

Early Intervention Practices for Children With Autism: Descriptions From Community Providers

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Across the country, states are reporting increases in the number of children with autism enrolled in the education system. Although a few specific treatment methods have been established as efficacious for some children with autism in controlled settings, research examining the translation of these treatments into early intervention programs has been minimal. The current study examined provider self-reports of the use of interventions in community settings through focus groups. Providers report the use of both evidence-based and non-evidence-based techniques and indicate that they often combine and modify these techniques based on child, personal, and external factors. Few providers had a clear understanding of evidence-based practice, and all providers reported concerns about adequate training. Implications for early intervention research are discussed.

Autistic spectrum disorder (ASD) is characterized by impairments in social interaction and communication, along with restricted, repetitive, and stereotyped patterns of behavior (American Psychiatric Association, 2000). Autism is an enigmatic disorder of unknown etiology that affects almost all areas of development and is present from birth. Across the country, states are reporting increases in the number of children with this disorder being served each year in the education system, with an average increase of more than 800% since 1992 (Individuals with Disabilities Education Act [IDEA], 1990).

This increase in children with autism, along with treatment studies suggesting substantial gains when treatment is provided at a very early age (Lovaas, 1987; McGee, Daly, & Jacobs, 1994; McGee, Morrier, & Daly, 2000; Strain & Cordisco, 1994), has led to an increased emphasis on early intervention (EI). Although no specific treatment has emerged as the established standard for all children with autism, several

methods have demonstrated efficaciousness in research settings and are now considered best practice.

Recently, two movements have dealt with the proliferation of multiple treatment methods for children with autism. The first involves the development of best practice guidelines, which either list common practices used with children with autism or include a critical assessment of available practices. The best practices guidelines for California (California Department of Education, 1997) currently include a list of many treatments available for children with autism, without regard for empirical support. In contrast, the New York EI program developed a set of recommendations for children with autism ages 0 to 3 years (New York State Department of Health, EI Program, 1999), which did consider experimental evidence for treatment efficacy. They reported strong evidence for intensive behavioral and educational programming but still offered no recommendations for specific strategies. This method has resulted in a list of preferred treatments to be considered when designing EI programs for children with autism.

Although one specific treatment has not emerged as the established standard for all children with autism, research reviews have described several methods that have been demonstrated to be efficacious with some children with autism in research settings. The most well-researched programs are treatments based on the principles of applied behavior analysis (e.g., Dunlap, 1999; Heflin & Simpson, 1998; National Research Council, 2001; Odom et al., 2003; Rogers, 1998), which represents a wide range of EI strategies for children with autism.

For example, one-on-one Discrete Trial Training has been shown to be very effective for some children. Lovaas and colleagues (Lovaas, 1987; McEachin, Smith, & Lovaas, 1993) have reported that as many as 47% of children enrolled in their in-home, structured program will mainstream into general ed-

ucation and do well academically. Other researchers teaching children in the home using similar formats report positive, yet less dramatic, results (Anderson, Avery, DiPietro, Edwards, & Christian, 1987). More naturalistic behavioral programming, such as Pivotal Response Training (PRT) and Incidental Teaching, has been successfully used to increase symbolic and socio-dramatic play skills in children with autism (McGee et al., 1994, 2000; Stahmer, 1995; Thorp, Stahmer, & Schreibman, 1995). Of those children under age 5 without functional communication who entered a parent training program using PRT, 50% learned to use speech to communicate (Schreibman & Koegel, 1996). Studies of inclusion models using behavioral techniques such as incidental teaching have also reported positive results for children with autism. Like in-home programs, inclusion projects have reported that as many as 50% of children are later mainstreamed into general education programs and maintain program gains (McGee et al., 1994, 2000; Strain & Cordisco, 1994). The use of positive behavior support to deal with specific behavioral issues in autism has also been shown to be effective (e.g., Carr et al., 1999; Horner, Carr, Strain, Todd, & Reed, 2002). Research examining the Picture Exchange Communication System has indicated positive increases in communication skills (Bondy & Frost, 1994).

A few techniques that are not behavioral in nature are beginning to demonstrate effectiveness as well. A functional, comprehensive technique in North Carolina called Treatment and Education of Autistic and related Communication handicapped CHildren (TEACCH) uses a structured environment, visual cueing, and other strategies to assist children with autism and their families. Case studies and studies of components of the technique support this method (e.g., Marcus et al., 2000; Ozonoff & Cathcart, 1998; Schopler, Mesibov, & Baker, 1982). A developmental model, Floor Time, has also shown some promising results (Greenspan & Wieder, 1997), although these results have been demonstrated primarily through record review.

A second method of determining appropriate practices has involved researchers looking for common elements across various treatments, regardless of method or theoretical orientation. Several researchers have reviewed programs and techniques with both published descriptions and intake and outcome data (Dawson & Osterling, 1997; Hurth et al., 1999; National Research Council, 2001; Powers, 1992; Rogers, 1998). Iovannone, Dunlap, Huber, and Kinkaid (2003) examined those reviews and identified six common elements of effective programs: (a) individualized support and services for students and families, (b) systematic instruction, (c) understandable and structured environment, (d) specialized curriculum content focusing on symptoms of autism, (e) a functional approach to problem behaviors, and (f) family involvement. These critical elements may be more important to child outcome than the use of individual techniques.

