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Project DATA (Developmentally Appropriate Treatment for Autism):

An Inclusive School-Based Approach to Educating Young Children with Autism

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Providing appropriate educational services to young children with autism may be one of the defining challenges of the 1990s and early 2000s for early childhood special education. The number of children with autism is increasing dramatically, the research literature is rich with evidence-based instructional strategies, and the Internet is even more full of information and advice of unknown quality. Parents and school district personnel, often working together but sometimes at odds, need to develop programs to meet the needs of these children. Project DATA (Development Appropriate Treatment for Autism) started as a federally funded model demonstration project for developing a school-based program for young children with autism that would be effective and acceptable to consumers (e.g., parents, school personnel). Project DATA consists of five components: a high-quality early childhood environment, extended instructional time, social and technical support for families, collaboration and cooperation across services, and transition support. In this article, we provide data demonstrating the effectiveness of this model and discuss the implications of this type of inclusive programming for young children with autism.

For educators, this is a challenging time to be working in the area of autism. Many will remember the 1990s and first years of this decade as the period when autism went from a rarely identified disability with a reported prevalence of 3 to 5 individuals out of 10,000 to the fastest growing category of disability, with current prevalence reported as 1 in 166 (Autism Society of America, 2004). Professionals working with infants and toddlers in early intervention programs have gone from rarely enrolling a child with autism to enrolling as much as 20% of toddlers with a diagnosis on the autism spectrum. Although great strides have been made in diagnosis, assessment, and intervention for children with autism, many unanswered questions still remain and much work needs to be done.

One of the most pressing challenges facing the field of early child special education is how to provide services to children with autism and their families that are effective, inclusive, developmentally appropriate, and acceptable to consumers (e.g., family members, school personnel). In other words, providing effective services for children with autism is where "the rubber hits the road" for early childhood special education personnel who believe in the importance of inclusive programs, developmentally appropriate practices, embedded instruction, and the use of instructional strategies that are evidence based. We need to ensure that these programs are inclusive and effective and that parents are never put in the position of having to make an either–or choice. This challenge is exacerbated by research evidence that is ambiguous, Internet sites that profess to have all the answers, and some practitioners who believe there is only one way to treat all children with autism.

It is within this context that we developed a model program for young children with autism, which eventually became Project DATA (Developmentally Appropriate Treatment for Autism). Our initial work was motivated by a community need for services for children with autism that reflected what we know about child development and current best practices in applied behavior analysis. We were motivated to develop a program that (a) integrated the best, most current practices from applied behavior analysis and early childhood special education and (b) re-

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sulted in the best possible outcomes for children with autism and their families. We were also influenced by some simple guiding principles, which served as the cornerstone of our program:

- Children with autism are children first, and any program must be a safe and nurturing place for children.
- Data-based decision making must be employed across all aspects of the program.
- Children with autism must have multiple opportunities to interact successfully with their typically developing peers every day.
- The program we develop must be acceptable to consumers and must fit in the social contexts of public schools.

With these principles in mind, we decided to work with our school district partners to develop a program that would help them provide effective, acceptable, and sustainable services to more children with autism. The purpose of Project DATA thus became to develop, implement, evaluate, and disseminate a program for young children with autism and their families that would be effective, sustainable, and responsive to the needs of consumers. This project emphasized actively integrating the strengths of early childhood special education and applied behavior analysis to create a comprehensive, effective, and appropriate program for young children with autism.

Over the last two decades, impressive progress has been made in some treatment programs specifically designed for young children with autism (Harris & Handelman, 1994). Although the outcomes achieved by these state-of-the-art programs are good and have been supported by data demonstrating positive child outcomes (Lovaas, 1987; McClannahan & Krantz, 1994; Strain & Cordisco, 1994), the services they offer are quite different from the "state-of-the-practice" services provided by most children with autism and their families (Dawson & Osterling, 1997). There are several reasons for this. First, most of the high-visibility programs are operated by private schools or universities without direct connections to public school districts (Anderson, Campbell, & Cannon, 1994; McClannahan & Krantz, 1994; McGee, Daly, & Jacobs, 1994). Often these programs are segregated (i.e., they serve only children with disabilities) or require children to "earn" their way into integrated or inclusive settings (Bondy & Frost, 1994; Handleman & Harris, 1994). Second, many of these programs are implemented by professionals who are not closely linked with the public schools, and the programs thus may lack the ecological or social validity that is required for eventual replication, adoption, and maintenance in a public school setting. Third, many such programs are run by professionals who are not experts in the areas of early childhood education or early childhood special education and thus overlook some important developmental information in regards to young children. Finally, most of these programs are firmly rooted in applied behavior analysis, with little or no input from other disciplines, especially those based in the public school. School district administrators, researchers, and advocates need to collaborate to increase the capacity of their districts to provide services for children with autism and their families and to ensure that these services draw on the existing best practices from a number of related disciplines. In one of the most influential reports on autism in recent years, the National Institutes of Health report on the state of the science in autism, McIlvane (1996) noted, "Although methods derived from applied behavior analysis were acknowledged as especially effective in treating autism, it was thought that incorporating perspectives . . . from other disciplines might enhance the effectiveness and acceptability of treatment methodologies" (p. 150). This call for diverse approaches in treating autism in young children has been repeated by every authoritative review of the research (see the 2001 report by the National Research Council for the most in-depth review of services for young children).

