning will take place, and it is more "normative" for services to be provided where children live at this age. But the commitment to a home-based treatment model can be daunting for parents, particularly when, as is now frequent, both work. The expectation that a parent quit his or her job to be able to provide a home-based program is unrealistic except for highly affluent

families or those where the family can survive on one parent's income. The intensity of this work also entails some special burdens on those delivering the services and may have important implications for family life and the marital relationship. However, this approach quickly enables parents to become versed in intervention techniques that can then be applied consistently throughout the child's day.

Center-based approaches have other pros and cons. One great advantage is bringing together in one place an entire group of people knowledgeable about autism and in regular communication with each other. The family does not need to transport the child to various sites for service. Backup is readily available; for example, if one staff member is sick, another trained staff member can take over. This can be a greater challenge in the public school setting, e.g., when there may be only one school psychologist or speech pathologist. Although parents are very much involved in Center based programs, the intensity of their, involvement is considerably lessened as compared to home based programs. The absence (often, but not always) of typically developing peers is a major drawback. More and more center-based programs now include a mainstream component (e.g., with an integrated classroom). It is also possible to combine approaches, for example, with special classes within schools with opportunities for mainstreaming or, for younger children, an option for a gradual transition into more normative preschool settings with some time at the center-based program and other time in the typical preschool.

School-based programs have the substantial advantage of the potential for considerable exposure to peers and mainstream, normative experiences. All the many resources available in school settings are available, including the possibility of additional services from professionals like the school psychologist or speech pathologist or occupational therapist. That being said, successful integration of students on the autism spectrum into public school settings does require thoughtful planning. Many of the techniques developed in center- and home-based programs for children with autism can be implemented readily in school settings, although maintaining the intensity of some of these interventions and their supervision can be a challenge. Preparation of teaching staff, particularly teaching assistants and paraprofessionals, is critical. A frequent challenge is that it may be easier for the aide to do something for the child rather than facilitating the child's engagement in the behavior/activity. The routine of a typical classroom day can be used to great advantage, for example, in terms of structuring mainstream exposure time, insuring predictability, and so forth. These routines also have great potential for use in teaching adaptive skills. Challenges for staffing have to do with training levels for teachers and other classroom personnel. Given the complexity of supports required, it is imperative that teachers be particularly well organized. Teachers must be familiar with a range of potential intervention

techniques and have a detailed lesson plan that can be readily implemented. Opportunities for more intensive interaction with parents are also often much more limited.

Special Educational Needs of the Child With an ASD

There are some excellent resources (many listed at the end of this chapter) describing school- and center-based programs developed to address the special needs of children on the autism spectrum. *Educating Children With Autism* summarizes areas of both agreement and divergence across the 10 comprehensive programs it surveyed. Probably most important is that there was consensus from all the programs that early intervention can make a major difference for many children, although not all children improve to the same degree. There was also agreement on the importance of several things about intervention programs:

- Intervention needs to be planned and intensive.
- Specific curricula should be used.
- Intervention programs must be interdisciplinary with good integration of services.
- Teachers and other service providers need experience, training, and ongoing support.
- Family involvement is critical to help the child generalize skills.
- Child engagement is essential—the child has to be actively involved.
- Functional behavior management procedures should be used to foster behaviors that facilitate learning.
- Attention must be paid to transition planning.

In the report, programs that appeared to work for younger children were year-round and "averaged" about 25 hours/week. (Note the quotation marks around "average" since, in fact, there were tremendous variations in how programs were organized and it was difficult to come up with a single number that captures this variation.)

There was also much consensus on the kinds of things that need to be worked on. These include social skills, communication skills, play (for younger children and leisure time for older children), behavioral issues and obstacles to learning, organizational and "learning-to-learn" skills (the ability to sit, pay attention to a task, and engage with the teacher or activity in learning), and to generalization and the translation of knowledge into real-world settings (adaptive skills).

Physical Space

The setting of the intervention was also felt to be important, given the difficulties children on the autism spectrum have in regulating their attention—particularly in more complex environments. This would usually imply a need for a balanced approach with "pull-outs" and opportunities for more intensive work mixed with classroom and small group work. It also implies that attention needs to be paid to the classroom environment, which can help or hinder the child's ability to attend. Having continuity and a consistent approach is also important. Having the team work together in a flexible and collaborative way is helpful in implementing the program and monitoring the IEP goals.