Although a few specific treatment methods have been established as efficacious for some children with autism in re-

search settings, research examining the translation of behavioral and educational research into community EI programs (i.e., IDEA, Part C, providers for children 0–3 years of age and school districts for children 3–5 years of age served by Part B of IDEA) is limited. Few have attempted to apply these strategies to public programs (Rogers, Lewis, & Reis, 1987), and no effectiveness trials for EI treatments in autism have been conducted (Lord et al., in press). Based on the experience of limited dissemination of evidence-based practices in other service settings (Weisz et al., 1995; Weisz et al., 1992), it is hypothesized that community EI programs use a variety of interventions, which vary greatly in quality and intensity and are not often based on research findings. Due to increasing numbers of young children with autism, public agencies, such as school districts and EI providers, are struggling to find ways to appropriately serve these children within the current system. New research is needed to examine whether empirically supported treatments are being used in community settings, how they are being adapted, and what barriers exist to their translation into EI programs. The first step in this process may be to simply describe EI providers' perceptions of the types of techniques they are using in their programs.

To determine what types of intervention techniques are being used in community settings (including those with and without an evidence base), we conducted a qualitative study of the practices of EI providers working with children with autism under the age of 5. Providers in two southern California counties participated in a series of focus groups to help answer the following questions: (a) What methods are providers using in their publicly funded EI programs? (b) Do providers have an understanding of which intervention techniques have a research base? (c) How are providers adapting research-based practices to fit community settings? and (d) Do EI programs have any of the "common elements" of successful programs defined in the literature?

METHOD

Study Design

Qualitative methods via focus groups were used to investigate the techniques employed by EI service providers working with children who have ASD. A focus group approach was chosen to obtain an unbiased, comprehensive understanding of the ways in which different service providers in various EI settings discuss, modify, and apply the techniques they use with children with ASD. Focus groups are defined by the use of participants who have a specific experience with or opinion about the topic under investigation, the use of an explicit interview guide, and the exploration of subjective experiences of participants in relation to predetermined research questions (Gibbs, 1997; Merton & Kendall, 1946). This approach is ideally suited for conducting exploratory investigations, such as the one reported in this article (Morgan, 1988).

Setting and Sample

Focus groups were conducted in San Diego County (consisting of 42 school districts) and Riverside County (27 school districts) in southern California. These counties were selected based on their representation of urban areas expected to have sizeable populations of children with autism (populations = 2,906,660 and 1,635,888, respectively; see Notes 1 and 2) and willingness to participate. The California Department of Education (2002) reported 152 children and 401 children ages 0 to 5 with autism in Riverside and San Diego counties, respectively.

Four focus groups were conducted with 22 early-intervention service providers working in both in-home and center-based settings. Introductory letters explaining the study were sent to special education directors and infant program providers (funded through California Early Start) serving children with ASD in both counties. Programs that expressed interest in participation and were currently serving children 0 to 5 years of age with ASD were asked to provide the names of one to two individuals for participation. Individual providers were then mailed an introductory letter describing the study and inviting them to participate. Groups were limited to a maximum of eight participants each.

To participate, a provider needed to be the primary service provider or supervisor in an educational/EI program and have at least one child with autism in his or her program. To assess services for children ages 0 to 3, agencies that contracted with the local regional center were contacted for participation. Many of these contracted agencies provide in-home services for children with autism. In-home agencies typically consist of a psychologist or other licensed professional who oversees the agency, program supervisors who develop individual programs for children with autism under the supervision of the psychologist, and therapists who provide the day-to-day service under the guidance of the program supervisor. Individuals at the level of program supervisor were asked to participate in the focus groups. The qualifications for these individuals vary by agency; however, they typically have a bachelor's or master's level degree, as well as experience in the field of autism. In group programs for children 0 to 3, the lead "teacher" in the classroom was asked to participate. The type of lead teachers in these programs varies by agency and may include early childhood educators or special educators, but these service providers are not usually required to have a teaching credential or specific degree. Once children turn 3, they are transitioned to school district services. For these programs, the classroom teacher was recruited for participation. These individuals had to conform to district policies in terms of education and licensure. Service providers were invited to participate in the focus groups based on their role in the development of programming for children with autism in their care and their role in supervision of paraprofessionals implementing interventions with these children. Because the term "teacher" carries connotations of licensure,

the term "service provider" will be used to refer to the focus group participants.

Service providers in each county were contacted until approximately six to eight possible candidates were available for each group. A time was specified for the focus group meeting based on service provider preferences. Participants were divided into four focus groups based on (a) provider's county of employment and (b) age range of children with whom the provider worked (either under 3 years of age or 3–5 years of age). Groups were divided this way to facilitate within-group interaction and to minimize any across-group differences (Morgan, 1988). These particular groups were chosen based on program differences in organization and federal funding categories for children within each of these age groups.

All participants were women; this was not due to sample bias but, rather, was an artifact of the target population. Originally, 25 participants were enrolled; however, 3 of the participants did not attend due to difficulties that arose unexpectedly when the group was to meet. Of the 22 service providers who participated, 19 (86%) were White, 1 was African American, 1 was Asian/Pacific Islander, and 1 was American Indian. Participants ranged in age from their 20s to their 50s, with the majority being in their 20s and 40s ($M = 37.22$; $SD = 9.66$). In terms of education level, 3 participants reported having below a bachelor's degree, 11 had a bachelor's degree, and 8 had a master's degree. Eight participants reported having a Special Education Credential, 1 had a General Teaching Credential, 2 had an Emergency Credential, and 11 had no credentials. Years of experience working with children with ASD ranged from 1 to 30, with a mean of 9.86 ($SD = 8.18$) years.

