# Chapter 6
# G-ESDM Treatment Strategies

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In Chap. 3, we focused on developing intervention objectives in the G-ESDM—the '*what* to treat' component of the intervention. This chapter is about 'how' to accomplish those objectives. As we discussed at length in the previous chapters, the basic organizing principle of the G-ESDM intervention is that individual objectives are targeted within group activities. To accomplish this, teaching strategies that were originally developed in the Denver Model and in the ESDM have been adapted for the group context.

The focus of this chapter is on 13 key intervention procedures that have been proven successful in our efforts to teach young children with autism in a group setting. Importantly, these 13 procedures constitute the core procedural components as measured by the G-ESDM group activity fidelity tool, a rating system (see Appendix) used to determine whether the program is being delivered according to the G-ESDM implementation standards described below.

## The Context for Intervention

As detailed in Chaps. 4 and 5, the G-ESDM intervention is delivered in the context of daily group routines that are naturalistic, meaningful, rewarding, and interactive. Rather than 'first we work on our learning objectives and then we play' or 'first we have our meal and then we work on the learning objectives', child objectives are addressed into all the everyday daily routines and associated play activities.

The adult's role is to provide a learning environment in which materials are carefully selected to support the target skills. Adults join the child in his or her spontaneous play as a play partner. In this role, the adults facilitate and scaffold—rather than direct—the child's interactions with materials and with other children, individualizing the type of guidance used according to the child need but following



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the children's lead and timing. Daily play routines provide an ideal arena to practice expressive and receptive communication, turn taking, imitation, sharing of affect, joint attention, functional and symbolic play, and motor skills—the foundations of social learning and cognitive/communicative development. To make this happen, there are a number of core elements that the adults delivering the therapy must apply. These are specified in the G-ESDM Small Group Activities fidelity tool (Appendix).

## Intervention Strategies Used in the G-ESDM

In the remainder of the chapter, we will discuss each element of successful delivery of the G-ESDM, as defined in the G-ESDM Small Group Activities fidelity tool (see appendix 1 for details on scoring procedures and fidelity criteria). While most of the elements of the G-ESDM Small Group Activity fidelity tool reflect the original ESDM fidelity criteria (see Rogers & Dawson, 2010), specific procedures must be put in place for implementation in the group context, which will be discussed in detail.

### *Management of Children's Attention*

In order for learning to happen, we must ensure that the child's attention is directed to the source of learning. Managing children's attention in the group environment refers to the adult's ability to take 'center stage' and become the primary focus of the children's attention, and/or to direct the children's attention toward peers or other relevant learning materials. As we discussed in the previous chapters, this can be challenging, as children with autism are not necessarily inclined to pay special attention to people, and even when they do they are very easily distracted. Shared attention skills require that the child pay attention to both the people and the objects in a way that facilitates shared interaction and communication. In the context of the small group activities, a number of strategies can be implemented to facilitate this process.

First, as detailed in Chap. 4, the physical setup must be organized so that the adult is always face to face with the children, while having easy access to materials involved in the activity without leaving the chair. Children are positioned strategically to support their attention to the adult, as well as to their peers. Second, the adults must maximize the children attention by increasing the 'salience' of their actions and communication: this involves using a playful, exaggerated range of motion and facial expressions to make actions and communication more intense and

'theatrical'. Levels of intensity, however, must be adjusted depending on the circumstances to sustain children's attention; e.g., increasing the 'volume' when a child is losing attention and decreasing the 'volume' when the child appears overstimulated.

To facilitate shared attention, it is important that the adult directs the child's attention not only to herself or himself, but also to other children and to the teaching activity. This can be achieved by encouraging children to notice what another child is doing, using gestures (e.g., pointing), words ('look! Carlos is opening the box!'), and facial expressions (a surprised face, and alternating gaze between the children and the objects involved in the situation).

## *Quality of Behavioral Teaching*

Once the children's attention is captured, the actual teaching episodes can take place. Learning science (applied behavior analysis) has demonstrated that learning is facilitated when it is organized in 'Antecedent–Behavior–Consequence (ABC)' sequences. These concepts refer to a universal process of learning, whereby the A (Antecedent) specifies what stimulus in the environment typically precedes and, after learning, elicits, the child response (e.g., the adult points to a figure in a book and says 'wow look!'), the B (Behavior) is an observable learned behavior (e.g., the child follows the adult's point to the target figure in the book), and the C (Consequence) is what happens immediately after the behavior (e.g., the adult says 'yeah, it's a bear!' and engages in a playful tickling game pretending to be a bear). A clear antecedent, a well-defined behavior, and a consequence experienced by the child as positive will motivate the child to engage again in the teaching activity and will support the acquisition of the target skill.

