

Chapter 2

The Group-Based Early Start Denver Model: Origins, Principles, and Strategies

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Since children with autism are special in the way they learn, teaching techniques used by teachers, therapists, and caregivers must be special too. Current research indicates that the best approach to promoting learning and development for young children with autism is to provide intervention that (1) starts early in life, (2) is implemented throughout the child's day, (3) draws on evidence-based strategies, (4) is tailored on the individual child's profile of strength and needs, (5) targets the core features of autism and addresses functional/adaptive skills, (6) includes systematic monitoring of progress, and (7) involves caregivers in decision-making (National Research Council, [2001](#)).

The Early Start Denver Model (ESDM) is an evidence-based intervention approach that meets the criteria for best practice in early intervention listed above. It is unique in the way it incorporates knowledge from different disciplines (including developmental science, applied behavior analysis, and social-affective neuroscience) to facilitate learning and development in young children with autism. This volume describes an approach we developed at La Trobe University for delivering ESDM in a group day care setting—the group-based Early Start Denver Model, or G-ESDM.

The origins of this program date back to the early 1980s, when an intervention called Denver Model was developed by Sally Rogers and colleagues at the University of Colorado Health Sciences Center. Recently, Sally Rogers and Geraldine Dawson developed the 'Early Start Denver Model' (ESDM; Rogers & Dawson, [2010a](#)), which involves the expansion and adaptation of the original Denver Model curriculum to address the developmental needs of toddlers and to include additional empirical findings on the core areas affected by autism. Additionally, a curriculum checklist (ESDM Curriculum Checklist; Rogers & Dawson, [2010b](#)) was developed to design individualized intervention targets.

In this chapter, we discuss the guiding principles underlying ESDM practices, including the rationale behind early intervention in general and the ESDM in particular, as well as the foundations for implementing these principles and procedures in a group setting.

Why Treat Autism?

Until recently, autism has been associated with negative connotations and regarded as a set of problems to fix. This notion has had dramatic implications for treatment—for example, the use of electric shocks to ‘punish’ autistic behaviors. Only recently have the strengths of children with autism, their unique ways of expressing themselves and experiencing in the world, and their contributions to families, communities, and society begun to be seen in a positive light. Then, why do we need intervention for autism? A number of self-advocacy organizations question the need for treating autism, based on the idea that autism is a way of being in the world, and a culture, that should be supported and appreciated rather than ‘fixed.’

The ESDM philosophy fully embraces the notion that the uniqueness of each individual with autism should be valued, but at the same time considers early treatment as a tool to empower children with autism and to provide them with the opportunity to express their full and unique potential, by maximizing their developmental skills, preparing them to participate alongside their family and peers in everyday environments, and addressing those areas of need that limit their social participation. This view is consistent with a shift from a medical model, which aims at curing or eradicating deviations from normality, to a social model, which focuses on environmental and social barriers to civil rights, inclusion, and expression of one’s identity and potential. Therefore, in the ESDM philosophy, we believe that children with autism should receive needed interventions to address areas of delay and impairments, so that the acquisition of critical social, communicative, and adaptive skills can provide children with the tools they need to be active members of their community (rather than being passive recipients of treatment). Consistent with the principles of the United Nations Convention to the Rights of Persons with a Disability (United Nations, 2006), this philosophy is embedded in the ESDM principles and practices by taking into account preferences, motivations, and choices of children with autism, and using those to expand their motivation and ability to navigate the real world of social interactions, with its challenges and opportunities.

This notion is fully consistent with recent literature documenting how children with autism, just like all other children, learn best when their motivations, strengths, and interests are taken into account in their interventions.¹

¹This notion reflects a significant departure from earlier conceptualizations of learning in autism. Historically, the field has been positing for decades that persons with autism simply could not learn. In the 1960s, this assumption started to be reconsidered thanks to the first studies documenting learning through behavioral techniques. However, at the time and in the following decades, it was believed that learning in autism was possible only through processes that differed from the ones supporting ‘normal learning’. Only recently the idea that learning in autism can be supported through play and social learning during naturalistic interactions like in typical development is being given credit (see Schreibman 1988, and Ashbaugh & Koegel, 2013 for an historical overview).

Why Early and Intensive Treatment?

There are many reasons why it is advisable to start treatment earlier rather than later. As mentioned in the previous chapter, some differences associated with autism, such as the diminished inclination to engage in joint activities, preclude children on the autism spectrum from taking advantage of social learning opportunities that are critical for the development and organization of the social communication circuitry of the brain.