Data Collection

An interview guide was developed to examine participants' use of various techniques in their EI programs (see Appendix A). Questions for the guide were generated based on the study goals and the pilot discussion with several providers about their program procedures. The interview guide was piloted with six EI providers (who did not later participate in the focus groups); minor revisions were made for clarification.

The discussion began with basic questions (see Appendix A), then moved toward more sensitive issues regarding specific methodologies. During the initial questions, the service providers gave descriptions of their programs, which typically included the intensity of programming, the number of children served, details about the setting, parent participation, and some description of specific techniques.

Consistent with a well-established tradition in focus group methodology (Merton, 1987; Schensul, 1999), the next phase of the discussion used two vignettes, presented one at a time, to facilitate discussion among the providers through exposure to uniform stimuli and provide a basis for the quantification and comparison of responses within and across focus groups (see Appendix B). Using a vignette describing an actual child

similar to those served by the service providers generated a clearer picture of methods used and how those methods were chosen. Each vignette described a hypothetical case history of a child with ASD. All participants received the same two vignettes, with the ages of the children altered to fit the group. The first child presented had significant delays in cognitive and adaptive areas and a lack of communication skills. The second vignette described a child with some language skills, moderate behavioral issues, and mild delays. Participants were asked to read over each vignette and then decide what type of program they would recommend if such a child came to their program. Participants responded in an open-forum type of discussion. To reduce experimenter bias, the definitions of an intervention were intentionally open-ended. Participants were asked to use their own words to describe the program, including any techniques, strategies, or methods they would choose to use. As participants responded, the co-moderator recorded the various interventions mentioned onto a flip chart displayed before the group. All methods mentioned were written down, regardless of whether they were a research-based comprehensive service, a specific strategy, or a general technique. The number of service providers who would use the specific technique with the child was recorded.

To ensure that all participants had input, the moderator asked different participants to begin each discussion and to provide input throughout. After all the participants had an opportunity to contribute to the discussion, the moderator asked participants to rate each intervention or technique according to whether they thought it was *evidenced based* (defined loosely for the participants as a technique or strategy with scientific research to support effectiveness with children who have autism) or not evidenced based. These responses were recorded for each participant. Participants were also asked if each technique was *autism specific* (designed for children with a variety of disabilities or specifically designed for children with autism) and about the utility, validity, and feasibility of using the technique. Participants were also asked whether (and if so, how) they altered the techniques. Finally, participants were asked to suggest one improvement to the EI system.

Procedure

Focus groups lasted no more than 2 hours each, including a short break. Participants were given an informed consent form and a background questionnaire. Background questions included information about age, district/agency, education, race, gender, classroom/program type, and teaching experience.

The moderator, who was the same for each group, began each session by welcoming the participants and providing them with the agenda. After introductions, the moderator asked participants to provide an overview of their programs. Next, the moderator distributed the first of two written vi-

gnettes to each of the participants. Participants read over the vignette and discussed the type of program they would recommend if such a child came to their program. Additional questions were asked, as previously described (also see Appendix A). At the end of each group, participants were thanked and given a \$10 gift certificate to an educational supply store.

Data Analysis

Data analysis was guided by grounded theory (i.e., theory derived from data and then illustrated by characteristic examples of data; Glaser & Strauss, 1967). First, audiotapes of focus group discussions were systematically transcribed and then reviewed by the research team. The transcripts were then independently coded by the project investigators at a very general level to condense the data into analyzable units. Segments of transcripts ranging from a phrase to several paragraphs were assigned codes based on a priori (i.e., based on questions in the interview guide) or emergent themes. Each transcript was independently coded by all three investigators. Disagreements in assignment or description of codes were resolved through discussion among investigators and enhanced definition of codes. The final list of codes, constructed through a consensus, consisted of a list of themes and issues, accounts of behaviors, and responses to the presentations of vignettes. The transcripts were then assessed for agreement among the authors on the coding, based on a procedure used in other qualitative studies (Boyatzis, 1998; Bradley et al., 2002). Interrater reliability was assessed for a subset of one third of each focus group transcript. For all coded text statements, the coders agreed on the codes 95% (range = 93%–98%) of the time, indicating good reliability in qualitative research (Boyatzis, 1998).

The constant comparative method (Glaser & Strauss, 1967) was then used to identify five primary themes and three secondary themes. Themes were constructed on the basis of comparison of codes assigned to segments of text to identify characteristics they shared and characteristics that distinguished them from other codes. *Primary themes* were defined as (a) using research-based practices, (b) understanding which practices were evidence based, (c) determining which intervention to use, (d) adapting specific interventions, and (e) specific training. *Secondary themes* were defined as child characteristics, participant characteristics, and external factors that influenced choices within the major themes. Additionally, comments were coded according to the six elements common to excellent autism programs (Iovannone et al., 2003). Themes were compared across groups to look for trends. Representative quotes from various categories were selected and presented in italics to exemplify the descriptive summary of the qualitative data.

In addition to the qualitative data derived from transcripts, quantifiable results in the form of tallies were available for some variables. Participants' reports of technique use were written down so the number of participants using each tech-

nique could be quantified. Program description information was transcribed by participant to quantify the specific elements of each program. This was critical to our overall study, because it allowed for a thorough and relatively quantifiable content analysis of the focus group sessions. This technique of using both qualitative and quantitative data collection in focus group analysis has been well-established in the literature (e.g., Krueger, 1994; Nassar-McMillan & Borders, 2002; Vaughn et al., 1996).