Current research has suggested that there are many effective approaches for educating young children with autism (Bristol et al., 1996; Dawson & Osterling, 1997; Harris & Handleman, 1994; National Research Council, 2001; Siegel, 1996), which differ primarily in the amount and location of services. According to Dawson and Osterling, however, effective programs for children with autism share six common elements:

1. They include curriculum content that addresses the following:
   - the ability to attend to elements of the environment (Koegel, & Covert, 1972; Pierce & Schreibman, 1994, 1995; Rosenblatt, Bloom, & Koegel, 1995);
   - the skill of imitating others, both adults and peers (Carr & Darcy, 1990; Garfinkle & Schwartz, 2002)
   - the use and comprehension of language (Garfinkle & Schwartz, 2001; Koegel, Koegel, & Surratt, 1992; Secan, Egel, & Tilley, 1989; Taylor & Harris, 1995);
   - appropriate play with toys (Haring & Lovinger, 1989; Lewis & Boucher, 1995; Stahmer, 1995); and
   - social interaction (Koegel & Frea, 1993; Krantz & McClannahan, 1993; Sainato, Goldstein, & Strain, 1992; Zanolli, Daggett, & Adams, 1996).
2. They include highly supportive teaching environments and generalization strategies (Dunlap, Koegel, & Koegel, 1984; Gaylord-

Ross, Haring, Breen, & Pitts-Conway, 1984; MacDuff, Krantz, & McClannahan, 1993; McBride & Schwartz, 2003).
3. They are conducted in learning environments that are predictable and routine (e.g., Lord & Schopler, 1994).
4. They employ a functional approach to behavior problems (Carr & Durand, 1985; Day, Horner, & O'Neill, 1994; O'Neill, Horner, Albin, Storey, & Sprague, 1990; Schwartz, Boulware, McBride, & Sandall, 2001).
5. They provide a planned transition from the preschool to elementary school (Chandler, 1993; Fowler, Schwartz, & Atwater, 1991).
6. They emphasize an individualized approach to family involvement (Boulware, Schwartz, & McBride, 1999; Dunst, Leet, & Trivette, 1988; Koegel, Bimbela, & Schreibman, 1996; Krantz, MacDuff, & McClannahan, 1993; Lovaas, 1993).

The Project DATA Model

The Project DATA model serves preschool children with autism and their families in inclusive and developmentally appropriate programs. When we planned this inclusive program for children with autism, we were putting our belief system to the test. One of the guiding principles of inclusive education is that children will learn from watching each other, playing together, and participating in the general classroom community. What we know about children with autism, especially very young children with autism, is that they tend to have difficulty imitating, engaging in many activities, playing, and readily responding to social praise (Rosenberg & Schwartz, 2003). Children with autism require explicit, intensive instruction to comprehend key skills and to learn how to learn in a classroom. We developed Project DATA to determine if we could blend the explicit and intensive instruction needed by children with autism with quality components of preschool environments according to professional organizations such as the Division for Early Childhood of the Council for Exceptional Children (Sandall, Hemmeter, McLean, & Smith, in press) and the National Association for the Education of Young Children (Bredekamp & Copple, 1997).

Method

Participants and Setting

The children in Project DATA were referred by a local public school district. Entry into the program was based on several criteria: referral from the school district, the presence of a diagnosis on the autism spectrum from a professional in the community, and an opening in the program. No other assessment data were used to influence placement in the program. During the first 4 years of the program, it was funded jointly by the school district and model demonstration grant funds from the U.S. Department of Education. Currently, the project is funded completely by school district funds and private donations. To date, 48 preschool children with autism and their families have participated in the project. Of the 48 children, 11 (23%) were girls and 37 (77%) were boys. Thirty-three children (69%) were Caucasian, 8 (17%) were African American, 5 (10%) were Asian American, and 2 (4%) were identified as Other. Children participated in Project DATA for a mean of 16 months. All of the children were between the ages of 3 years and 6 years when they participated in the program, and all had an independent diagnosis of autism or pervasive developmental disorder not otherwise specified (PDD-NOS). At program entry, program staff administered the *Childhood Autism Rating Scale* (CARS; Schopler, Reichler, & Renner, 1988) to each child. The average CARS score was 36.70 (range = 19.50–56.00). The mean score would place a child between the categories of mildly/moderately autistic and severely autistic.

The school-based components of Project DATA were conducted at a university-based comprehensive early childhood program. Every year, this program provided services to more than 200 children from ages birth to 7 years in integrated early intervention and early childhood special education classrooms. All of the study participants attended one of three preschool classrooms, each with a morning and afternoon session, at the center. Each preschool class had 16 students, 9 with disabilities and 7 without identified disabilities. Each classroom had a head teacher, an assistant teacher, and two classroom aides. Speech, occupational, and physical therapy services were provided in the classroom. Family support activities were held at the school, the child's home, or another location chosen by the parent (e.g., childcare program, grocery store, religious school, in the family's car).

Program Design

The Project DATA model consists of five interdependent components that work together to yield improved outcomes for young children and their families. These components are shown in Figure 1 and described next.