The ESDM addresses the need for social learning by facilitating joint engagement and participation in social exchanges, so that the brain can receive the input that is needed during the critical period of infancy and toddlerhood. As the child gets older, brain development is less ‘open to change’ (although some degree of brain plasticity is maintained throughout the life span, and individuals with autism, like those without autism, can learn new skills at any point during their lifetime). Moreover, as the number of children receiving a diagnosis of autism prior to age 3 continues to increase thanks to early detection efforts (Barbaro & Dissanayake, 2010; Robins et al., 2014), it is crucial that appropriate intervention is available in all community settings that provide early childcare—homes and out of home care settings such as childcare programs that are dedicated to early learning and care of infants and toddlers. Research data indicating better outcomes for children with autism who are younger at age of entry into intervention attest to the importance of an early start (Makrygianni & Reed, 2010; Perry et al., 2008; Vivanti et al., 2016; Rogers et al., 2012; Smith et al., 2015).

Likewise, the guideline of providing interventions across children’s daily experiences—rather than a few hours per week with therapists—reflects the need to address the learning deficits that have already accumulated over time as a consequence of difficulties affecting social learning during infancy. As symptoms of autism often result in missing many learning opportunities, in order to reverse this pattern, it is necessary to provide an enhanced number of learning opportunities throughout the day, every day. It is critical to remember that typically developing children are engaged with others and take in social learning opportunities throughout all of their waking hours, which numbers 75 or more per week. If it takes this much exposure to social learning for children without any developmental challenges to develop typically, then it is only logical that young children with autism would also need that level of learning opportunities to maximize their development. In working to get intervention techniques into all of a child with autism’s waking hours, we are trying to level the playing field for them.

Why the Early Start Denver Model?

Most early intensive intervention approaches for young children with autism share some basic features, such as the active engagement of the child for many hours per week (usually 20+) in a planned educational treatment involving the use of behavioral techniques, with specific goals derived from assessment results, manualized instructional procedures, and a data collection system to facilitate progress and outcome measurement (National Research Council, 2001). This approach to autism treatment has sound empirical support, with research indicating that programs with such characteristics can be efficacious in improving language, cognitive skills, and social skills in young children with autism (Vivanti et al., 2014; Reichow et al., 2011).

Within this framework, however, there are different approaches to choose from, which vary according to goals and procedures. The program described in this book, the group-implemented Early Start Denver Model (G-ESDM), is characterized by a unique set of principles, objectives, and strategies. Before discussing why this can be considered an ideal option for a group setting (such as in a childcare program), we will summarize the unique principles, objectives, and strategies of the ESDM below.

Principles of the ESDM

A seminal paper published 25 years ago (Rogers & Pennington, 1991) details some of the key concepts underlying the ESDM principles. The most important notion introduced in this article (which is now supported by empirical evidence; Pennington, Rogers & Williams, 2006) is that autism creates a barrier to the development of the processes that facilitate bodily and affective synchrony during early interactions, such as imitation, reciprocal vocalization, and sharing of affect. Lack of engagement in these early social exchanges, in turn, prevents the child from constructing shared meanings and an understanding of the social partner's actions and emotions—their attentional focus, the sources of their emotional responses, their motives, and the meaning of their behaviors. At the brain level, this is reflected in the lack of cortical organization and specialization in the social domain (Dawson, 2008). This idea recognizes that cognition and language are grounded in bodily actions that are social and playful in nature and occur through the participation in meaningful social exchanges during daily routines (Bruner, 1975).

Another important influence in the ESDM was the work of Dawson and colleagues (Dawson et al., 2005, 2002; Dawson & Bernier, 2007; see also Mundy & Burnette, 2005) which introduced the notion that autism might be linked to a biologically based deficiency in experiencing social engagement as intrinsically rewarding, with downstream consequences on brain development.

In addition to these principles derived from developmental science, ESDM is built on the naturalistic application of principles from applied behavior analysis (ABA) to address the learning needs of children with autism. The practice of naturalistic application of ABA was articulated early on by Schreibman and Koegel et al. (1989) in their work on pivotal response training (PRT), an intervention approach that emphasizes the use of operant learning strategies carried out in the context of activities built on the child's interests and motivation. In a similar way, ESDM incorporates the strategies of naturalistic applied behavioral analysis within a broader framework of social engagement and child-initiated learning. Additionally, the Early Start Denver Model toolkit involves the following intervention strategies.