Results

Methods Used in EI Programs

When asked to describe their teaching strategies, participants listed more than 40 different strategies or interventions important to their EI programs. These ranged from intervention techniques (those methods that consist of a set of strategies for treatment delivery and have a specified protocol) such as DTT (Lovaas, 1987) or TEACCH (Schopler, Mesibov, & Hearshey, 1995) to very specific strategies such as modeling and data collection, which are typically used as one part of a larger intervention. Service providers mentioned 30 intervention techniques and 21 specific strategies in the course of the focus groups. Approximately 17 of the specific strategies were part of the intervention techniques mentioned. Of the 30 intervention techniques, 13 were described in more than one focus group, indicating some permeation into the system rather than

an idiosyncratic preference of one participant or program. Six specific intervention techniques were used by participants in all four focus groups: applied behavior analysis (ABA), Floor Time, occupational therapy (OT), PECS, sign language, and Social Stories. At least three of the four groups also endorsed DTT, music therapy, PRT, and the TEACCH methodology. The most widely used intervention was PECS, with almost all of the participants mentioning it, even those who did not use any other intervention in their programs (see Table 1). *Applied behavior analysis*—defined broadly by our participants to mean the use of behavioral strategies but not including specific techniques such as DTT or PRT—was used by 72% ($n = 16$) of participants, followed by OT (including sensory integration), Floor Time, DTT, TEACCH, and sign language. Only 18% ($n = 4$) of participants did not use any specific interventions regularly, although all but one of these did use a “modified” PECS at times. Three of the four participants who did not use intervention techniques regularly were from rural areas of each county.

Those four participants who stated they did not use any specific intervention techniques indicated that they were using the same strategies as some of the intervention techniques but did not describe the strategy by the technical name (e.g., “I call it ‘teaching the kids’”). For instance, one participant stated that she did not use a specific strategy or intervention technique for teaching play skills: “That’s one of the centers we have, it’s like, you know, the play area. Just basically teaching him how to play with different toys. With the adult, and then a bit later on with another child . . . playing.”

TABLE 1
Use of Intervention Programs in Community Early Intervention Settings

Intervention program % (n)	Percentage of participants using methodology		
	0–3 Programs 45 (10)	3–5 Programs 55 (12)	Total 100 (22)
Applied behavior analysis	60 (6)	83 (10)	73 (16)
Discrete trial training	50 (5)	75 (9)	64 (14)
Floor time	70 (7)	67 (8)	68 (15)
Occupational therapy (SI)	50 (5)	100 (12)	77 (17)
Music therapy	20 (2)	25 (3)	23 (5)
Picture exchange communication	90 (9)	100 (12)	95 (21)
Pivotal response training	30 (3)	33 (4)	32 (7)
Sign language	50 (5)	50 (6)	50 (11)
Social stories	30 (3)	17 (2)	23 (5)
TEACCH	30 (3)	75 (9)	55 (12)
Minimal use of intervention programs ^a	10 (1)	25 (3)	18 (4)

Note. SI = sensory integration; TEACCH = Treatment and Education of Autistic and related Communication handicapped CHildren.

^aThree of these participants said they used a modified picture exchange communication system with some students, but they were not specifically trained in the intervention; one participant did not use any autism-specific intervention methods.

The participants who did not use any autism-specific intervention programs served children with a variety of disabilities in their programs and used general teaching strategies with all the children. They typically described their center-based programs as

pretty much like a preschool class that you might see in the community someplace We start the day with a circle activity, name identification, numbers and calendar, and we count how many are here and how many are absent and those sorts of things We stress communication at all times. That's our biggest focus. The [children with autism] do pretty much what all the other kids in my class do, and most of the kids in my class are just language delayed . . .

A participant who worked in a home setting said,

What we do is go to the homes one time a week, usually, sometimes two times a week and it's usually an hour-long visit Our philosophy is to sit down with the family . . . and work with the children. We work on developmental skills. All of our children have many disabilities. Depending on the disability, we work on those skills.

This subgroup of participants worked in districts that served fewer children with autism and had lower population densities in general. There did not seem to be a difference across age groups.

All of the participants who mentioned specific intervention techniques used more than one method. For example, one participant stated,

I've done everything. I've been trained in DT . . . we have some sensory, a lot of kids are on a sensory diet . . . and we have Speech and OT . . . some of my kids have PECS systems, and some of them are verbal. We have Discrete Trial behaviorists that come in as well. I don't have anybody on TEACCH baskets right now, but I have had and we'll use that. We do a little PRT kind of a Floor Time sort of approach and some of my staff have been trained in that . . .

Understanding Which Intervention Techniques Are Evidence Based

Participants tended to endorse any intervention they were using as being evidence based. They indicated that ABA, DTT, music therapy, OT and sensory integration training, PECS, PRT, and TEACCH all had a solid evidence base. They could not agree on Floor Time, parent education, sign language, Social Stories, or vision therapy. It appeared that if a participant had attended a workshop or lecture on a method, she felt that there was sufficient research to support it. Often the participants did admit they did not know or began a debate that indicated a lack of knowledge in the area. None of the participants mentioned reading any specific research papers or reviews, nor did they mention using the California Best Practice Guidelines.

Of the 30 interventions participants listed, approximately one third ($n = 9$) were evidence based or had at least some evidence of efficacy for children with ASD, if only from record review (National Research Council, 2001). However, participants endorsed (by coming to consensus as a group) more than 50% ($n = 15$) of the methods as being research based. They were unsure about or could not agree on another 20% ($n = 6$) of methods. They claimed that there was no research or poor research for about 30% ($n = 9$) of the techniques mentioned in the groups.