Component 1: High-Quality Inclusive Early Childhood Program

As indicated by its central location in the figure, the integrated early childhood program was the core compo-

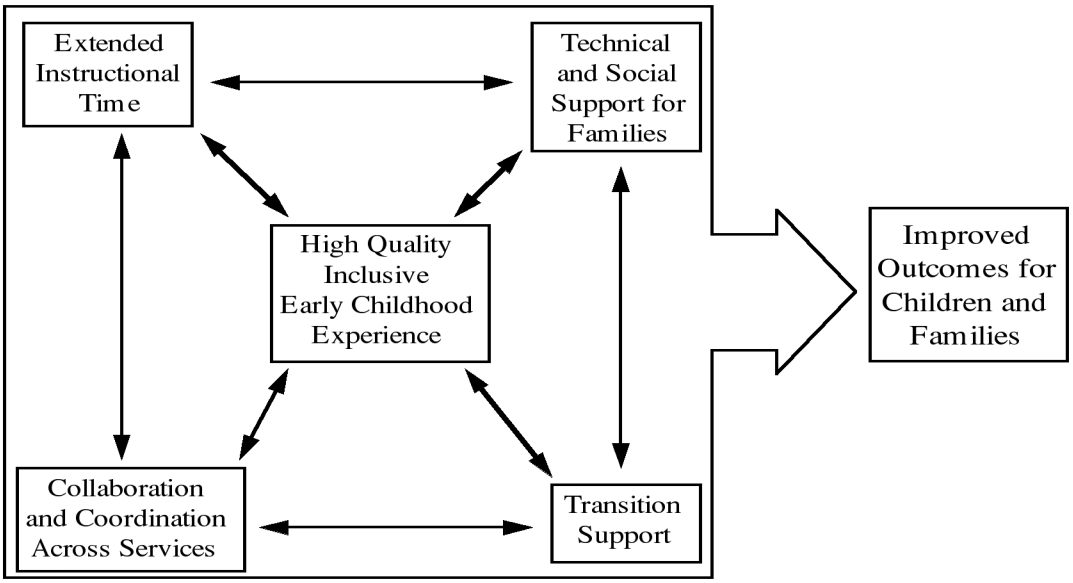

FIGURE 1. Project DATA model.

nent of the Project DATA model. We stressed to families that the preschool program was the primary component of the overall program, and our job as the "autism program" was to facilitate children's successful interactions with peers, activities, and materials in the preschool. The goal at the preschool was to provide classroom activities that promoted dynamic interactions between the target children and the environment in a family-centered and developmental–behavioral approach to instruction and curriculum (Allen & Schwartz, 2001). To translate this philosophy into practice, we planned classroom activities that promoted high levels of engagement and multiple opportunities to apply systematic instruction to achieve educational goals (Sandall & Schwartz, 2002). The classroom activities and instructional strategies not only were developmentally appropriate (Bredekamp & Copple, 1997), which means individually and chronologically age-appropriate, but also adhered to recommended practices for young children with disabilities; that is, they were effective and systematic (Carta, Schwartz, Atwater, & McConnell, 1991; Sandall et al., in press). These concepts are illustrated in five strategies that we consider central to providing educational services for young children with autism in inclusive settings. These strategies, listed next, are described in detail in an article by Schwartz, Billingsley, and McBride (1998).

- Teaching communicative and social competence by using explicit instruction to enable children to act upon the environment to achieve their goals in an appropriate manner. This includes requesting preferred materials and activities, requesting to not participate in some activities, asking peers to play, and responding to the social bids of peers.
- Using instructional strategies that maintain the natural flow of classroom activities. Rather than removing children from free choice or snack time to provide instruction, we worked with teachers to embed instructional episodes using evidence-based instructional strategies into the ongoing routines and activities of the preschool classroom.
- Teaching and providing opportunities for independence across the day. Staff members ensured that all children were given opportunities every day, with appropriate amounts of support, to manage their own materials, make choices, and develop skills to solve conflicts and other problems.
- Proactively and systematically building a classroom community that includes all children through group activities, shared control of materials, and intervention strategies that provide every child opportunities to lead and opportunities to follow.
- Promoting generalization and maintenance of skills across settings, staff, and materials by using common materials in class, providing multiple examples of every item taught, and having many staff members interact with each child.

Component 2: Extended Instructional Time

An extended-time component of the school program that was added to the existing preschool day for the children with autism totaled approximately 20 hours per week of school-based services (increased from the existing 12.5 hrs per week offered in the preschool program). In addition to adding more hours, this longer day provided students with an uninterrupted period of intensive instruction that addressed core deficit areas. This extended portion followed the morning session of the preschool, so morning students would stay later and afternoon students would arrive earlier. The program deliberately was scheduled this way to meet the real-life scheduling needs of school districts. We knew that we needed to create a program that would not increase transportation costs and that would fit in the social contexts of public schools if we wanted school districts to eventually attempt replication and adoption of this model.