THE CLASSROOM ENVIRONMENT FOR THE CHILD WITH AN ASD

Goals: The physical environment should *enhance* and *not distract* engagement and attention for children with ASDs.

Organization of the Room

- Place materials/furniture to help organize the child (natural boundaries).
- Look out for obvious distractions; place desks so the child looks at the teacher (not outside).
- Don't have computer displays running where the child can see them.
- Have an area in the room with few distractions where the child can "retreat" if he or she needs to.

Respect Visual Learning Style and Difficulties with Generalization/Organization

- Masking tape can be used to mark out specific areas, e.g, where the child sits in the classroom.
- Visual schedules/supports should be used; these can transition into other organizational supports for older children (preteaching, organizational software).

Attend to the Social Environment

- Think about entrance/exit issues; for example, children's cubbies should be away from the door.
- Consider proximity issues,for example, desk spacing, activity areas.

Applied Behavior Analysis(ABA)/Behavioral Treatments

Programs differ in the ways they manage behavioral issues and problems and in their approaches to teaching skills. A range of approaches can be used, but many methods derive from the ABA literature. This literature has been remarkably

productive over the past decades in helping us understand effective ways to teach children with autism, particularly children who lack learning-to-learn skills and need real help in being able to profit from the school environment. These methods also apply to older and more cognitively able children. They can include a combination of several different strategies, including discrete trial training, pivotal response training, and use of functional routines. Discrete trial methods can be used for very basic skills. This procedure results in having a clear sequence where concepts are broken down into tasks that can be targeted. In the discrete trial, a cue is given to the child, who then responds and receives a reward or consequence of some kind before the procedure is repeated. Careful data are kept, and there is a larger vision of what is to be accomplished; that is, basic things like sitting in the chair are targeted first, and then as activities become more complex they are pulled together to help the child achieve higher skills levels. Pivotal response training focuses very much on the environment, broadly defined, and ways in which the reinforcement can be a natural consequence; this has the great advantage of making it easier to carry the procedure throughout the day and simplifies the task of generalization. It also meshes nicely with an approach that looks at functional routines. The functional routines approach focuses on a sequence of predictable events such as snack or circle time or going to lunch. These routines can then be used as the basis for various teaching activities, e.g., use of words, social skills, concepts, and so forth. Because typical children also are engaged in such activities, this method can seem to be very natural. Methods that use these behavioral techniques must, of course, develop a clear vision of expectations for the child. A few models have been developed that try to use child preference more actively; we discuss these in greater detail later in this chapter.

Social Skills Teaching

Social skills are usually taught using a balance of methods. These vary somewhat with the age of the child. For younger children, peer-mediated approaches are frequently used, while for adults, instruction is most frequent, and for school-aged children, what might be called "hybrid" methods are often used, for example, a social skills group where there is an adult leader (or leaders) with a peer group; this group might include other children with ASD as well as typically developing peers. Various combination of these approaches are also possible, of course; for example, a speech pathologist might work with a child in a small group, like a "lunch bunch" and individually. Play skills should typically be explicit targets of intervention in younger children. There are many ways to teach play skills, including specific ABA-type instruction with development of scripts and functional play routines. Modeling by peers can also be helpful. Social skills

intervention is always an important aspect of the plan for children on the autism spectrum. Chapter 6 reviews social skills interventions in greater detail.

Language/Communication Interventions

Language and communication skills are also an essential aspect of intervention, given that we know that the language levels and the capacity to speak are better signs for long-term outcome. We believe that with early intervention, the number of children with more prototypical autism who manage to be able to speak by age 5 is around 75%; this is a marked increase from a decade or two ago when the number was more like 50%. As we discuss in chapter 6 and subsequent chapters, there are many different approaches to intervention in this area. It is important to keep in mind that even for children who don't speak, a focus on communication is essential, and for such children augmentative approaches can be used.

More verbal students on the autism spectrum present some interesting challenges for the system. Occasionally, the communication needs of more able children with Asperger's are minimized or ignored. We have heard statements like "He has such a great vocabulary, he doesn't need to see the speech pathologist," but this is said of a child who can't carry on a conversation except about his topic of interest. This is, of course, just the reason he needs to see the speech pathologist. Language and communication skills should be targeted at multiple levels, depending on the child's needs, for example, both expressive and receptive language as well as social language.