Research-Based Practices That Fit Community Settings

The participants reported making a variety of adaptations in their research-based practices. The most prominent adaptation was using multiple techniques in a single program, as well as with individual children. Their specific technique adaptations seemed to depend on a variety of factors, but three areas of focus became clear: (a) the characteristics of the individual child; (b) the preference of the particular participant; and (c) external factors, such as funding and support. When participants discussed a particular technique, their reasons for choosing the technique and reasons for adapting the technique from the version they read about or learned were coded according to these factors.

The majority of participants (72%; $n = 16$) chose specific interventions based on characteristics related to each individual child's strengths and weaknesses. One participant explained, "Depends on the child. You know, so much of the therapist is not responding to the way that the book says to do it." Some examples of child characteristics that would lead a participant to alter a program include using creative methods to motivate a child based on the child's own likes and dislikes, using one-on-one techniques with a group of children, and shortening or lengthening sessions based on a child's attention level.

Participants tended to choose more structured intervention programs that involved one-on-one teaching or discrete trial techniques when a child had more severe cognitive delays, needed to learn compliance, or did not imitate or attend in less structured settings. At least one participant indicated that DTT was not appropriate for a child under 3 or 4 years of age, but this was not a typical response. Naturalistic techniques such as Floor Time and PRT were typically used to increase generalization of skills (often skills that were first taught in a DTT format), increase motivation, increase turn taking, and improve social interaction. Nonverbal communication techniques, such as sign language and PECS, were typically used for children who did not have verbal language. Participants described using PECS when sign language did not work, for older children who were able to recognize pictures, and to increase word-finding skills. Sign language was used with nonverbal children, if it worked for the child, or if the child was using gestures.

Participants mentioned they used TEACCH techniques for children who needed to learn to do independent work or task completion. They had some concern about using this technique with very young children, although there was some disagreement about this. Visual schedules were used for transition difficulties, or if the child needed to feel more independent. Participants felt that inclusion was important once a child “was ready.” The definition of “ready” varied, but consensus was that children needed some language and needed to be higher functioning. Occupational therapy and sensory integration training were seen as essential for children who had sensory sensitivities, were overstimulated, engaged in self-stimulatory behavior, or had motor or feeding difficulties.

Participants also discussed choosing (or not choosing) a specific technique based on personal reasons (45%; $n = 22$):

You’re not gonna do Discrete Trial if it’s something that you don’t feel comfortable with, so you change it to adapt It’s the same thing that we do with Links [Links to Language Program], or a sensory program, or anything else.

Participants were quite varied about whether they enjoyed the highly structured DTT. One participant stated, “I don’t like it, but it is useful and we need to do it It is a pain in the neck.” Other participants thought it was boring to implement or made the children seem robotic. Some stated DTT was their favorite technique due to the success they had seen with their programs. Some felt DTT was necessary for compliance and language training. Most participants using this technique reported that they also used other programs to increase generalization and social skills.

Participants who enjoyed using Floor Time emphasized the importance of building relationships with the children: “I am a big fan of it; it is important for the relationship level with the family.” Participants who used PRT often felt it was intuitive for them, that it allowed for more social and turn-taking opportunities, and was fun to implement. Most of the participants enjoyed using sensory integration, although some did not enjoy specific techniques, such as brushing. Participants reported modifying all techniques they had learned to fit their own style:

I always tell the girls [classroom aides] when they come in to work for me, that it doesn’t matter so much that they have to mimic me, but they have to take their personality and fit it to how it’d work for them. You don’t want to put a square peg in a round hole, because our personalities aren’t the same, and then I also try to match up children with the same type.

Finally, use of a technique was sometimes based on external factors (55%; $n = 12$). For example, the use of inclusion as a treatment technique was highly dependent on the availability of typically developing peers. Programs co-located with state preschools were more likely to include typical peers. Additionally, participants felt that sufficient staffing to support a

child in an inclusion environment was essential but not always available. Several participants had children in inclusion programs simply because the school district demanded it. Participants in classrooms often felt the need to modify one-to-one strategies for use in a group setting.

They [children with autism] don’t need to learn how to do it in an isolated setting in an isolated way. They need to learn how to do it with a peer, with a friend, in a social manner, together, playfully. So I’ve always done Discrete Trial in a group of one or two, on the floor, with toys in a natural setting. My program’s always been a full-inclusion setting, always, no matter how autistic the child was. So it’s always been, I mean, we call it Discrete Trial because some people wanted to hear that word, Discrete Trial, but it’s never really been Discrete Trial.

Participants thought that the programs they had learned were geared toward one-to-one teaching and that was not typically possible in a classroom environment.

The participants who enjoyed the naturalistic programming were frustrated by the difficulty they had collecting data on children’s progress when using those programs. Districts and agencies often required specific data on skill acquisition, which participants thought was most easily obtained using structured techniques. For some programs, this need for data drove the choice of technique, rather than the child’s need or provider preference.

Training in Intervention Programs Used in EI

Although we did not specifically ask about training, at each focus group, participants talked about needing more training, both for themselves and for paraprofessionals. Training ranged from attending a brief workshop on a method to ongoing training and supervision. Participants with ongoing supervision reported feeling the most supported and confident in their use of the technique. All of the participants stated that paraprofessionals provided an extensive amount of service but did not receive the same level of training as the participants:

We had a staff development day that was mandatory for our teachers, and then we didn’t make it mandatory for our [aides] I know my two aides never worked with children with autism. They just had, you know, regular kids, so it’s been really hard telling them five different directions. It’s the little things that they do. I mean if they didn’t go to it, you have to tell them all the information.