Common errors in the delivery of A–B–C framed learning opportunities include the following

(1) The antecedent does not provide a clear cue to the target behavior (e.g., the adult waits with the book opened for the children to look at the target figure, without making it clear that following the adult's point to the bear is the target).
(2) The behavior is not clearly defined (e.g., the adult is not sure if the target response is the child following the point to the book figure or imitating the word 'Wow!', thus not knowing which behavior they are supposed to reward).
(3) The adult does not reward the target behavior with a clear positive consequence (e.g., after the child follows the point to the target figure, the adult just moves on the next page), or the consequence is not experienced as positive for the child (e.g., the tickling game is directed to a child who does not like to be

tickled—in that case, the consequence will be perceived as a punishment rather than a reward, and the target behavior will be discouraged, rather than encouraged), or it is not delivered contingently and quickly right after the target behavior occurs (the reward timing element is critical in order to establish the link between A and B).

(4) Another frequent issue is that an adult does not deliver the prescribed trial per child per minute: this can happen when the group activity is running smoothly, and children are entertained by the activity but are not required to do anything (e.g., they are quietly listening to the adult reading a book). While in this situation, it can be tempting to just enjoy the moment of quiet shared engagement, this is exactly the right time to deliver teaching episodes. It is not only important to provide learning opportunities: it critical to do so frequently, and to ensure that each child in the group is provided with one or more learning opportunities every minute. An optimal pace must be maintained to ensure that each child in the group is actively participating in the activity the majority of the time.

Finally, the number of repetitions needs to be well matched to group needs, with more repetitions delivered for new skills (acquisition) and fewer for skills that have been already practiced (maintenance)

One simple way to determine whether the teaching is well organized according to the A–B–C format is to ask an observer to indicate what the behavior the teacher is trying to elicit, and what reward the adult is providing.

## *Instructional Techniques Application*

This element refers to the use of evidence-based teaching techniques such as shaping, fading, prompting, chaining, and error correction procedures, which facilitate learning. When an antecedent is delivered and the child does not respond with the target behavior, then additional intervention techniques are needed in order to address the treatment objective.

*Prompts* are adult behaviors that follow the 'A' (antecedents), precede the 'B' (behavior), and help the child to perform the target behavior so that it can be reinforced. While the antecedent is what tells the child to perform a behavior (e.g., the adult asking: 'which box should we open, the white one or the pink one?'), a prompt is something the adult does to provide assistance to the child in performing the behavior (Wolery, Ault, & Doyle, 1992). Varying levels of assistance can be provided; examples are verbally telling the child to point to one of the boxes, providing a motor model of pointing, or placing the child's hand to perform the pointing action.

When prompting is introduced to facilitate the acquisition of a particular behavior, the adult must gradually withdraw support (*fading*) to avoid prompt-dependency (i.e., the child getting used to having hand-on-hand guidance and not learning to produce the target behavior independently).

In the ESDM, these techniques are generally implemented using a 'least to most prompting' strategy;[1] in which, the adult provides the A and waits to see at what level the child responds before adding additional teaching techniques. For example, the adult asks 'which box should we open?' and then waits for the child response, then, if there is no response, verbal prompting is offered (reminding the child to point), then partial physical prompt (placing the hand on the child arm to encourage her or him to perform the pointing actions) and eventually, if the child does not respond, a full physical prompt is used (hand on hand guidance).

Physical prompting can be difficult to manage in a group intervention environment, and the 'invisible support' plays a key role in prompting strategies if the leader cannot easily provide the prompt. As detailed in Chaps. 4 and 5, the 'invisible support' sits behind the children during group activities and provides prompting as needed when cued by the adult who is leading the group. For example, in a common scenario, the 'lead adult' models an action, e.g., clapping hands. If the child does not respond, the lead adult uses a verbal prompt to encourage the target response (e.g., 'your turn!'). If this prompt is not successful, the lead adult then nods to the 'invisible support' and the invisible support, sitting behind the child, provides a partial physical prompt to help the child produce the target behavior (in this example, to clap hands). The adult should not allow the children to have more than two sequential errors before adjusting the instructional technique.