AUGMENTATIVE COMMUNICATION STRATEGIES

- Provide "workarounds" for communication for students with limited or no spoken words.
- These workarounds can take various forms:
  - Picture exchange
  - Manual sign language
  - Computerized communication systems
- Typically, emphasize the stronger visual learning style of children with autism.
- Use of these augmentative strategies does *not* prevent children from learning to talk—it should increase their ability to talk if they are capable of it.

Organizational Issues, Learning to Learn, and Adaptive Skills

One of the obstacles for learning arises from the tendency of children with autism to be overly focused on details and not see the "big picture." This likely is

very much related to the social difficulties and difficulties with dealing with change. These difficulties result in problems in developing joint attention and other early emerging social skills, which "set the stage" for the child in terms of learning what to and what not to focus on. This leads to problems in what psychologists call executive functions (the ability to get the big picture and multi-task) and requires specific intervention for children at all ages and cognitive levels. For younger children, this can take the form of visual aids, for example, the classroom schedule on a bulletin board in picture format. As children become more cognitively able, these can be supplemented by other supports, for example, written lists/schedules, organizers, computer software, and so forth. Another problem that arises from difficulties with organization and a tendency to hyperfocus is a failure to appreciate that the skills learned in one context can be applied in another—this activity is called **generalization**. It becomes truly critical if children are to achieve independent living skills. Accordingly, it is important that schools and families work together to be sure that there is carryover of activities into home and other settings. Organizational aids can also help, as children need to do homework or help with simple household activities like shopping. Providing a structure, in advance, can prevent many problems from happening. It is important for parents and teachers not to teach skills in isolation. Generalization should be encouraged at every opportunity, as this will facilitate the acquisition of skills necessary for ultimate adult independence and self-sufficiency. We talk about daily living and other skills in the next chapter.

Sensory–Motor Issues

Sensory and motor issues can sometimes be a source of great difficulty for children on the autism spectrum. It is important that, as part of the IEP, the occupational and/or physical therapist be involved to develop procedures specific to the individual child. For some children, help with gross and particularly fine motor activities may be needed. The child with Asperger's may, for example, have particular problems with cursive handwriting, and it may be possible to justify alternatives (e.g., a laptop) if these difficulties can be documented. Both the speech pathologist and occupational therapist can be helpful around eating/feeding issues.

Use of the child's natural motivations and of more developmental approaches has been somewhat less common than ABA-based approaches, but these approaches have been effectively used. With these approaches, as indeed with typically developing children, the idea is that learning is easiest when it follows the natural inclinations/leads of the child. This approach also often assumes that, in general, normal developmental progressions are followed—that is, that you can make reasonable predictions of what a sequence of skills learning will be. As with other approaches, and perhaps even more with this one, it is important

to (1) pay attention to the child's learning environment and (2) be sure that the child is producing enough leads to follow. We have seen children enrolled in such programs fail to progress if they are not producing enough in the way of cues/leads for the teacher to follow.

AREAS OF VULNERABILITY AND POTENTIAL RESPONSES	
Area of Vulnerability	**Potential Responses**
Organizational problems	Stepwise approach
	Consistency and predictability
	Use functional routines
	Give plenty of time
	Support organization with visual aids, organizers, computers, etc.
Attentional problems	Isolate the most relevant information
	Pay attention to the learning environment
	Structure environment/minimize distractions
	Support attention whenever possible
Problems in sequencing	Use routines, predictability, and sequencing
	Use visual schedules, stepwise approaches
Difficulties with rigidity	Use planned changes (choice times, predictable surprises)
Problems with time management	Use timers (including visual timers and cues)
	Give extra time,
	Give concrete instructions (do X for 5 minutes)
	Establish clear expectations/feedback
Visual learning style	Provide visual supports (pictures → written words)
	Limit verbal language
	Keep language short and simple
Gestalt learning style (learns in "chunks")	Present material across settings
	Encourage generalization (family involved)
	Breakdown tasks into component parts
Trouble understanding social cues	Exaggerate social cues
	Pair gestures and words
	Teach in context
	Keep language simple
	Be explicit, explicit, explicit