Many participants thought they could train their paraprofessionals but did not have the time to do so. A few programs, however, did allocate time for training:

I am so reliant on my aide. I have the time built into my week that I do staff training once a week, but you know, a lot of programs and districts don’t give that, and I think that your program is dependent on that. . . . Everybody needs to be highly trained, if not for any other reason than from a legal perspective.

The need for ongoing training for all staff was echoed through each of the groups, as well as an understanding that to adapt these methods to work with various children in different environments, a good understanding of the original technique was needed.

Common Elements of Successful Programs

We asked participants if EI programs had the “common elements” of successful programs defined in the literature. We examined the participants’ comments and responses based on the six effective practices outlined by Iovannone et al. (2003). Iovannone et al. were chosen for several reasons: (a) The authors summarized and integrated several other strong reviews of the literature (including Dawson & Osterling, 1997; Hurth et al., 1999; National Research Council [NRC], 2001; Powers, 1992); (b) Iovannone and her colleagues included the components of the NRC review, except intensity of engagement and early entry, which we could not measure through our focus group methodology; and (c) these authors provided clearer operational definitions of each category than any other reviews. These definitions allowed us to assess whether EI providers were using effective practices or whether they used evidence-based techniques. The four groups were relatively similar in their descriptions of program elements. However, the 0-to-3 programs tended to use systematic instruction and a structured environment less often than the preschool programs (see Table 2).

Individualized Support and Services for Students and Families. Most providers mentioned the importance of individualizing programs based on specific child characteristics (68%; $n = 15$). Smaller programs were not able to offer flexible placements based on child need but typically individualized within the single placement. Larger programs offered more placement options due to more classrooms. Some of the variation in placement included home programs, a range of center-based programs (e.g., severely or non-severely handicapped;

autism-specific), opportunities for inclusion, as well as intensity of speech and occupational therapy. None of the participants mentioned high engagement as an important element of programming.

Systematic Instruction. A majority of the providers used autism-specific intervention programs with systematic teaching procedures (68%; $n = 15$). However, participants did not mention how the quality of this instruction was monitored. Only a rare few had supervision in any of the specific intervention methods. Some participants in the San Diego groups mentioned data collection on the children’s progress as one method of assessing effectiveness. No participant mentioned how the effectiveness of the overall procedures was evaluated.

Comprehensible and/or Structured Environment. Participants in center-based programs mentioned structuring the classroom to increase children’s ability to predict their environment (64%; $n = 14$). They mentioned strategies such as picture schedules, transition songs, verbal warnings, or transition objects, as well as using a daily routine with scheduled, predictable activities. Several participants mentioned using more naturalistic techniques to help generalize skills learned in structured settings. A few participants mentioned generalization of skills to the home environment. Participants in home programs only rarely mentioned structuring the environment in a systematic way.

Specialized Curriculum Content Focusing on Symptoms of Autism. Participants in each focus group mentioned specific curriculum elements relating to social, communication, leisure, and functional skills (77%; $n = 17$). Other areas of curriculum were described, such as joint attention skills, symbolic play, motor, and self-help skills.

A Functional Approach to Problem Behaviors. The providers were specifically asked what they would do if the child in the vignette had severe tantrum behavior. Participants

TABLE 2
Use of Common Effective Educational Practices in Community Early Intervention Settings

Effective practice % (n)	Participants using practice		
	0–3 Programs 45 (10)	3–5 Programs 55 (12)	Total 100 (22)
Individualized support	70 (7)	67 (8)	68 (15)
Systematic instruction	50 (5)	83 (10)	68 (15)
Structured environment	50 (5)	75 (9)	64 (14)
Specialized curriculum	80 (8)	75 (9)	77 (17)
Functional approach to behavior problems	70 (7)	67 (8)	68 (15)
Family involvement	80 (8)	75 (9)	77 (17)

typically described the use of behavioral methods such as functional analysis and teaching alternative behaviors (68%; $n = 15$). They gave examples of modifying the environment to reduce problem behaviors. Although many participants did not use behavioral terms, their approach to dealing with the tantrums involved assessing the causes of the behavior and altering the antecedents and consequences. The participants were concerned with building rapport and providing a positive experience for the child without compromising learning.

Family Involvement. Participants discussed parent education or participation as an essential aspect of their programs (77%; $n = 17$). However, there were mixed feelings about how to involve parents. Some programs included parent involvement for all children through classroom participation, communication notebooks or phone calls, structured parent education opportunities (workshops, support groups), or training. In the 0-to-3 programs, participants were more likely to report that parent education was a main focus of the program:

Our philosophy is to sit down with the family, the primary caregivers, and work with the children. We, as the support, the participants, pulling back and really trying to get the parent[s] to interact with that child so that they know that they can work with that child.

Concerns participants raised about parent involvement included difficulty with follow-through for some families:

I mean, I have the time in my schedule, it's built in . . . I can either go to their house and have a parent conference; I call them at work; I can call them at home; they can come to me, but the student that has the most autistic things going on in his life has the parent who, I think, does the least, except ask me to do it all, and so, it's really difficult to make sure that it's being carried over.

Some programs reported that they did not have time built in to meet with families but that they would do so on their lunch break or after school; other participants said they had 1 to 8 contact hours per month devoted to parent education. Although 77% of the programs said families were involved in programming, the 0-to-3 programs, especially those conducted in the home, had a greater emphasis on family functioning and education, as well as more positive feelings toward family involvement.