*Chaining* refers to the teaching of multistep skills, in which sequences of actions are taught and combined in temporal order. For example, a multistep behavior such as hand-washing can be broken down into a number of small steps; turning tap on, putting hands under water, putting soap on hands, rubbing hands together, turning tap off, and drying hands on paper towel then putting paper towel in the bin. For this task, one might choose a forward chain or a backward chaining approach (Miltenberger, 1997), whereby the child is prompted through each step of the hand-washing process except the last step, which the child will be encouraged to perform independently. For example, the child can be initially expected to just put the paper towel in the bin. As the child learns to execute the last step, she or he will be expected to complete the second to last step, for example drying the hands before putting the paper in the bin. This process continues until the child is able to execute all the steps independently.

[1]This is an area where the ESDM differs from some other behavioral programs, which are often based on a 'most to least' prompt hierarchy.

In the context of group activities, it is critical that the adults select target behaviors of appropriate levels of difficulty for each child, and appropriate levels of guidance is provided when needed so that all the children in the group can perform the skill.

## *Managing Children's Affect and Arousal*

The concept of 'arousal' refers to the physiological preparedness to perceive and react to environmental stimuli. The arousal level is reflected in the child's behavior, so that a child whose arousal is low will tend to be slow, passive, or even unresponsive to stimuli, while children whose arousal is high will tend to be overactive and might not settle easily into an activity. Children, just like adults, are more likely to learn when they are in an optimal state of arousal: not too passive and not too active. Children with autism are often reported to be less reactive (i.e., hypoaroused) or overly reactive (i.e., hyperaroused) to environmental inputs compared to typically developing peers. For example, they might be 'hypersensitive' to the sensory inputs of a typical preschool group settings, including the noise, smells, lights, textures, and movement level in the classroom (Lane et al., 2014; Uljarevic et al., 2016). More often, however, they are hyporesponsive, i.e., less reactive than normal to sensory stimuli (Baranek, Little, Diane Parham, Ausderau, & Sabatos-DeVito, 2014). In both cases, atypical states of arousal in response to sensory stimuli might hinder the optimal engagement in learning activities (Baron, Groden, Groden, & Lipsitt, 2006).

In the G-ESDM emphasis is placed on the adult's ability to modulate the children's arousal, bringing the level of arousal up when children are uninterested, displaying blunt affect, and/or unresponsive, and bringing the level of arousal down when children are overly active, avoidant, or 'too' excited. To do so, they can adjust their behavior based on the children's state of arousal; in particular, the tone of voice that they are using and the pace of their motion.

Additionally, the choice of activities should be based not only on the teaching contents and behavioral targets, but also on the impact that the activity will have on the arousal level of each child involved. For example, games involving water or sand can be so exciting to some children that their behavior can become disorganized, preventing any meaningful learning to happen. Conversely, a very passive child might be unresponsive during a quiet book activity but more alert and animated during games involving water and sand.

When working in small groups, the adult should be therefore responsive to the general arousal level of the group (arousal level is contagious, so the activity level is often similar across children in the same group) and help each child in the group to reach an optimal level of arousal (e.g., using more arousing motion and tone of voice when addressing a more passive child and a softer approach toward a

hyper-aroused child). The overall feeling of the group should be pleasant and playful. Activities that are calming or arousing are therefore selected based on the continuous monitoring of children's level of activity, to proactively achieve an optimal arousal level that is conducive to learning (see Chap. 9, for more details on sensory responsivity and arousal in autism).

## *Management of Challenging Behavior*

As we will discuss in Chap. 8, a critical component of the G-ESDM is the management of challenging behaviors. This is particularly relevant in a group environment, where maladaptive behaviors of one child (e.g., aggression, self-injurious behavior, destroying materials, severe temper tantrums) can disrupt the activity of the group. Importantly, in order to prevent the occurrence of maladaptive behaviors, all the activities should incorporate elements that are meaningful and rewarding to each child, so that no child is sitting passively through an activity that they neither understand nor enjoy. This requires adapting the activity so that each child is able and willing to be an active participant and independent in at least some part of the activity.