Behavioral Management Issues

Programs vary in the ways they manage behavioral issues and problems and in their approaches to teaching skills. As mentioned earlier, ABA methods have been very helpful in giving us more effective ways to teach children with autism effectively. These methods work both in encouraging the kinds of behaviors and

skills that parents and teachers want to develop and in dealing with problem be-
haviors that can arise. These methods also work for older and more able chil-
dren. They can include one or several different strategies, including discrete trial
training, pivotal response training, and use of functional routines. Methods that
use these behavioral techniques must, of course, develop a clear vision of
expectations for the child, i.e., in what behaviors are to be developed and
encouraged and what behaviors are to be decreased and/or discouraged. A few
models have been developed that try to use child preference more actively; we
discuss these in greater detail in chapter 14.

Mainstreaming

Under the law, it is presumed that children with autism and related conditions
should be mainstreamed as much as possible. With the growing sophistication of
support methods for both affected children and typically developing peers, it is
increasingly possible to support children with ASDs in more typical, mainstream
settings. If the process of identification and intervention starts early, it is fre-
quently possible to have children fully included by the time they reach first
grade, and even those not fully included are more able to relate to their typical
peers and to achieve at least partial inclusion.

Various terms are used for mainstream settings, these include *full inclusion* and
integration. Various possible models are available; for example, a special education
integrated class might include some children who were typically developing.
Usually, mainstream classes are structured around a traditional classroom model,
while an integrated class also includes work individualized for specific students.
A wide range of models are available incluind ones where both a regular class-
room teacher and special ed teacher work together in the same inclusive class.

When considering inclusion of the child with an ASD in mainstream settings,
parents and the school must take into account the needs of the child, the context
of inclusion, the need for adult supervision, the expectations of peers, and so
forth. Attention to activities used in the class, the structure and routine of the
interaction, and the physical environment all contribute to successful social in-
teraction. The teacher often needs support to learn techniques for inclusion and
managing problem behaviors. Support staff such as teacher assistants and para-
professionals may also benefit from training, with one of the goals being to help
support the child in the environment through an emphasis on peer-mediated,
rather than adult, intervention.

One of the great advantages of mainstream/integrated classes is the potential
for fostering social skills. Most of the work that has taken place to date has cen-
tered on preschool children, although some work on older children has appeared
as well. That being said, it is clear that simply putting the child with an ASD in

the classroom is not, by itself, sufficient. Rather, the teacher and peers must be appropriately prepared if peers are to be helpful and effective models. An entire body of work has now emerged on strategies and procedures for teaching social skills in these contexts using typical peers and free play and other situations. Adult supervision is typically used to help initiate interaction and monitor ongoing activities. Peers can be very effective agents of change—if given the special license to do so. For older children, more complex and sophisticated strategies are needed. Even here, benefits can be shown from peer interaction and self-monitoring. The experience can be a valuable one for peers as well as for the child with ASD. As might be expected, younger peers need more support and monitoring than older ones.

Strategies for increasing interaction in a mainstream setting are varied. These include social scripts, for example, in teaching fantasy play (an area of great difficulty for many children on the autism spectrum). Teaching both response to social overtures and initiation is important. It is critical that the child with an ASD be able to both initiate and respond appropriately; the latter is much easier, of course. Videotapes can be used as effective adjuncts to the teacher; for example, the child can review the tape, observe when things go wrong, discuss alternative responses, and so forth. Video feedback can be highly effective, given the visual learning style in autism.

Researchers have developed various models of inclusion. For less cognitively able children, the emphasis may be on skills relevant to community involvement. This may be reflected in initial classes with an emphasis on one-on-one teaching with an eventual move to small group and more inclusive classes, eventually with typically developing peers. Transitions to mainstream settings should be carefully planned and supervised. Unfortunately, school districts often attempt to mainstream children into what are, seemingly, the easiest settings to manage: gym, recess, and cafeteria. Unfortunately give the lack of structure and reduced levels of adult supervision for children on the autism spectrum, these are usually the absolute worst situations to begin mainstreaming.