Developmental Sequences

As detailed in the ESDM Manual (Rogers & Dawson, 2010a), the ESDM involves a distinctive curriculum checklist that assesses current developmental skill levels. The curriculum covers developmental domains that are critical to early social learning, such as imitation, verbal and nonverbal communication, joint attention, sharing of affect, and play, as well as motor, adaptive, and cognitive aspects, and is thus a comprehensive developmental tool for assessing child strengths and weaknesses (Rogers & Dawson, 2010b).

All children with autism, by definition, are impaired in some of the abilities that facilitate learning from others, and therefore, the chief objective in the ESDM is to build the foundation for spontaneous social learning, so that the child can learn from others in all everyday experiences and settings, as other children do. The idea is that the expertise in social learning gained through improved communication, imitation, and reciprocity will lead to the ability to learn during everyday life social exchanges. A corollary of this idea is that by providing children with the foundations for social learning, and by 'normalizing' the frequency of meaningful and rewarding social interactions for a child with autism (which is reduced by the nature of autism itself) and, consequently, the frequency of social learning opportunities, we can minimize the detrimental impact of autism on child social learning. As mentioned above, this is particularly relevant in the case of younger children, as neural plasticity during early developmental stages might allow for a deeper impact of social learning experiences on the developing brain.

While this overarching goal is relevant for all children with autism, the ESDM recognizes that each child with autism is different, and therefore, the curriculum assessment tool is used to determine the specific strength and weakness of the individual child within each domain, so that learning experiences can be individually tailored to maximize learning progress.

In the ESDM, the intervention objectives are built following the sequence in which skills develop in typical development. For example, the use of 1–2 words will be targeted only after the child mastered basic precursors of expressive

language, such as directed use of communicative gestures, phonological maturity, spontaneous vocalization with communicative intent, imitation of sounds, and integration of gaze, gestures, and display of affect. By following the typical developmental sequence of social-cognitive functions, the ESDM aims to build a social foundation for the development of language and cognition so that complex behaviors such as word use are not simply memorized and emitted ‘on demand’ (e.g., labeling words in response to an adult showing a picture), but rather built on the communication foundations involving joint attention, emotion sharing, and spontaneous use of sounds and words for multiple pragmatic functions and generalized across multiple environments, materials, and partners, as seen in children without autism (Akhtar & Tomasello, 2000).

Accordingly, the ESDM aims to develop the acquisition of the *spontaneous* and *social* use of language, as well as imitation, gestures, eye contact, and other behaviors that are critical for social-cognitive development. Details on the organization of the curriculum checklist and the definition of learning objectives are reported in Rogers and Dawson (2010a, b) and in the following chapters.

Joint Activity Routines

The intervention strategies of the ESDM are based on the notion that (1) early social, communicative, and cognitive skills are best taught and learned within the context of meaningful and rewarding social-emotional exchanges, and (2) lack of early social engagement is the main obstacle to learning in children with autism. As a consequence, the basic mission of an ESDM therapist is to involve the child in social routines characterized by joint engagement and shared positive affect to support spontaneous social learning. These are called joint activity routines (Bruner, 1975). In a joint activity, two or more partners join together to carry out an activity (books, social games, play with toys, mealtime, etc.). The partners join to set up the activity and land on the initial theme of the routine. Then, they share the theme through back-and-forth rounds, during which they share their pleasure in the activity through communication exchanges. Often, one partner adds some component to the routine (variations) to keep interest up. When one or another partner no longer wants to continue, the activity ends and the partners transition into another activity. The structure thus includes a set up that involves mutual interest, a theme that involves rounds of back-and-forth turns, often some variations on the initial theme, and then a ‘closing and transition’ component. The communication framework involves shared interest, shared pleasure, shared goals, and reciprocal acts. Both partners are aware of the interest, affect, and goal of the other as well as the self, thus experiencing a sense of mutuality, of two people joining together metrically and emotionally. This is a framework for joint attention and for social communication.