This more intensive intervention component focused on highly individualized instruction and addressed areas of need identified by families and the preschool classroom staff. Instruction was aimed at increasing each child's success in accessing developmentally and age-appropriate activities and environments and improving his or her functioning at home and in community settings. The importance of individually designed programs for children with autism is critical because the population is heterogeneous (Dawson & Osterling, 1997; Leaf & McEachin, 1999; National Research Council, 2001). The core curriculum is driven by each child's strengths and needs as delineated in his or her Individualized Education Program (IEP), which is developed with the use of a multidomain, curriculum-based assessment (e.g., the *Assessment, Evaluation, and Programming System* [AEPS; Bricker & Pretti-Frontczak, 1996]). This ensures the individual and comprehensive nature of each child's intervention services. The IEP was developed by the families and preschool teachers, along with other professionals who were working with the child in the extended day component.

Intensive Instruction. Instructional strategies that were used were empirically driven, cross-disciplinary, and acceptable to both teaching staff and families. These strategies utilized naturalistic teaching techniques (Hepting & Goldstein, 1997), embedded learning opportunities (Sandall & Schwartz, 2002), and discrete trial teaching methodology (Koegel, Russo, & Rincover, 1977). These strategies could be integrated successfully because they were all based on empirical information about children's learning. By using a variety of strategies, we were able to match the child's need for support in each teaching interaction to the type of instruction given. For example, children may need more directive, explicit instruction when they are beginning to learn a new skill, but after a short period of time they may be able to respond appropriately to a less directive approach embedded in a play activity. All of the instructional strategies follow the child's lead to determine areas of interest, potential reinforcers, and important information about the child's behavioral state (e.g., Guess, 1995). The focus on the environment, child's interests, and functionally related responses enhances the social and ecological validity of these intervention strategies and, most important, enhances the child's generalized responding of newly acquired skills.

The extended-day portion of the program was staffed at a one-teacher-to-two-children ratio and used small-group and individual instruction to teach relevant skills. A lower student:teacher ratio was used initially for students who required more explicit instruction. How explicit the intensive instruction would be depended on child need; however, the instruction focused on enhancing the child's abilities to access typical preschool environments and take advantage of embedded curriculum and naturalistic teaching strategies, both of which are recommended practices in early childhood special education. In this context, we defined explicit instruction by how small the steps of the instructional program were, how contextualized the instruction was, and how natural were the reinforcers used to teach the task. For example, a child who required very explicit instruction to learn how to imitate might begin instruction with a teacher sitting across from him, clapping her hands, and asking the child to do the same. Physical prompts would be used as necessary, and tangible reinforcers (e.g., preferred toys or food) would be available. This child might need to be taught to imitate multiple movements before he learned the concept of generalized imitation. He might also need to be taught explicitly how to respond in a small group (perhaps beginning with one teacher and two students, and gradually adding students) before he would be able to demonstrate his imitation skills at a circle-time activity in the preschool classroom. Decisions about how explicit the instruction needed to be were based on daily child performance data.

Teamwork. The comprehensive nature of the extended-day component relied on collaboration between the families and the teaching staff. For each child, the IEP team developed individual goals and objectives that related to the child's everyday environments: preschool classroom, home, and the community. Based on these individual goals and objectives, we developed intervention programs and determined the most appropriate intervention context (i.e., the classroom extended program or home). For each family, one member of the team was designated as a resource coordinator and was the pri-

mary contact for the family, as well as the liaison between the classroom and the extended-day program.

Component 3: Technical and Social Support for Families

Social and technical support services were offered to every family in the program and provided to every family that wanted them. Although these support services were individualized to meet the unique needs of each family, the minimum services included the following:

1. ***Home-based services offered at least monthly.*** Goals of these visits were driven by each family's interests and the IEP (developed collaboratively between the family and professionals). More intensive services were offered to assist families through "problem" situations (e.g., beginning toilet training, haircuts, problems with bedtime, difficulties at Sunday School), and assistance was faded as the child's behavior improved. Teaching strategies were used in the context of the home to help family members teach the behaviors their children needed to help them become more independent and participate fully in family life (Boulware et al., 1999; Koegel et al., 1996).
2. ***Resource coordination.*** A resource coordinator was designated to assist each family in learning about community-based resources (e.g., respite care, government benefits, childcare, support groups, community therapists) and to serve as the family's primary contact with the program. Families completed an interest survey (e.g., AEPS family interest survey) when they began the program and then reevaluated the survey to indicate new or changing interests every 6 months or upon their request.
3. ***Parent support and network evening offered monthly.*** At this information session and support group, speakers talked about parent-selected topics. Examples of topics presented included estate planning, positive behavior support, nutrition, advocacy, and a series on parenting a child with autism.
4. ***Fathers' evenings offered monthly.*** The topics for these meetings were determined by the fathers who participated. This support group was facilitated by a male social worker, and Childcare was provided. Mothers' groups were also offered monthly during the school day.

Component 4: Collaboration and Coordination Across Services

Almost every family with whom we worked has had some family-negotiated services for their child. We defined a *family-negotiated service* as any therapeutic service that (a) families hired and (b) was not paid for by school district funds. Such services could include speech therapy or occupational therapy paid for by health insurance, behavioral home programming paid for by the family, or nutritional consultations. We attempted to gather all the providers working with a family for a meeting once a year. The purpose of this meeting was to share information rather than to do joint planning.