The goal is to have a successful mainstream experience. To this end, a well-worked-out transition plan with a gradual increase in exposure of the child to the mainstream setting is valuable, with careful, thoughtful adjustment based on response of the child. For preschool children, situations readily used for mainstream activities include story time and free play as well as snack or lunchtime. With appropriate support, recess can also be used. For older children, music and art and similar activities can be positive times. For the more cognitive able child, some mainstream academic classes may be appropriate (and easier than less structured activities). The greater complexity of middle schools and high schools presents significant challenges, although even here mainstreaming can be successful. Issues do arise for lower functioning students, where the balance of benefit (of

exposure to normal peers) versus trade-off (need for more vocationally focused, transitional activities) can be an issue. For example, in one case with which we are familiar, a very cognitively disabled teenager who was not yet showering independently enrolled in a traditional American history class; —in this case, whatever benefit came from being exposed to a discussion of the U.S. Constitution was probably greatly outweighed by a lack of attention to basic self-care skills.

INTERVENTIONS TO SUPPORT INCLUSION

Peer-based interventions (e.g., peer modeling, buddy systems)

Teach play skills

Participation in social skills groups

Provide visual activity schedule for classroom

Teaching social scripts (and then fade scripts over time)

Teaching self-management skills (initiation, staying on task, social routines)

Support inclusion (encouraging peer response, teacher responds to child through peer, environment supports peer interaction)

Management of problem behaviors

Adapted, with permission, from Handleman, J. S., Harris, S. L., & Martins, M. P. (2005). Helping children with autism enter the mainstream. In F. R. Volkmar, R. Paul, A. Klin, & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders* (3rd ed., pp. 1038, Table 40.1). Hoboken, NJ: Wiley.

Students with Asperger's

There are somewhat different challenges for more cognitively able students, particularly those with Asperger's. Often, the problem here is a lack of awareness, or minimization, of the child's level of social disability. Put another way, the very good language (but not communication) skills of the child overshadow an awareness of the child's vulnerability. Typically, this is reflected in comments like "He is too bright to be in special ed" or "She is too verbal to be on the spectrum." This is a bit like saying, "He's too bright to have pneumonia" or "She is too verbal to have polio."

The communication goals for the child with Asperger's may have a somewhat different focus than those of the child with autism. For Asperger's, these usually will include work on social communication (**pragmatics**). Issues such as carrying on a conversation with a beginning, middle, and end are important, as are issues of topic sharing, reciprocity, humor and irony, expectations for turn taking, and building on what the other person just said. Teaching self-monitoring

and self-correction is important; even very rigid phrases like "Am I talking too much?" or "Would you like to talk now?" can elicit helpful feedback. Video and audio feedback can be valuable ways to learn self-monitoring and gauge progress. Work on **prosody** and voice volume can be helpful in this way as well. Most of us have hundreds, if not thousands, of different voices we use for different people and/or different settings. For individuals with ASDs who are verbal and who tend to be monotonic and loud, having three voices is very helpful (soft, medium, and loud) as long as the individual knows which one goes where (soft for church, medium for class, loud for playground).

Many of the same challenges and strategies for inclusion we have discussed previously (see the text box on page XXX) apply to the student with Asperger's. There are a couple of potentially important differences. Two of these things make life a bit easier for teachers: (1) Often, there is a strong motivation on the part of the student to "fit in," and (2) better verbal abilities make it easier to teach explicit (verbal) strategies and rules for self-regulation and mastery of classroom routine. However, the one-sided social approaches may be off-putting to the typically developing students, so careful support and work with peers is important. Bullying (which we discuss in greater detail in chapter 8) can start to be a problem, particularly as children become a bit older.

For students with Asperger's, another contributing factor to lack of recognition of the child's difficulties is the relatively frequent variability of the child's behavior across settings; for example, the child may seem engaged and enthusiastic in class, but the same child may literally be lost on the playground or the lunchroom. Often, behavior problems develop when the social difficulties are not attended to. These behavior problems can then lead to highly inappropriate labels; these vary from state to state, but terms like *BD (behavior disturbed)*, *ED (emotionally disturbed)*, or SEM (social–emotionally maladjusted) are used, and then the child is placed in a classroom with truly conduct-disordered children—usually boys—and all hell usually breaks loose very quickly. We're aware of one case where a very bright but quite socially limited first grader was put in a BD class for having talked back to his teacher (reminding her repeatedly that circle time was running late). He was in this BD class for no more than 5 minutes when a truly behavior-disturbed boy (who was very socially sophisticated) told him to "go pull the handle of that bright red box on the wall—a lot of stuff will happen," and indeed it did. This kind of placement leads to the worst possible mismatch. The support of the communication specialist is often very helpful in dealing with communication issues that contribute to behavior problems. Behavior management procedures can be effective but should be informed by the child's patterns of strengths and weakness and attempt, as much as possible, to help the child engage in self-monitoring/self-management.