The use of joint activity routines as the basic context for teaching is a critical point that distinguishes the ESDM from many other models. ESDM does not try to

work around the weaknesses often seen in autism by replacing socially mediated learning with nonsocially mediated forms of teaching, such as using visual cues rather than a social model, or using picture schedules rather than verbal instruction so that a social interaction is not required to accomplish a task. Rather, the ESDM emphasizes social learning as an intervention core for young children with autism, and as a consequence, social-affective engagement is a crucial ingredient in all the intervention procedures. In other words, ESDM strategies do not attempt to *simplify* learning by eliminating its social component—instead, the idea is to *amplify* the social framework of learning in order to bring the child into the ‘social loop.’ One strategy used to accomplish this (in addition to the developmental sequence strategy described earlier) is by engaging the child in rewarding and meaningful joint activity routines.

Use of Child-Preferred Activities for Meaning, Motivation, and Reward

Before describing how to embed teaching episodes within these routines, it is worth analyzing the concepts of ‘rewarding’ and ‘meaningful’ in more depth. As we mentioned above, typically developing children experience social interactions as intrinsically rewarding, while this component is less strong for those who have autism. As a consequence, many intervention approaches use rewards for learning that are not actually related to the learning task at hand—we will term this ‘external rewards’—based on the logic that if children with autism are not intrinsically rewarded by social attention and praise, then a substitute reward is needed.

The ESDM strategies, however, are based on empirical findings showing that children with autism do find social exchanges interesting and motivating, under certain circumstances. Young children with autism typically have favorite adults and turn to them for help to get their needs met, for comfort, and for fun. They also find many other activities pleasurable, though those activities may be quite different from preferred activities of most children of their age. The task of the ESDM therapist is to identify those social and nonsocial rewards for children and then incorporate these into intervention activities, which induces children’s positive emotions. By inducing positive emotion in children during social engagement through movement, touch, and gesture songs, and other types of positive sensory social input, the child begins to associate these activities with pleasure and reward and is inclined to participate more readily, seek out more such experiences, and approach people for more. By building up joint activity routines from the initial interest of the child (e.g., spinning a toy), the therapist constantly attempts to turn the excitement and reward value for the activity into *shared* excitement with a social partner for doing the activity, so that the social communication aspect of the activity is highlighted.

These joint activities need not only to be rewarding, but also to be meaningful in order to promote spontaneous learning. What do we mean by meaningful, exactly? We mean that the child fully understands what is being asked of him and why. Much of what is expected of young children with autism often makes no sense at all to the child, because children with autism, as mentioned in Chap. 1, are not well equipped to ‘make sense’ of others’ actions (Vivanti et al., 2011, 2014), might not understand others’ language or emotions, and so cannot grasp the context of what is being asked. To ask a child to imitate an arbitrary movement (touch nose) with the instruction ‘do this’ might not have deeper meaning to the child. It is a random association that has to be built up from many trials. However, putting stickers on each other’s bodies and pointing to body parts as a way of indicating where the sticker goes or where the therapist will put it is a game that is very graspable for most young children with autism, after one or two experiences. Pointing to body parts now has ‘meaning,’ and the child often learns to imitate the adult and points to a body part in a few minutes of this game, because the request is now ‘meaningful’ for the child.

Children without autism do not happily learn things that are arbitrary either, nor do adults. We are all motivated to engage in meaningful activities. However, those without autism experience others’ actions, emotions, and communication as conveying meaning partly because typical brains are wired to facilitate this process, and partly because they can quickly ‘put together’ information from others’ communication, from the context, and from the attentional cues involved in a social exchange. Just like expert chess players, when observing a chess game in progress, children without autism can understand (and remember) why the pieces are arranged in a certain way on the board, where the pieces came from, and where are they likely going next.

Understanding others’ actions, emotions, and communication, to a child with autism, is like understanding a chess game for someone who does not know anything about chess—the arrangement of the pieces on the board, the movements, and the changes do not convey clear meaning and therefore do not provide a platform for building learning. When there is no meaning, all acts seem arbitrary. A very important task for the ESDM therapist is to develop activities that convey meaning for an individual child, so that actions, emotions, and words occurring during joint activity routines are not perceived by the child like a random stream of sights and sounds, but like a purposeful, organized, and cohesive sequence of goal-directed behaviors.

This is accomplished through the establishment of everyday routines with everyday materials (the use of everyday items is critical for generalization outside the treatment setting). The activities are organized around a clear theme and capture motivation and goals that ‘speak to’ an individual child. The therapist creates a clear ‘narrative’ for the activity by describing actions, people, objects, and emotions involved in the activity with simple and consistent words (as we will detail later on, the language complexity is based on the child’s level—see Chap. 6).