Component 5: Transition Support

An important component of the Project DATA model was collaboration among people in all the services and settings in which the child spent time. Each child had a resource coordinator, who served as the liaison for the classroom, the extended day program, the family, and any other family-negotiated services providers. This collaboration was important for facilitating optimal outcomes for children and reducing stress on the family (e.g., Donnegan, Ostrosky, & Fowler, 1996; Dunlap et al., 1984). In addition, the resource coordinator was the transition facilitator as the children prepared to leave our program. The resource coordinator worked with the family and the public schools to identify an appropriate program and to ensure that the staff at the school the child attended received the support and training needed to prepare for the transition.

Dependent Measures

To evaluate the effectiveness of Project DATA, we collected information on the children's developmental progress in functional skills, families' and consumers' satisfaction, and ongoing self-assessment by the management team.

Developmental progress was measured by using the AEPS to assess the children at the beginning and end of each school year. This assessment was completed by the preschool classroom team (lead teacher, assistant teacher, related services personnel) and Project DATA staff following the guidelines in the AEPS manual. In addition, the classroom team used the Project DATA curriculum-based measure to assess each student at the beginning and end of every school year. This measure was developed to gain more information about student performance on key areas of concern for children with autism, such as attending, imitation, social interaction, and following directions (see Note 1).

Parents were interviewed annually to identify priorities for intervention and to gauge their satisfaction with

the program. The management team met at least monthly to evaluate the project progress against an activity timeline. Modifications to the timeline were made as necessary and were documented in meeting notes.

Results

Did the Children Achieve Important Development Gains?

To put a clearer and more functional picture on the children's progress, we constructed an index to evaluate functional outcomes. These functional outcomes are important for school, home, and community participation and are often identified as core deficits in autism, but they are not readily measurable on any assessment measure that would be appropriate to use in a classroom. The functional outcomes index represents performance on selected AEPS items as well as the items from the Project DATA curriculum-based measure (see Note 2). On this index, six functional outcomes are represented: *use of speech to communicate, ability to follow complex directions, motor imitation, toilet training during daytime hours, symbolic play,* and *cooperative play with peers*. The results for all 48 children are displayed in Figure 2. The children made gains across all of these functional skills. Before entering Project DATA, 63% of the 48 children used at least five words spontaneously; at the end of treatment, 81% of the children did. For following directions, preassessment was at 13% but increased to 48% at postassessment. Motor imitation showed similar gains, with preassessment at 60% and postassessment showing that 92% demonstrated generalized motor imitation. Toilet training yielded the largest gain, with 38% of the children toilet trained at program entry and 83% at exit. Symbolic and cooperative play showed smaller gains, with pre–post scores being 17% to 25% and 6% to 17%, respectively.

The study children made gains across all of the developmental domains, as measured by the AEPS, with the greatest gains in the adaptive, social, and fine-motor domains. These results are shown in Figure 3. The children's scores across the program on different development domains are as follows:

- adaptive: 45% preassessment, 67% postassessment;
- cognitive: 37% preassessment, 48% postassessment;
- social communication: 29% preassessment, 50% postassessment;
- social: 33% preassessment, 57% postassessment;
- fine-motor: 32% preassessment, 62% postassessment; and
- gross-motor: 57% preassessment, 72% postassessment.

Are Parents Satisfied With the Program?

The parents of the children in the program were satisfied with the format of the program, the content of the program, and the progress their children made in the program. We collected information during family interviews and from letters families sent us about the program. Several examples of statements made by the families follow:

> After two years in DATA, "Andy" is in kindergarten and at the top of his class academically. . . The DATA Project experience gave him the confidence to maximize his learning experiences.

> DATA Project is a million little things done right every day to help this child succeed, and let me tell you, those things add up!

> While I am forever thankful for the DATA Project, I can't seem to forget the other 799 parents at the conference I attended who are not able to benefit from this program.

Another measure of family satisfaction is the demand by families for the program. By the second year of Project DATA, we had more requests from families than we could accommodate, including many from families outside of the school district.

Are Other Consumers Satisfied With the Program?

Local school district administrators appeared to be satisfied with this program. At least three neighboring districts have replicated the program, and we receive multiple inquiries about training staff to implement Project DATA. We also have many visitors every year who want to observe the project. During the 2003–2004 school year, more than 100 persons—families, school district administrators, and teachers—visited the program.

Discussion

The goal of Project DATA was to develop a program for young children with autism that was effective, was acceptable to consumers, and blended the best practices of applied behavior analysis and early childhood special education. The data presented in the Results section suggest that we achieved this goal. In a relatively short time (average time in the program was 16 months), the pro-