> ### ADDRESSING AREAS OF VULNERABILITY FOR CHILDREN WITH ASPERGER'S
>
> - Be explicit, explicit, explicit:
>   - Put things/rules into words.
>   - Teach social roles.
>   - Assume nothing.
> - Make things verbal:
>   - Use video examples to explain ongoing stories and personal reactions.
>   - Teach narrative and observation skills (child as "detective" or "reporter"—a person who asks all the Wh questions: who?, what?, where?, when?, and why?).
> - Teach emotions and the language of emotions:
>   - Self-awareness of feelings, problem situations.
>   - Teach about the experience of anxiety, depression, reactions to novelty.
> - Teach explicit coping strategies:
>   - Include verbal self-talk and verbal coping.
>   - Increase self-monitoring capacities and invitations for feedback (am I talking too much?).
>   - Teach alternative solutions when child is aware of starting to have problems-for example, a pass to visit an adult at school (his or her "safe address") and then rapid return to the class.

Behavioral strategies for management of problem behaviors in more able individuals should be informed by an understanding of the child's disability. What can seem like very inappropriate behaviors may be much better understood from the child's point of view. An excessive tendency to follow the rules can lead to trouble; for example, the child may be quite insistent on a routine partly because she or he has learned to use it as a lifeline. The special interests often seen in students with Aspergers and sometimes with other students on the autism spectrum can present some challenges for the student and teacher alike. Whenever possible and when appropriate it may be helpful to use the students natural interests/motivations in a positive way. Sometimes the task is helping the student learn to contain an interest, for example, to have something to talk to other students about apart from rocks or dinosaurs; in these cases, giving the child the opportunity (for very discrete periods) to pursue his or her interest may be used as an incentive for other work. We talk more about behavioral strategies and other approaches in chapters 8, 9, and 14.

Family Support

Support of the parents and siblings is essential for many reasons. First and foremost, the family remains with the child when school staff do not. Also, unlike

school staff, they don't come and go over time. They have particular advantages when it comes to work on generalization of skills and helping the child on the spectrum make connections between academic and real-world knowledge. As we discuss later on in this book (chapter 19), support for siblings and parents is important.

Translating What We Know to School Programs

Fortunately, many of the interventions derived from model programs discussed earlier are readily used in school settings. These can be used to systematically analyze tasks, build new skills, and generalize skills to nonschool settings. A number of resources that illustrate application of these techniques have appeared and are listed in the reading list at the conclusion of this chapter. Arick, Krug, Loos, and Falco (2005) have developed a comprehensive curriculum for preschool and elementary school, the STAR program, which serves as one helpful model combining effective instructional strategies in the service of a well-conceptualized curriculum (www.starautismprogram.com). Table 5.2 summarizes some of the different instructional strategies used in the STAR program, which combines these approaches very effectively.

Given the sometimes intense needs for immediate support, it is critical for parents and teachers to not lose sight of the big picture. While all the behavioral techniques of ABA represent powerful tools, it is essential that schools and families have a longer term vision for the child and that the teacher, in particular, be prepared to implement an appropriate curriculum with realistic, objective, and measurable goals. Methods derived from pivotal response training and functional routines also offer powerful approaches to address fundamental problems in learning and facilitate generalization.

As we describe in greater detail in subsequent chapters, specific areas for instruction will, understandably, differ depending on the child's age and levels of functioning. For preschool children, appropriate tasks involve receptive and expressive language, social engagement (particularly joint attention, which becomes critical for profiting from a classroom environment), basic learning-to-learn skills (staying in the chair, attending to materials at hand), play skills, and preacademic abilities. The latter include use of areas of strengths, for instance, in nonverbal problem solving or visual spatial skills, to help the child learn to read words that can serve as prompts for specific behaviors. For the school-aged child, more traditional academic skills become more important. In addition to the continued need for supporting social and communicative development, there may be a growing awareness of the child's areas of vulnerability, and problems with anxiety may loom larger. Sensory processing problems may also