For example, the establishment of a simple theme based on the child’s spontaneous interest in building and crashing a tower with blocks carries meaning about

the goals of the child's and the therapist's actions (picking up a block and adding it to the stack). The therapist sits across from the child, face to face, so that actions, words, and facial expressions and communicative signals are easily shared, including the words used by the therapist (e.g., 'put it on'; 'goes on top,' 'I need a block' before putting the next block on the tower) and the emotions expressed (smiling expectantly and saying 'uh'oh' as the tower starts to sway to communicate a feeling of 'suspense'). The crash becomes surprising, exciting, and noisy and provides the needed climax and ending for the repeated activity, and additional words, actions, and emotions mark it. The shared emotional experience between the partners, conveyed through gaze, expressions, and perhaps gestures and sounds as well, marks the ability of these two minds to come together in an experience, and all the words, expressions, and gestures used are made socially meaningful through the object activity and the therapist's ability to create an experience of shared emotion, shared goals, and shared meanings, for the child.

The ESDM toolkit includes joint activity routines that involve objects, as we just described, and also joint activities that do not involve objects—these are called *sensory social routines* (Rogers, 1999). Sensory social routines are based on face-to-face interactive games (e.g., tickle games, movement routines, songs, high-five routines, pick-a-boo games) during which actions and attention of the two play partners are not focused on objects, but on the partner who is sharing the interaction. The pleasurable and predictable nature of these routines creates a meaningful and rewarding social framework that facilitates social engagement, decoding body language, using nonverbal communication, sharing emotions, and optimizing the arousal level on the part of the child (strategies on modulating arousal are covered on Chap. 6). The more sensory social routines the child and partner evolve, the more the child will play an active role in cocreating the activity by initiating, responding to, and continuing social exchanges through bodily actions, facial expressions, sounds, and words.

Thus, ESDM strategies involve use of intrinsically rewarding and meaningful social interactions, with the idea that intensive participation in socially rewarding and purposeful shared experiences will lead children to become attuned to their social environment. The process of learning *from* others is therefore parallel to learning *about* others, and it is based on the participation in shared sensorimotor and social-affective reciprocal exchanges. Children learn the procedures and outcomes of the social activities that they are sharing with others while learning about the process of doing things together, which involves the appreciation of the partner's social-communicative and emotional facial and bodily cues.

Embedded Learning Within Joint Activity Routines

While this framework is a necessary foundation in the ESDM, it is not sufficient to promote learning. Within these joint activity routines, ESDM therapists insert carefully tailored teaching episodes. These are based on the science of applied

behavioral analysis, with an emphasis on the application of the A-B-C (Antecedent–Behavior–Consequences) principles. Human learning occurs in the framework of A-B-C, where a specific stimulus or event (**antecedent**) sets in motion a specific **behavior**, which results in a specific **consequence**. If the consequence is rewarding to the child, we say that the behavior was ‘positively reinforced’—when this happens, the child will be more likely to produce the behavior in the future in the presence of the specific antecedent, since the neural pathways that connect the B (Behavior) to the A (Antecedent) are strengthened by the reward. While any reward, external or intrinsic, will operate to strengthen AB connections, in the use of motivating activities, the rewarding consequence comes from the achievement of one’s goal. Goal achievement is inherently rewarding; thus, when children are learning inside meaningful, motivating activities, the reward is inherent in the activity itself, which greatly helps children generalize skills to other settings (as long as the activities naturally occur in different settings!).

In the ESDM, teaching episodes consist of naturalistic ABC sequences embedded within the different parts of the joint activity routines. For example, during a routine involving a preferred song, the adult might pause expectantly when saying ‘We all fall...’ (antecedent), the child responds by looking at the adult and saying ‘down!’ (behavior), and then, the child and adult fall together on the floor laughing (consequence). Since the child enjoys the song and laughs at the ending—the rewards—it is more likely that s/he will use language, eye contact, and sharing of affect (the target behaviors in this example) again in the future.

Other strategies derived from ABA and used extensively in ESDM include prompting (clues given by the adult to facilitate the emission of the target behavior in the child), fading (gradually removing the prompts used to support the spontaneous occurrence of the target behavior, so that the behavior does not become dependent on the adults’ helping prompts), shaping (reinforcing immature attempts that progressively approximate the target behaviors), chaining (linking simple behaviors into complex sequences), the use of functional behavior assessment and positive behavior strategies to treat challenging behaviors, and the use of a rigorous data collection system to monitor the child’s learning, evaluate progress, and adjust teaching strategies as needed. Within the ESDM approach, interventionists will use these and many other empirically supported strategies that can help the child—see Wong et al. (2015) for a comprehensive list of procedures demonstrated to be successful in teaching specific skills with young children with autism.