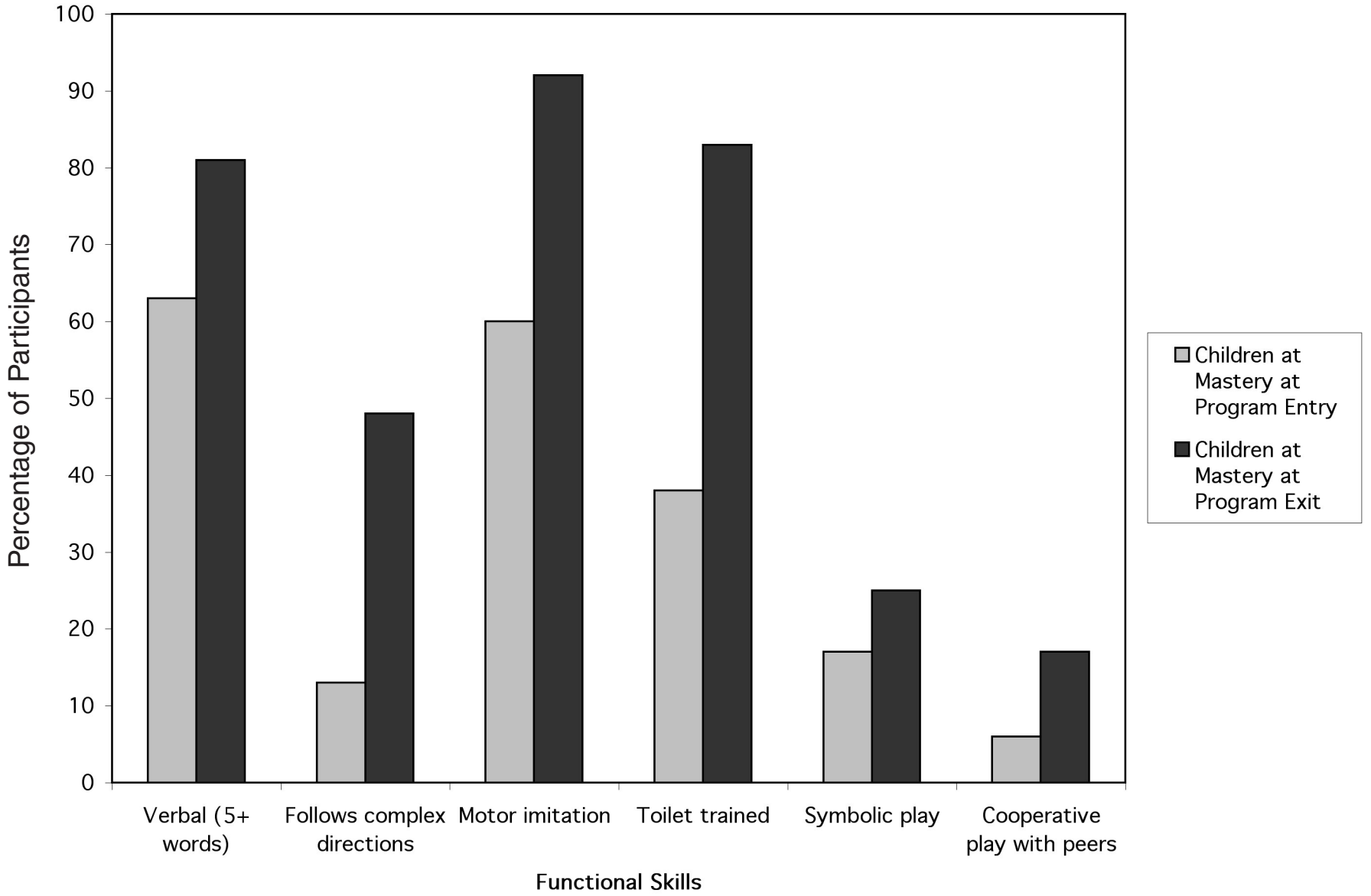

FIGURE 2. Percentages of functional outcomes achieved by the 48 participants in Project DATA before and after intervention.