TABLE 5.2	INTERACTION OF INSTRUCTIONAL STRATEGIES AND CURRICULUM AREAS

Instructional Strategies Used in STAR Program			
Curriculum Area Used in STAR Program	Pivotal Response Training	Discrete Trial Training	Teaching Functional Routines
Expressive language	All expressive language	Specific imitative sounds/words Specific labels Most midlevel and advanced programs	Develop generalization of expressive language
Receptive language	Taught incidentally within context of other Pivotal Response Training programs	All receptive language programs	Generalize use of receptive language within routines
Spontaneous language	All spontaneous language instruction program	Reinforce spontaneous language when it occurs	Set up situations in which the student needs to use spontaneous language
Functional routines	Expand expressive language using PRT strategies within routines	Expand receptive language use during discrete trial within routine	All activities comprised of a predictable chain of behaviors
Preacademic skills	Expand and generalize use of preacademic skills	All preacademic programs	Generalize use of preacademic skills within routines
Play skills and social interaction skills	Play skills are taught with PRT play programs and incidentally during PRT language	Social interaction and play are taught incidentally during one-on-one discrete trial sessions	Develop appropriate play and social interaction during all appropriate routines (e.g., play a game with peer, recess routine with peer buddy)

Adapted, with permission, from Arick, J., Krug, D., Fullerton, A., Loos, A., & Falco, R. (2005). *Handbook of autism and pervasive developmental disorders* (chapter 39, p. 1013, Table 39.2). Hoboken, NJ: Wiley.

become more prominent (see chapter 16). Problem behaviors (see chapter 14) may also loom larger in importance. New strategies for teaching social skills may be needed, for example, social skills groups and direct instruction. The seemingly simple task of negotiating a more complex middle school may represent its own problems, with endless potential for the student to be sidetracked by others or the tremendous social demands of moving about in hallways filled with children (one of many possible solutions is to have the child move just before the bell rings and to give practice when the school is empty, along with visual

supports, if needed). Organizational issues also loom larger (see chapter 6) as academic demands increase. Using areas of strength to address areas of weakness and respecting different potential approaches to problem solving is important. For individuals with more "classical" autism, the visual learning style should be used in a positive way to facilitate coping and organization; for the student with Asperger's, an emphasis on verbal scripts and strategies may be equally as important.

High school (see chapter 9) presents its own special challenges. For students who are unable to participate in part or fully in regular educational settings in high school, there is tremendous potential for social isolation. Fortunately, often by this age, behavior problems start to diminish and, whenever possible, the child's motivation for success can be a valuable ally. As in middle school, having an advocate within the school is highly valuable. This person can help the diverse range of teachers and staff the child has to deal with to understand the nature of autism and advocate for appropriate accommodations. At this time, thinking about next steps and transitions to work or college or other activities should begin (see chapter 9).

Summary

In this chapter, we have surveyed current best practices in educating children with autism as exemplified by a range of model programs, each of which has at least some empirical research support. The issue, for the individual child, of exactly what approach is most suitable remains a challenging one. As we have noted, significant gaps in research exist, and although we can rightly point to many accomplishments, much remains to be done. In particular, the issue of helping develop a program designed for the child rather than trying to force a child into a program remains a common source of difficulty. Unfortunately, there is a lack of good studies that replicate findings in other locations and in which different interventions or models of intervention could readily be compared. As noted, even with very intensive service, many children continue to have significant learning challenges. For the present, the choice of program should be based, as much as is possible, on the individual needs of the child and family, while keeping in mind that things needed at one point in the child's life may not be needed later on.

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■ WEB SITES

Behavior Analyst Certification Board: www.BACB.com

Children's Unit for Treatment and Evaluation (Children's Unit) at the State University of New York at Binghamton: http://icd.binghamton.edu.