Using these teaching strategies, child intervention objectives are systematically incorporated into the joint activity routines, and over time, the child increases his or her repertoire of flexible, adaptive, generalized, and age-appropriate skills and knowledge through the systematic elaboration of joint activities in typical routines throughout the day. This will provide the child with opportunities to learn and practice the child’s target skills across a variety of contexts.

From ESDM to G-ESDM

In the following sections, we will describe the rationale and principles that lead to the adaptation of the ESDM for a group context.

One critical factor underlying the need for developing group-based effective interventions is that the number of children with special needs receiving early intervention programs has risen dramatically in the past 10 years (Aron & Loprest, 2012). Early intervention, according to the US Federal regulations, should be ‘provided in natural environments, including the home and community settings in which children without disabilities participate’ (Individuals with Disabilities Education Act, 34 CFR Part 303). Given the relatively widespread availability of preschool programs in the community, implementing early intervention programs within community childcare, preschool, and playgroup services seems to be an ideal solution to meet this requirement. Nevertheless, literature documenting procedures and outcomes of early intervention for children with special needs delivered in such programs is limited (Stahmer & Ingersoll, 2004; Vivanti et al., 2014).

One of the major objectives in the development of the Group-based ESDM (from here on G-ESDM) was to create a sustainable evidence-based early intervention program for children with autism that could be delivered in regular preschool and group settings. While the majority of the existing literature on ESDM focuses on 1:1 implementation (one interventionist delivering therapy to one child, usually at the child’s home), in many contexts, such practice is not feasible. The main barrier to 1:1 early intervention programs involves the scarcity of resources in public health care and education and the high costs associated with organizing treatment delivery through private practitioners. Another issue concerns the impact of home-based intervention on the family’s everyday life—this includes the need for at least one family member to be home during therapy hours, and the practical and emotional challenges that are inherent to having many therapists being in the family’s home for many hours per week. For example, the following is a parent testimonial based on a real-life example:

When ** was diagnosed with autism and I was told by the doctor that the treatment was going to have to be at my home I felt more stressed and pretty embarrassed. **’s dad is not in his life and I recently moved into my mom’s house, she is a great grandma but she won’t want strangers in the house. She is still adjusting to us being there and I can’t put that one on her especially when I am barely contributing. I asked the doctor if there was a preschool that my son could go to so I could get a job. That way I could help my son and my mom out.

Clearly, there are other situations in which home-based treatment is feasible and preferred by the family. However, the goal of developing additional autism intervention approaches is to offer flexibility, so that the needs of individual families can be met, and to demonstrate scalability, so that intervention services can reach as many children as possible.

The implementation of early intervention in childcare and preschool settings provides a sustainable alternative, allowing children to receive treatment within

existing community programs without posing constraints to the family work and daily commitments. Furthermore, the group environment provides opportunities that are not available in a 1:1 setting, including the many more opportunities to target educational goals in the social domain, e.g., participation in cooperative activities, engagement in purposeful play with peers, and intentional communication with peers. As childcare and preschool programs are designed to promote early learning and socialization in young children, they offer ideal environments within which to apply the ESDM. Unlike clinic-based therapy settings, childcare and preschool programs provide constant opportunities for play and interaction with typically developing peers, thus maximizing learning opportunities and reducing the risk of social isolation.

Additionally, the G-ESDM can be applied in the context of therapeutic playgroups. These are small groups organized and conducted by a therapist in a clinic environment, involving children with autism and peers, with the aim to target specific social and communication objectives. This format allows to reach more children in a therapy hour and to address goals that are difficult to target in 1:1 settings, as reflected in the following therapist testimonial:

As an ESDM Therapist I chose to use the G-ESDM Therapeutic Playgroup model over the preschool model in my community as the demands of licensing a childcare center seemed overwhelming. My playgroups consist of both children with autism and typically developing peers in different sizes. With the playgroup model I can choose the size and configuration of the group based on the needs of my clients with autism. The downside to a playgroup model is finding peers and motivating their parents to participate. I often try to utilize naturally occurring social circles of the families I work with but I also found that conducting my playgroups near a preschool helps. I work closely with the preschool director and she encourages the participation of her students in the program.