While such well-planned learning environment will prevent the emergence of many challenging behaviors, when these issues nonetheless occur, a solid mastery of behavior management techniques is needed. These include functional assessment to determine the function(s) of the challenging behavior, and the development of a positive behavior support plan to replace the target behavior with a more appropriate behavior. While conducting a functional behavior assessment may require, in some cases, a person with a high level of training in behavior analysis, all adults on the team should be knowledgeable about the factors underlying the onset, maintenance, and management of behavioral challenges and understand how respond and structure the environment to reduce and prevent challenging behaviors. This is critical so that the adults in the treatment setting do not unintentionally elicit or contribute to maladaptive behaviors (e.g., by frustrating the child with demands that are not well calibrated to the current functioning level, or by inadvertently rewarding maladaptive behaviors through social attention; see Powers, Palmieri, D'Eramo, & Powers, 2011, Doehring, Reichow, Palka, Phillips, & Hagopian, 2014 for detailed descriptions of behavioral management techniques).

In the group context, it is also critical that other children are protected from the aggression, and that adults are well coordinated to ensure that children's challenging behaviors are addressed and engagement for learning is re-established as fast as possible, with minimal disruption of the group activities.

## *Peer Interaction*

This element refers to adults' ability to facilitate communication and social interactions among children. As we detailed in Chaps. 4 and 5, the G-ESDM involves the organization of a physical set up that facilitates peer awareness and active interaction, with activities that bring children together within the same space and lend themselves to social exchanges. Art table activities, 'sensory' games such as games with water, sand, and shaving cream, group music, and movement games such as Ring Around the Rosie and parachute games are some examples of activities that encourage children to be in the same physical space.

Each child's intervention program has several peer social interaction objectives. These individual objectives guide the adults as to what types of behaviors to stimulate or prompt in the context of peer interactions. Additionally, how materials are managed can facilitate peer interaction. Situations in which the children need to share and pass materials, or help each other, and those in which the children have duplicate objects and are face to face so they can imitate one another, are all context in which the materials and their placement actively facilitate peer interaction.

Rather than always directing children through social exchanges, the adult will (1) support peer communication, play, reciprocal imitation, and sharing of affect, (2) facilitate conflict resolution as needed, and (3) provide assistance during spontaneous peer interactions that are built on the children's interest and motivations. As we will detail in Chap. 8, this can be achieved through active monitoring of the amount of social reciprocity and communication occurring in the peer interactions, redirecting the children to the activity, or encouraging communication when this does not occur spontaneously, prompting social behaviors (according to the least to most prompting hierarchy discussed above), and repairing communication breakdowns as needed.

## *Children's Motivation Optimized*

This item refers to a foundational element of the approach: not only must each child be *able* to participate in the learning activities but he or she must also be *motivated* to do so. One strategy for increasing child motivation, first articulated by Schreibman and Koegel (Koegel et al., 1989, 2016; Koegel, Koegel, & Schreibman, 1991) in their influential work on Pivotal Response Teaching, is to create a balance between targeting new skills and practicing previously mastered skills. As it would be the case with children and adults without autism, interspersing the challenge of a new learning goal with engagement in familiar activities will encourage motivation, success, maintenance of previously learned skills, and active engagement with new skills. For example, acquisition of a new group-based song routine can be followed by a song that children in the group are already familiar with and motivated by. One way to organize the balance between more challenging/less motivating and

easier/more motivating activities is to use the so-called Premack Principle. This principle, sometimes referred to as 'grandma's rule', states that an opportunity to engage in a preferred behavior will reinforce a less preferred behavior. For example, if a child enjoys playing in the sandpit (preferred activity) and avoids participating in small circle group time (less preferred activity), the adults might allow the child to play in the sandpit after taking part to the small group activity.

To optimize motivation, it is also important that the frequency and the strength of reinforcers (positive consequences following the target behavior) within social activities are managed carefully. This involves making sure that the activity is in itself reinforcing for each child in the group, and if it is not, embedding additional and/or more powerful reinforcers within it. Additionally, it is critical that the adults reward the attempts and approximations of the target behaviors for each child in the group. In the G-ESDM, the emphasis is placed on intrinsic rewards—that is, positive consequences that are naturally embedded in the activity. For example, when children are playing 'Ring Around the Rosie' they are practicing communication and imitation skills, and these are rewarded by the 'we all fall down' finale, rather than external rewards such as giving the child an iPad or a token for having imitated the actions in the song. This naturalistic approach requires the adult to create activities or elements in activities that are experienced by each child as rewarding, and engender positive affect, warmth, and shared pleasure.