Douglass Developmental Center at Rutgers University: http://dddc.rutgers.edu

Developmental Interventions Model (Floortime): www.icdl.com/dirFloortime/overview

Lovass Method: www.lovaas.com

Princeton Child Development Institute (PCDI): www.pcdi.org

Treatment and Education of Autistic and Related Communication-Handicapped Children (TEACCH) at the University of North Carolina: www.teacch.com

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

Walden Early Childhood Programs at Emory University: www.psychiatry.emory.edu/PROGRAMS/autism/Walden.html

Homeschooling: http://homeschooling.gomilpitas.com/weblinks/autism.html

▪ QUESTIONS AND ANSWERS

1. **We are thinking about home schooling our 10-year-old with autism. Are there any resources available to help with this?**

    You don't tell us much about your 10-year-old, so it is hard for us give very specific advice. We would advise you to think carefully about not availing yourself of the services and opportunities provided for peer interaction in schools. That being said, there are some resources on this topic (see reading list), including a helpful web site and at least one book. We do know some parents who have been able to do this successfully, sometimes using local services to help with special things. Pay attention to opportunities for peer interaction.

2. **My wife and I have a young child with autism. He has just started ABA but only at 4 hours a week, and we're not sure this is enough. Also, the person providing the services (who is very expensive) doesn't seem to be as good or as well organized as the person working** with **the child of a friend of ours (who is getting much more service). Is there any kind of standard for ABA?**

    Your question raises several different issues, including how much time is enough, how to evaluate the quality of an ABA therapist, and the issue of standards for therapists. The question of time is hard to answer without knowing the particular child and without knowing the circumstances (e.g., is the plan to increase services after a short period of getting to know your son?). The original Lovaas model was very intensive, with 40 hours of service a week. In the National Research Council Report, it seemed that about 25 hours a week was a rough kind of average (of very different types of programs). The professionals who helped you with the diagnosis ought to be able to talk with you about services available. The issue of quality of the ABA therapist is complicated for several reasons. First, keep in mind that there are some ABA specialists may have different levels of experience or who have worked more with some age groups than others. As with all therapists, there can be variability. The professionals who worked with you in getting a diagnosis may be a good source of information. Other parents can be excellent sources of information as

well. There have been some attempts to establish minimum qualifications and certification procedures. Visit Behavior Analyst Certification Board (www.BACB.com or www.abainternational.org) **for more information.**

3. **Our 4-year-old grandchild has been enrolled in a special pre-school program for children with autism over the last year. He doesn't seem to have made much progress at all as far as we can tell. He has horrible behavior problems and limited communication. He has some special interests (including some computer games) but says words only now and then. His parents tell us that they were told we'd have to wait for several years to see progress; they also told us that the school didn't want to try anything like the computer for teaching language, as they think that will hold his language back.** Some of the new augmentative communication devices may be helpful given the interest in the computer; you might suggest an evaluation with this specifically in mind.

   Unfortunately, even with good programs, not every child gets better or as much better as we would like. Lack of progress should prompt a reassessment and serious look at the program. As we've pointed out in this chapter, there are many different models of teaching, and some children may do better with one over others. Part of the assessment should include a careful look at your grandchild's communication skills and updated recommendations for intervention. The fact that he has interest in the computer is something to mention to the person or people seeing him—it might be something that could well be used in programming for him.

4. **What states have the best programs for autism?**

   Actually, there are a number of different models in the various states. In a few states, like North Carolina, Delaware, and some others, there are statewide programs. In other states, the model is very different, with almost all services provided within the public school settings. In some states (such as Connecticut), services vary substantially from town to town. In other cases, there is a mix of both private school and public school programs. A few states have a model where regional schools are funded. In other words, there is tremendous variability. If you have the luxury of being able to move to a state of your choice, do your homework and try to find a state (or town) with good services.

5. **What do you see as the current needs for research on interventions in schools?**

   An excellent question with a multipart answer. In the first place, as a society, we've done an increasingly good job in doing research on autism and its psychological and neuropsychological basis. We've not done such

as good a job in translating research into schools. Many different intervention methods and programs are now out "on the market," and some of these appear very promising, but we need careful, well-designed studies to understand better whether they work and how they work (and who they work for). On the school side of the equation, we should be doing a better job of understanding what works for what children; all too often, the child is expected to "fit in" with whatever model the school has going. However, we should be doing a better job of tailoring interventions for the individual child.

6. **What is the role of the parents and family in helping teachers and school professionals?**

Parents and family members have several important roles to play. First and foremost, parents can and should act as advocates for the child. They should participate actively in the process of developing the IEP and monitoring the child's progress. They should be actively involved in the school program so that they can help with the generalization of skills across settings, from school to home and community.