Potential Concerns About Group Interventions for Autism

Despite these benefits, the implementation of early autism intervention in community group settings poses challenges that may discourage professionals from setting up group programs and families from enrolling their children in such programs. The most frequently voiced concerns include the following:

- How is it possible to address the specific and unique learning needs of each individual child in a group setting? (the issue of treatment individualization),
- How can we ensure that the rigor and quality of the therapy do not get diluted in the context of the many duties, tasks, and constraints of a preschool setting? (the issue of treatment integrity),
- How can we avoid the risk of segregation when many children with disability are grouped under the same roof? (the issue of social inclusion), and
- How can we ensure that families are involved in the therapy? (the issue of caregiver–professional partnership).

In the G-ESDM, there are specific procedures developed to address these issues, which we will cover throughout this book. In the following section, however, we will briefly discuss these frequently voiced concerns, which need to be understood and communicated to families and staff prior to and during the implementation of the G-ESDM.

Individualization Is not Incompatible with Group Implementation

The issue of individualization reflects the most apparent difference between receiving individual versus group-based therapy, and it is often a cause of concern because, as caregivers and professionals know, each child with autism has a unique way of functioning, learning, and approaching his or her daily routine that requires an individually tailored program. Moreover, lack of individualization is a major threat to the quality of any educational program for special needs (National Research Council, 2001; Schreibman & Ingersoll, 2005).

Importantly, delivering the ESDM in a group environment does not mean that all children in the group are expected to be similar and to learn in the same way. The G-ESDM includes specific procedures to individualize treatment goals (see Chap. 3) and treatment strategies (see Chap. 8) and to track progress within the group implementation framework, so that each child has an individualized program that is built on his or her individual profile of strengths and weakness, with ongoing monitoring of treatment response.

The Group Delivery of the ESDM Is not a Diluted Version of the 1:1 Delivery

The issue of treatment integrity reflects the risk that the ‘active ingredients’ of the therapy can be diluted when programs are implemented within the constraints of community settings and without the resources needed for a 1:1 delivery. Common issues underlying this risk include limited resources, limited training, high ratios of children to staff, and limited time for planning, review, and systematic monitoring of treatment integrity (Akshoomoff & Stahmer, 2006).

To address this risk, the G-ESDM includes a specific fidelity system, which was developed to establish whether therapists were delivering the therapy as intended. This tool has two functions—determining whether the therapists and the site are ready to deliver the G-ESDM, and monitoring the quality of the treatment to avoid treatment ‘drift’ (i.e., gradual alteration of the treatment protocol). This fidelity system and other resources to ensure that treatment is implemented as intended in the G-ESDM are provided in the Appendix.

A related concern is that even well-trained therapists might not be successful in maintaining treatment quality and integrity if the staff-to-child ratio is lower than 1:3. A high staff:child ratio is critical in producing positive outcomes in both typically developing children and those with special needs (Frede, 1995; Graham & Bryant, 1993), and our research (Vivanti et al., 2014, 2016) documents positive effects of the program with a minimum of 1:4 ratio across the day. However, in order to address the dynamic needs of the group and to maximize learning opportunities, a higher ratio is often needed for specific activities or to address specific aspects of the program. Therefore, a staff:child ratio of between 1:2 to 1:4 is recommended to implement the G-ESDM.²

Receiving Therapy in a Group Setting Is not Incompatible with Mainstream Inclusion

Caregivers and professionals are often concerned that environments in which children with autism are in groups together involve the risk of segregation. This concern should not be underestimated, as research shows that children (or adults) in segregated settings are at risk of being devalued or seen as dangerous (Marini & Stebnicki, 2012) and that socially inclusive settings are more beneficial than segregated ones in promoting positive outcomes in children with special needs (Buysse & Bailey, 1993). Being aware of this risk, we advocate the use of the G-ESDM in inclusive settings (i.e., settings where children with and without autism share the same space and participate in shared activities), and we discourage the use of segregated settings for therapy delivery. In developing and implementing the G-ESDM, we have developed a number of procedures to facilitate social inclusion and participation, which will be covered in Chap. 7.