Another way to optimize child motivation is to incorporate the child's choices in the teaching activities—a strategy that is often summarized as 'Following the child's lead'. This strategy does not imply that children can do whatever they want, but rather that their spontaneous initiative, choices, and motivation are embedded in each activity.

In the group context, this is accomplished both by having the child choosing the activity, as described in the 'activity centers' section on Chap. 5 (e.g., offering the child a choice between the water table or the constructions table), or by providing choices within the activity (e.g., during a ball activity, asking the child 'should we throw the ball up in the air or in the water?'). The interests of each child in the group should be considered to ensure that the activity is motivating and rewarding for all. For example, a 'Wheels on the Bus' activity song may be a good choice for a group that includes a child who is motivated by transport (as the bus song can be elaborated to incorporate other forms of transport), a child who enjoys songs, a child who likes instruments or shaking things (e.g., shakers can be included for the verse 'the wipers on the bus go swish swish swish'), and a child who loves being touched (the adult could tap the child's tummy or hand and encourage peers to do the same during the verse 'the horn on the bus goes beep beep beep').

Importantly, within this context, the child and the adult have shared control on the situation—both lead and both follow. For example, if the child does not show spontaneous initiative, or even if he or she is mildly protesting when offered the activity, the adult must encourage the child to participate in the new activity by embedding familiar and motivating elements in the task. However, insisting on one particular activity when the child shows distress or disinterest will not result in spontaneous learning, and the learning objectives should be targeted in the context

of a different activity. Similarly, activities in which children are initially engaged but gradually lose interest should be ended quickly, and choices between new activities should be offered. Offering novel, interesting learning experiences through the combination of multiple objectives in one activity and the elaboration of play themes is the key to keep children motivated and engaged. The systematic use of these techniques to optimize motivation should result in learning activities characterized by warm and positive affect, shared control, and a lively pace, which are fun both for children and adults.

## *Adult Use of Positive Affect*

Another pillar of the ESDM philosophy is that learning is built in the context of warm, positive interactions between teachers and learners. This is not only encouraged to create a pleasant learning environment: As we mention in Chap. 1, children are more likely to attend to and learn from people displaying a playful and positive affect, rather than those displaying a 'neutral' affect. Therefore, during each activity, we expect to see a warm, positive emotional tone in adults' facial expressions, voices, and interaction styles in ways that support children's engagement. The intensity of this positive emotional display has to be well matched to the overall feeling of the activity and the children in the group, and genuine to the adult. We are not describing forced affect, unnatural levels of liveliness, affection, or exuberance, but rather that each adult appears to be having a positive experience with the children and conveys that through nonverbal communication to the children.

## *Sensitivity and Responsivity*

In the ESDM, the adults are not only teaching behaviors *to* the child, but also they are constantly building learning experiences together *with* the child. This requires continuous attunement and responsivity to the child's communication, emotional states, and feelings. The behavior of the child should be acknowledged contingently even when it does not take the form of a clear communication. For example, the child can express a feeling of frustration or enjoyment, or an interest for a particular toy (e.g., a balloon), with subtle body language or ambiguous vocalizations (e.g., moving toward the balloon and smiling or moving away from the balloon/covering their eyes)—when this happens the adult's role is to identify and acknowledge such cues, reading them as intentional communications and act accordingly. For example, in a group lunch activity, it can be very easy to allow the children who are more passive or minimally verbal to just sit and eat their lunch. In this context, it is important to read the cues of all the children to ensure that subtle communications are reinforced or used to provide additional learning opportunities. One child may

be looking at what another child is eating; this provides a good opportunity to comment on the food and to encourage the child to request some of the same food. Another child might be having difficulty opening their drink bottle and may briefly extend it toward the teacher to ask for help. It is important that these behaviors are noticed, acknowledged, and reinforced by fulfilling the child's goal.

In another example, during a song routine (e.g., the wheels on the bus) the adult, after noticing that one child is showing interest in a particular action/verse of the song (e.g., pretending to beep the bus's horn) will repeat that verse and provide another learning opportunity (e.g., encourage the child to say 'beep'). Subsequently, after noticing that another child is showing signs of distress (e.g., putting hands over ears, during the verse 'the babies on the bus go wah wah wah') the adult will say 'shhhh', encourages the unhappy child to do the same, and quiets down the group so that the noise levels are no longer uncomfortable. The adults' ability to monitor and promptly respond to each child's cue is therefore critical to facilitate learning, prevent challenging behavior, and support children's spontaneous initiative.