Discussion

The present investigation provides a preliminary examination of service providers' reports of their use of specific treatment practices in EI programs for children with autism. Because little is known about community EI services for children with autism, this study is seen as a first step toward understanding how service providers implement programs. Frontline workers

charged with designing, implementing, and tracking EI programming described the interventions they use with children with autism. Although many of the participants may have had only superficial knowledge of specific intervention techniques—and the adequacy of their implementation of these techniques is unclear—we thought that beginning with their own descriptions of programming would provide an initial understanding of what community providers thought they were giving young children with autism. Additionally, the statements of these participants would provide some understanding of the permeation of various intervention techniques into the public EI system.

The types of intervention techniques reported as used most often by community providers included those with and without some research base. Although no autism treatments currently meet criteria for well-established or probably efficacious, empirically supported treatment (Lonigan, Elbert, & Johnson, 1998; Rogers, 1998), most researchers would agree that of the techniques mentioned by the participants most often, ABA, DTT, PECS, and PRT have a relatively strong evidence base (National Research Council, 2001; Rogers, 1998). Floor Time, TEACCH, and sign language have case report and record review evidence of success with children who have autism (Greenspan & Wieder, 1997; Lord & Schopler, 1994; National Research Council, 2001), but OT, music therapy, and Social Stories have minimal, if any, research-based evidence of success (e.g., National Research Council, 2001; Smith, 1996). It seems, then, that a few evidence-based interventions for children with autism have been translated into public EI systems, as have other programs that do not have a research base.

Although participants expressed a desire to use methods that have been shown to be effective, they had not analyzed the research base for the programs they used. This lack of examination of the evidence speaks to the need to improve training for service providers in the area of evaluation of research and treatment effectiveness. It appears that program marketing, availability of training, provider preference, and external factors such as parent requests influence the use of specific practices more than whether the practice has any evidence of efficacy. Therefore it is critical that the research community examine the methods used to reach EI agencies and families to make research-based practices available and to increase understanding of the difference between a research-based technique and other techniques.

Although service providers are reporting the use of evidence-based practices, they report using these practices in a highly modified form. First, service providers in this study reported combining several methodologies to develop individualized programs based on each child's specific characteristics. Second, all of the participants reported adapting the program from the training protocol to fit their own program or teaching preferences, as well as the needs of individual children within their program. Finally, the majority of participants felt that adequate training for themselves and the paraprofessionals in their pro-

grams had not been provided. All of these factors raise significant issues for the use of evidence-based practices for young children with autism.

First, the idea of combining techniques is controversial and underresearched. The specific treatment methods described by the service providers as evidence based were studied using the specific program in isolation. Little research has been conducted that examines the use of these methods in combination. McGee et al. (1999) advocated the use of one treatment strategy because of the possibility that multiple treatments will confuse the children. They "take the position that the 'more is better' tenet applies to hours of intervention and not to various methods of intervention" (McGee et al., 1999, p. 144). Other researchers have suggested that an individual child may respond better to one treatment than another (Anderson, 2002; Anderson & Schreibman, 1999; Ingersoll, Schreibman, & Stahmer, 2001; Rogers, 1996; Sherer, 2002; Sherer & Schreibman, in press). A recent study examining a toddler program that combines research-based methods reported results similar to those found in single-technique programs (Stahmer & Ingersoll, 2004). However, this research is in its infancy, and there has been no documentation of the types of adaptations needed to combine programs or which adaptations may reduce the efficacy of any individual technique.

Second, no examination of the types of adaptations being made, or whether these adaptations alter a technique significantly, has been conducted. Researchers often call for individualization of treatment for young children with autism; however, very little research has suggested exact methods of adaptation based on specific child characteristics (Schreibman & Anderson, 2001). Finally, no fidelity of implementation research has been conducted in community environments to examine whether community service providers are implementing these methods effectively after what they describe as only minimal training. If a provider does not understand the philosophy behind the intervention or cannot conduct the treatment with precision, it is highly unlikely that adaptations of the method will be effective.

The majority of participants said they used the most common effective elements reported by researchers as essential to good educational programming (Iovannone et al., 2003). This finding is important, in that even if the participants are not using specific evidence-based interventions, they may be getting at the common important elements that bridge many of the methodologies. These service providers gave rich examples of how these common elements are used in their programs. Of course, it is impossible to know if these elements are being implemented appropriately, but it is an important first step that the service providers in the community recognize that these are important factors in their programs. As researchers examine fidelity of implementation of specific intervention programs, it will be equally important to study the appropriate implementation of these common effective elements. Currently, there are no standardized methods for measuring these common elements in community programs, nor is it clear if

these elements are necessary or sufficient for providing good services to young children with autism.

Limitations

Providers who participated in the focus groups were those willing to come and talk about their programs. Despite this apparent limitation, we had a good mix of highly evolved programs and those new to serving children with autism. Many of those agencies and districts that did not participate did so passively by not responding to repeated calls. The extent to which the participants' programs are representative of all service providers in southern California or in other locales is not known. However, anecdotally, the service providers spanned a range of programs similar to those seen in other districts in San Diego and Riverside counties.

Another concern was the extent to which the discussion influenced the participants' answers. That is, did the service providers come to consensus on a specific program or state that they used intervention techniques because other participants were doing so or because it was what they would rather do? Although this is a valid concern and certainly a limitation to this study, anecdotally, the participants appeared to be honest in their descriptions. Participants in all of the groups were kind to one another and accepting of all responses. Participants using limited research-based interventions were eager to learn from other programs and made plans to exchange information after the focus groups. Research asking service providers individually about interventions is currently being conducted to address these concerns.