Children with Autism Do not Copy Each Other's Maladaptive Behaviors in Group Settings

A related concern that is often expressed by caregivers is that exposure to other children with autism will encourage children to imitate maladaptive behaviors displayed by other children with autism. This is an unfounded concern, and there is no evidence that children with autism tend to imitate maladaptive behavior (e.g., aggression) of other children (Stahmer & Carter, 2005). In fact, children with

²This recommendation refers to actual ratios of between 1:2 and 1:4, not ratios that can occur if every staff member assigned is present. The planned and funded ratio has to be higher in order to assure adequate coverage when staff members are sick, on vacation, at trainings, in meetings, and so on.

autism are less inclined than typically developing peers to imitate what other children are doing (Vivanti & Hamilton, 2014). Similarly, there is no evidence that children with autism are more aggressive when together—children with autism, as a group, are less likely than their typically developing peers to intentionally hurt others (Rogers et al., 2006).

Delivering Therapy in a Group Setting Does not Mean that the Caregivers Are not Involved

Another important issue that needs to be taken into account is that a preschool setting can be less conducive to caregiver–professional contact and communication than a home-based individualized program. Group programs have the advantage of relieving families from the continuous care of the child with autism and allowing them to work or to focus on other commitments. Indeed, one of the historical missions of childcare programs is to enable caregivers to work outside the home if they desire to do so, and implementation of the G-ESDM should not affect this important purpose. However, the G-ESDM places a high priority on the caregiver–professional partnership. This is based on the belief that children with autism should not learn only during ‘therapy hours’ with a specialist—rather, they can, and should, learn a great deal during daily routines, just like typically developing children. Caregivers, therefore, play the most important role in facilitating child learning opportunities by using ESDM strategies during caretaking routines at home. Moreover, input from the caregivers is crucial in constructing each child’s individualized education plan. Consistent with the principles of the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA), the G-ESDM program takes family values, goals, and priorities into account in the definition of both educational goals and educational strategies. Therefore, therapists in the G-ESDM need to facilitate open communication, trust, and mutual respect with caregivers and address barriers to caregiver–professional partnership.

Conclusions

In this chapter, we have discussed the guiding principles and strategies of the Early Start Denver Model (ESDM) and its implementation in group settings (G-ESDM). Consistent with other approaches, the ESDM emphasizes the importance of starting intervention early in life, providing intervention throughout the child’s day, drawing from evidence-based educational strategies, individualizing the program, and involving caregivers in decision-making. As we will discuss in detail throughout the book, caregivers play a critical role in the G-ESDM. They provide guidance on ‘what to teach,’ thus working with the intervention team in generating

treatment goals, and when possible, they use the ESDM strategies during caretaking routines at home, under the supervision of the team. The ESDM has a distinctive focus on early social learning experiences as the critical ingredient to positive cognitive, adaptive, and social outcomes. Therefore, the ESDM is not aimed at ‘replacing’ socially mediated learning using alternative forms of teaching—rather, it focuses on how to make early social interactions meaningful, rewarding, and conducive to learning. Strategies to achieve successful social learning draw from the Denver Model, pivotal response training, as well as applied behavior analysis.

The group delivery of ESDM (G-ESDM) has a number of advantages compared to the 1:1 implementation, including feasibility and potential to facilitate peer-mediated learning and ‘learning to learn’ in a group setting. There is more potential for quality control and oversight in a group setting, and families are less burdened. Group setting represents a natural environment for children, unlike long periods of 1:1 therapy at home with therapists. And group programs prepare children for the school environment that is coming. At the same time, the use of group programs presents challenges in several areas: ensuring individualization of objectives and strategies, achieving and maintaining treatment integrity, facilitating social participation and avoiding segregation, and building caregiver–professional partnerships. Procedures to address these four issues are vital and distinctive components of this program, and the positive outcomes of the G-ESDM documented in research (see Chap. 9) are unlikely to be achieved if the ESDM is used in a group setting without ensuring that learning goals are individualized, teaching strategies are implemented to a high level of rigor, children actively and independently participate in activities with typically developing peers, and caregivers are involved in the program. Each group that is delivering G-ESDM needs to work through these challenges in a successful way and then present their solutions to key stakeholders (caregivers, service providers, and staff) in order to allay concerns of families, referring professionals, and other service providers on a child’s team.

The scientific evidence supporting the efficacy of the ESDM across delivery models is covered on Chap. 9.

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Model for Preschoolers with Autism

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2017, XVI, 147 p. 8 illus., 6 illus. in color., Hardcover

ISBN: 978-3-319-49690-0