## *Multiple and Varied Communicative Opportunities*

One of the most important roles for teachers and therapists delivering the G-ESDM is to provide continuous opportunities for experiencing and practicing the use of communication. Effective use if communication requires mastery of different elements, including the ability to articulate words (phonology), create grammatically correct phrases (syntax), express meanings (semantics), and using language to share meanings and shape interactions in a social context (pragmatics). This latter element is particularly emphasized in the ESDM, based on the research showing that the use of communication for social purposes is a strong predictor of social-communicative development (Akhtar & Tomasello, 2000). Typical children use verbal and nonverbal communication during social exchanges for a variety of different reasons (e.g., greet, comment, ask, and share feelings), adapting their communication to the ongoing interaction and taking turns with their social partners. As many children with autism are inclined to use language primarily for requesting and protesting and have particular difficulties in adapting their communication to the social context (Rapin & Dunn, 2003), we seek to target other functions in each activity, to ensure that communication serves social motives rather than only being instrumental for obtaining/rejecting items.

Therefore, during each daily routine and play activity, multiple communicative functions are addressed, including requesting, protesting, commenting, labeling, asking for help, greeting, and imitating the adult's sounds and nonverbal communication.

In the group context, this is accomplished within activities that require frequent communication. In order to increase child communication, adults take into account each child's communication objectives and encourage and scaffold their

communication to expand spontaneous language and gestures across different functions. At least 1 communication objective for each child is targeted within each activity. For example, in a group art activity, a number of different communication functions can be incorporated in addition to requesting and refusing. The adult may place the markers in a clear plastic container with a closed lid so that the children are encouraged to ask for 'help' to access them. When using the markers, the adult might label the colors and model sound effects as children take the lids off ('pop'!). When a child draws something, the adult can model commenting 'Wow, you drew a circle!'. One tub of glue may be provided and given to an individual child so that other children need to request it from each other. When using scissors, the adult may label their actions ('snip snip snip') to provide opportunity for the children to imitate. At the conclusion of the activity, children are encouraged to indicate that they are 'finished'. Adults can prompt children to show their drawing to others, to share materials, and to help others. Emotion words can enter when children look proud of their work, are frustrated by a jar that will not open, and are mad when another child takes the scissors. The speech pathologist on the team can help design rich 'communication temptations' (i.e., situations that motivate children to communicate) and should observe the activities from time to time to help identifying additional opportunities for increasing child communication.

## *Adult Language*

In the G-ESDM, the adult uses natural language to model appropriate verbal communication while narrating and supporting the ongoing themes of the activities and interactions through comments, instructions, and remarks. The complexity of the language needs to fit each child's current language level and objectives. This is accomplished using the 'one up rule' (See Rogers & Dawson, 2010). According to this rule, the adult should use sentences that are approximately one word longer than the child's typical sentence. Within any group-based activity, the adult is likely to be working with children with varying levels of language understanding and use. Therefore, during group activities in which children with different levels of language skills are participating, the adult will calibrate her or his language input to match each child's individual needs.

As a general rule, when directing language to all the children in the group, initially the adult's language will match the child with the least language. However, subsequent language will be modified dynamically during the activity and match the other children in the group. For example, when playing with bubbles, the adult might introduce the activity by saying 'bubbles' or 'play bubbles'. During the activity, when directing his/her communication to a child who uses 3-word phrases, the adult will model, 'Ed blows bubbles up' while also modeling '[child's name] bubbles' for other children as they take turns. Similarly, the adult will use one-word phrases when talking to a nonverbal child ('car', 'splash!', 'finished', 'roll!', 'push!'), two-word phrases when directing communication toward a child who use

singles words, ('red car', 'rolling play-doh', 'hot water'), and sentences of approximately 6 words when talking to a child who uses sentences of 4–5 words (e.g., 'sit down on your chair Marcus', 'the baby's crying because he is feeling hungry!', 'get the book and bring it here'). Importantly, the adult's language must always be syntactically, semantically, and pragmatically appropriate. The goal is to expand the child spontaneous communication in the context of group activities in which language is naturalistic, meaningful, and rewarding. Therefore, the adult does not tell the child what to say (e.g., 'say 'dog'') and does not provide 'artificial' praise (e.g., 'good job talking'). Rather, the adult language should accompany each interaction providing continuous opportunities for registering/appreciating correspondences between words, actions, and feelings.