Another limitation is that these data are composed completely of self-reported program information. There is no way to know whether the service providers are actually conducting their programs in the way they described and no way to estimate the quality of programming, as no fidelity of implementation data are available. This makes it difficult to understand the adaptations of the programs and the providers' understanding of how techniques can be adapted. Additionally, there is no way to know whether providers are actually combining techniques or simply using terminology that they think best describes what they are doing. Future research steps will examine concordance between provider report and what actually happens in treatment settings.

Implications for Autism EI Services

Legislators and researchers are currently emphasizing the delivery of research-based practices in many areas, including autism services. Therefore, it is critically important to examine the attitudes and experiences of service providers in community-based settings. Although many service providers reported being supportive of the use of evidence-based techniques, most did not have a good understanding of what the research was saying in the area of autism. Most of the providers reported using at least one evidence-based technique; however, these

same providers were just as likely to report using poorly researched techniques as well.

These findings provide insight into recommendations for successful translation of research-based practices into EI programs for children with autism. Pragmatic issues regarding the use of the techniques in classroom settings must be addressed. Validity concerns when techniques are combined or modified should also be examined. In addition, adoption of any new intervention is likely to be facilitated by increased marketing to both community agencies and family members, access to low-cost training, and methods for use in group teaching situations.

Additional research is required to provide a more detailed description of EI programming for young children with autism. It will be imperative to survey a wide range of service providers to get a broader picture of methods used in EI settings. A survey will allow for analysis of the use of evidence-based programming, as well as the common elements seen in superior programming, while taking into account provider education and experience, number of children with autism in the area, and other program components. Finally, researchers will need to validate the self-report measures to determine whether providers are using these techniques in the ways they describe, how they are modifying programs, and the amount of training needed to ensure quality programming.

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AUTHORS' NOTES

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NOTES

1. Based on July 1, 2002, estimated population by U.S. Census Bureau.
2. Based on July 1, 2001, estimated population by U.S. Census Bureau.

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APPENDIX A

Focus Group Discussion Questions: Introduction

The purpose of the group today is to get a sense of what teachers are doing in different early intervention programs that serve children with autism. We have asked teachers with a variety of backgrounds, years of experience, and so on to get a well-rounded view of what is happening. There are no right answers; we just want to know what the classrooms/programs are like. We don't have a notion of what they should be like. All of your different perspectives will be helpful.

Opening Question:

Tell us who you are and what you most enjoy doing when you are not at work.

Introductory Question:

What brought you to special education and, specifically, to working with children who have autism?

Transition Question:

You are here because you work with children who have autism spectrum disorders. Give a brief overview of your program for those children.

Key Questions:

Provide first vignette and read aloud.

1. What type of program would you set up for this child if he came to your program today?
 - a. What specific techniques might you use (if any)?
 - b. Are any of these techniques autism specific?
2. Would you need to adapt any of the strategies or techniques you listed for this child? That is, how might your use of the technique be different from what the "manual" says?
3. Tell us which techniques you listed that you think have some research supporting their effectiveness.
4. Are there any techniques you might use in your program that we did not discuss today?
5. Tell us about any techniques you don't like. Why don't you like them? Why do you still use them?
6. Tell me about the things you have tried and discontinued. What prompted you to discontinue the technique(s)?

Ending Question:

If you could choose one thing to change about the current early intervention system for children with autism, what would it be?

APPENDIX B

SAMPLE VIGNETTE: ALEXANDER
 CHRONOLOGICAL AGE: 2 years 11 months

Diagnostic Impression:

1. Autistic Disorder
2. Borderline Developmental Delay, provisional

On the *Bayley Scales of Infant Development* (Bayley, 1993), Alexander is scoring in the borderline range (78) with a communication age equivalent of 22 months and a nonverbal age equivalent of 26 to 30 months. He is using words and pointing to communicate his needs. He asks for bubbles and a variety of other items. Alexander does have some difficulty with word finding and is engaging in some echolalic behavior, repeating what he has just heard. He is using the pronoun "I" very appropriately. He is repeating words he hears within 2- to 3-word sentences and has a speaking vocabulary of at least 20 words; however, he usually uses 1- to 2-word phrases when he speaks spontaneously. Alexander is able to follow simple commands without cues, such as "sit down." He can point to a variety of pictures and can identify body parts via pointing. Alexander has difficulty with relating to people in his environment. He is a very cautious, shy little boy who has difficulty separating from his parents. He does engage in some reciprocal interaction using eye contact, and he engages in some joint attention, such as showing and clapping with his parents.


His parents report that he has more difficulty relating to other children, although he is beginning to observe other children and to attempt some interaction at this time. Alexander's play is somewhat immature for his age. He enjoys simple toys, such as busy boxes and puzzles and a spinning train. He is not yet engaging in symbolic play on his own but will feed a doll when asked to do so. His preferred activities are somewhat stereotypical in nature. He will drive his toy trains around the track and likes to carry them around with him. Alexander has been observed engaging in some hand-flapping, especially when very excited. He enjoys watching fans and will talk about fans he has seen. He has motor planning difficulties as evidenced by his poor ability figuring out how to get on and off toys, such as a sit-n-spin. He also exhibited low muscle tone throughout his body. Alexander has difficulty with transitions and changes in plans. He is also somewhat distractible but can complete a task when redirected. He is able to tolerate structured sitting with minimal cues for redirection. He is also able to persist in an activity despite being challenged. Alexander has some delays in his daily living skills. He is beginning to use utensils but prefers to use his fingers when possible. He is cooperating with dressing and is able to remove his shoes. He is letting his parents know when his diaper is dirty.

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