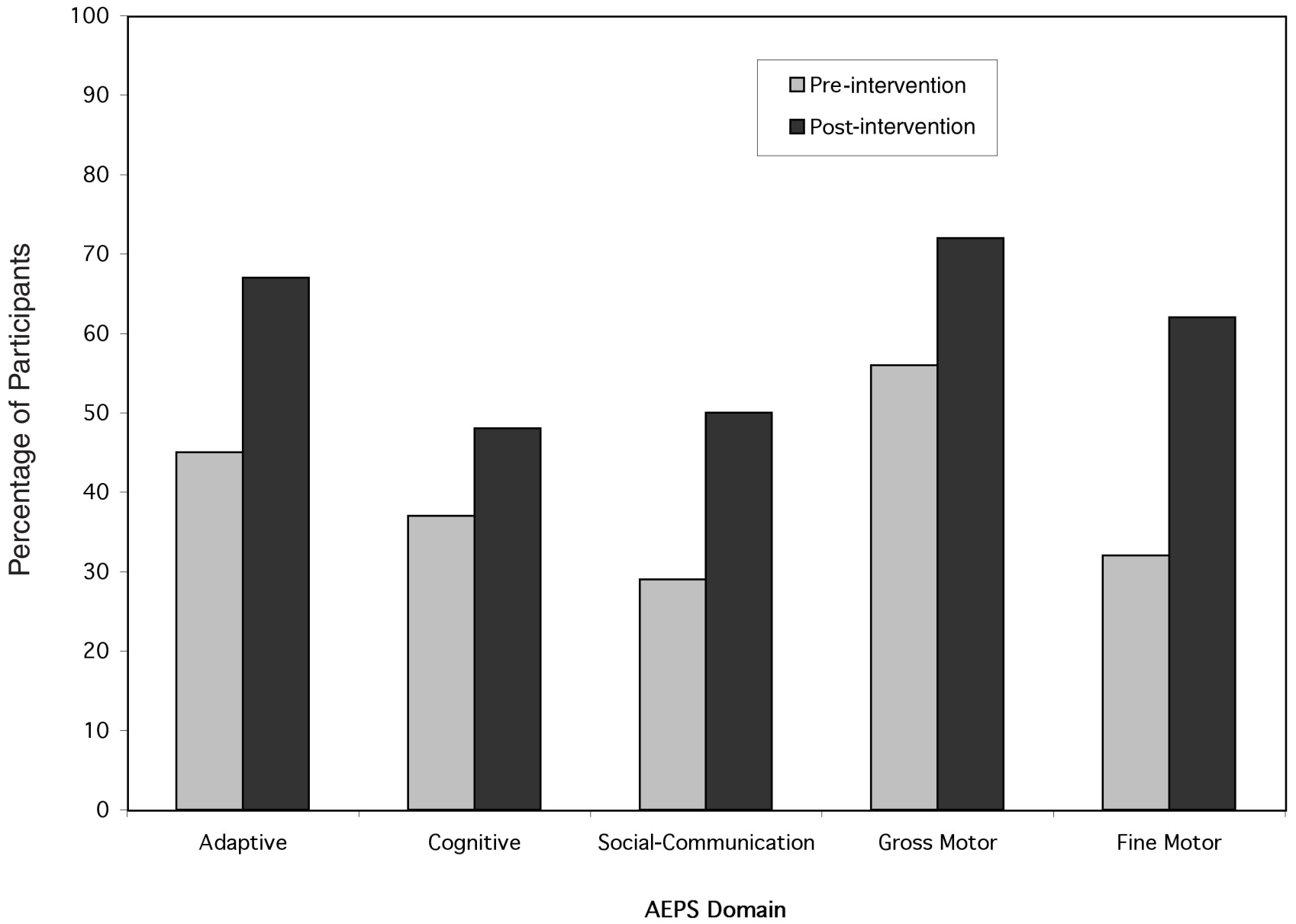

FIGURE 3. Percentages achieved on five developmental domains of the *Assessment, Evaluation, and Programming System* (AEPS; Bricker & Pretti-Frontczak, 1996) by the 48 participants in Project DATA before and after intervention.

gram resulted in meaningful gains for young children with autism who had participated, and consumers (e.g., families, school district personnel) have become major advocates of the program. When evaluating these gains, it is important to remember how children were admitted to Project DATA. All of the children were referred by the local public school district, had an appropriate diagnosis, and were admitted on a space-available basis. No other admission criteria were considered (cf. Lovaas, 1987, who implemented stringent admission criteria). To more completely evaluate Project DATA, it is important to return to the guiding principles we set forth for the program to see if we remained true to our mission and to let these principles inform a broader discussion about what constitutes appropriate services for young children with an autism spectrum disorder.

1. *Children with autism are children first, and any program must be a safe and nurturing place for children.* Project DATA consists of five components (see Figure 1), with the core component being a quality integrated early childhood experience. Although some individuals may think that placing the integrated early childhood program in the center of the figure has only aesthetic or semantic value, we believe that the integrated program must remain the core component and that it can be supported by the other program elements. This has many implications. First, children with autism do not need to "earn" their way into integrated settings (cf. Leaf & McEachin, 1999; Lovaas, 2003). Children with autism are full members of their classrooms and need to receive the support necessary to enable them to participate and learn in the classroom. Sometimes that support includes explicit instruction in segregated settings; but that instruction supplements, rather than supplants, the classroom experience. When we started Project DATA at the University of Washington, the extended day portion of the program was the first segregated classroom at the Experimental Education Unit in more than 20 years. After some initial resistance, staff and faculty came to an understanding that sometimes providing some instruction in a more restrictive setting results in an overall less restrictive placement for the child. This, however, is a slippery slope, and we must be vigilant that some instruction provided in segregated settings does not become all instruction provided in segregated settings.

Second, the classroom teacher—rather than the staff of the "autism-related program—is the primary contact for the family. As a related item, parents came to realize that the activities in the classroom were as important as the more explicit instructional activities in which the children participated. Participation in a developmentally appropriate, activity-based program helped parents understand all of the domains of development rather than focus on discrete skills most often associated with beginning curricula for children with autism.

Finally, full participation in preschool classrooms helped teachers retain ownership of and responsibility for the educational programs of the children with autism and helped the parents feel like full members of the school community.

2. *Data-based decision making must be used across all aspects of the program.* Data collection and accountability have long been considered cornerstones of special education (Carta et al., 1991). Adhering to this tradition, we collected data and used them to guide every component of the program. Data on classroom behavior were collected and evaluated by the team at weekly meetings, data on programs being addressed during the extended instructional day were collected and reviewed by the Project DATA team, and all of these data were shared with the parents during home visits. We also used data collected on the overall program to make decisions about staffing, program configuration, and policies. The project management team met monthly and used both child data and program data to inform the administrative decisions. This emphasis on data-based decision making has become extremely important as we begin to help school districts implement this program. Many programs for children with autism advocate a set curriculum or set of instructional procedures that must be followed for every child. Our policy and practice have been that we respond to the evidence. If practices are successful, we use them. If they do not result in meaningful change in child behavior, we do not. Our reliance on evidence has helped us work successfully with parents, teachers, and other professionals who often come to the table with different theoretical orientations or belief systems. It also helps everyone on the team to keep focused on the reason we are all assembled—to facilitate optimal development in every child with whom we work.

3. *Children with autism must have multiple opportunities every day to interact successfully with their typically developing peers.* Because the integrated classroom is the core component of Project DATA, we worked with the classroom teachers to ensure that systematic instruction was provided across all activities and areas in the classroom. This included systematic instruction on social interactions. To help in planning, implementing, and evaluating this instruction, teachers developed activity matrices that included every child and every active objective on the IEPs (Sandall & Schwartz, 2002). These matrices required teachers to plan when they would be providing specially designed instruction and collecting data for every objective. These planning matrices are extremely useful when classroom teams create lesson plans, prepare materials, and assign instructional groups. They have also become an important tool that teachers use to communicate with other members of the team. It is through the use of better planning that the amount of systematic instruction that is embedded in the ongoing classroom rou-

tines and activities has increased. This instruction has been essential in helping children with autism participate more fully, communicate more effectively, and interact more successfully.

4. *The program we develop must be acceptable to consumers and fit within the social contexts of public schools.* When we started this program, we did so with public schools in mind. We wanted to create a program that was exportable and sustainable. We also wanted to create a program that would fit in the contexts of public schools. We therefore considered issues such as transportation, staffing, space, and training. We believe that we accomplished this goal, because we have conducted outreach training for more than 35 school districts and currently have more requests for training than we can handle. What is most rewarding is visiting a program in a nearby district that has embraced Project DATA, altered some components to make it their own, and actually improved on the original model. We work collaboratively with this district to learn from each other, prepare students, and continue to look at the data to improve our model.

Implications for Practice

The Project DATA model appears to be a promising approach for providing effective inclusive services for children with autism. To implement this model, however, staff members must have a thorough understanding of the principles of applied behavior analysis and recommended practices in early childhood special education. Classroom teachers and extended day teachers must have a deep knowledge of effective practices, including systematic instruction, ongoing data collection, positive behavior support, and the general early childhood curriculum. They must know the continuum of instructional practices and how to match the appropriate practice to the child and learning. As we develop more school-based programs for children with autism, we must ensure that teachers receive adequate support and the technical support they need to maintain the quality of the program. Children with autism may provide the perfect opportunity for early childhood special educators to examine how to embed explicit instruction in inclusive settings effectively. If we are to continue to advocate for inclusive settings for children with autism, we must be able to document that we are not asking parents to trade the effectiveness of an intervention for a more naturalistic setting for that intervention.

Implications for Research

Because Project DATA was never designed as a research project, we do not have the types of evidence that may be most convincing to some researchers and policymakers. We do, however, have data indicating that children made progress in the program and parents were satisfied with the project. These results suggest a number of future directions for research. Although we would not want to compare the Project DATA children to a nontreatment control group, it would be interesting to compare this group of children to a group of similar children who are receiving different types of services (e.g., home-based behavioral programs). Do children receiving services that emphasize participation in an inclusive setting make different types of gains from those of children receiving more segregated services? Are children who are receiving one type of service more likely to generalize their gains? It will also be interesting to follow the children who participated in Project DATA over time. Does early participation in classroom settings affect these children's performance in elementary school? Educating children with autism in Project DATA–type models will involve providing them with quality integrated early childhood classrooms. Research needs to address whether increasing the number of children with autism in inclusive settings affects the atmosphere and quality of those settings. If so, we will need to examine strategies for including children with autism in a manner that enables us to maintain other elements of program quality. Finally, as more children with autism receive services from their public schools, we need to conduct policy studies regarding the costs to the system (both financial and personnel) and explore strategies for fully funding the programs for these children and families. ◆

AUTHORS' NOTES

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NOTES

1. Copies of this assessment are available from the second author.
2. Definitions are available from the second author.

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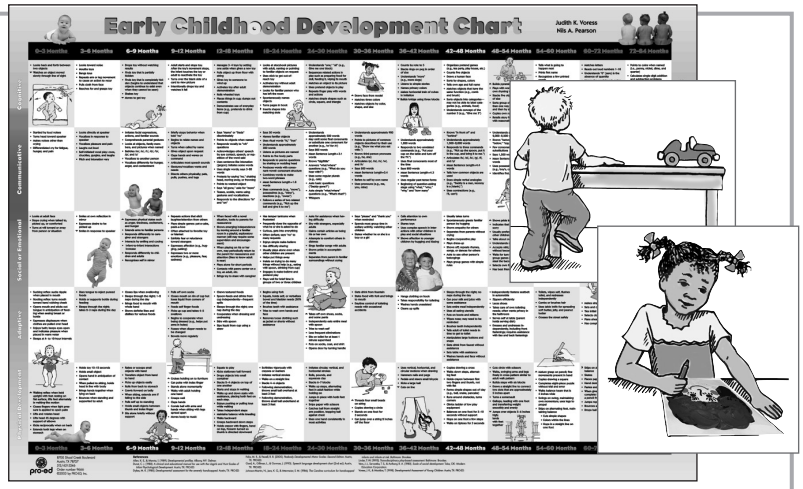

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