## *Joint Activity Structure and Elaboration*

Joint activity routines provide the organizing framework for teaching in the ESDM. In these routines, child and adult are coconstructing activities that provide opportunities to do things together and learn from such experiences (Ratner & Bruner, 1978). There are four phases in a joint activity routine. The first is the setup phase, in which the child chooses the activity and the adult follows the child's lead without interfering (e.g., the child spontaneously picks up a book, and the adult follows the child and sits in front of him). The second phase develops the theme: the child and the adult participate equally in the activity chosen by the child, creating a theme (e.g., the theme is turning slowly the pages of the book and then naming the animal on each page), and this is repeated a few times, until the theme is solid and a clear, predictable, and enjoyable routine is established. Then there is the elaboration phase: at this stage, the adult introduces a variation or elaboration on the theme. For example, after naming an eagle, the adult models the movements of an eagle flying in a playful and interesting way—the elaboration or new theme becomes imitating the movements and the sounds of the animals in each page. Finally, there is the closing phase, in which the adult, based on a naturally occurring circumstance (the book is finished, or the game is getting repetitive, or the child is losing interest) provides a smooth ending for the current activity while engaging the child in the ending (e.g., encouraging the child to put away the book) followed by a transition to the opening phase of the next activity (e.g., the child is encouraged to make a choice for the next activity).

Joint activity routines address both the social difficulties (through the joint engagement component) and the flexibility difficulties (through the systematic introduction of variations on the theme) that characterize autism, while also providing opportunities to target multiple objectives across developmental domains. The activities are individualized to an appropriate level for each child. For example, in the book activity described before, objectives in fine motor (turning pages), motor imitation (mimicking the eagle movements), vocal imitation (imitating animal sounds), and verbal communication (labeling animals) are targeted.

In a group activity, a spontaneous joint activity might start with the initiative of a single child. For example, a child plays with a piece of material and the adult approaches her and starts to play with the same material. This is the setup phase. The adult begins to slowly shake the material, the child imitates him/her, and the adult and child begin shaking the scarf together and singing a song (e.g., 'we shake and we shake and we shake and we stop'). This is the theme. Other children watch and begin to join in with the assistance of another adult. As one child starts jumping while shaking the scarf, the adult points out that the child is jumping and also begins to jump. With some prompting, some of the other children start jumping too. When another child goes underneath the scarf, the adult counts to three, then lifts the scarf up and says 'boo'. This becomes the elaboration. After repeating the 'peek-a-boo' game a few times, the lead adult notices that some children are beginning to lose interest, so she gives the children a choice between continuing the 'peek-a-boo' game or transitioning to play with the play dough. A majority of children choose to play play dough, so the lead adult has the children clean up and put away the scarves while another adult has moved with other children to the art table. This is the closing and transition to the next activity.

## *Transition Between Activities*

This element, while already contained in join activity structure, receives special emphasis in G-ESDM because skillful transitions foster child flexibility, temporal sequencing, and the development of a sense of the present, future, and past. Additionally, poorly managed transitions are often marked by problem behaviors, attempts to escape from activities, and difficulty engaging children in new activities, and much intervention time can be spent in trying to recover poorly done transitions.

The goal here is to facilitate a smooth transition between activities or locations, so that the children experience daily routines as having clear temporal and physical boundaries (this activity is finished, and now we are doing something different), and the motivation to move on to the next activity independently is optimized. The role of the adults is to facilitate the group's shift of interest from the closing activity to the new one, so that the attentional focus and the motivation of the group of children flow from one thing to the next at the appropriate time.

As mentioned in Chap. 4, the physical organization of the space is critical to support children's independence during transitions. The physical layout helps children move from one place to another without distractions and barriers. The goal is to have children moving from one activity to another independently and intentionally, with the next activity as a goal in mind, rather than having an adult take an inattentive child by the hand and lead him or her through the transition. In a group setting, each transition during the day needs to be well planned for in advance with adults maintaining clear roles—these are discussed in detail on Chap. 5.

## Conclusions

In this chapter, we examined a range of elements highlighted in the G-ESDM fidelity tool that reflect the core intervention procedures of the G-ESDM. These elements encompass behavioral techniques and developmentally based strategies to support the child's ability and motivation to learn during social interactions with adults and peers. A common thread across these elements is that social interaction is neither 'imposed' nor expected to happen spontaneously. Rather, opportunities for doing things together are built on the spontaneous actions and interests of each child in a context where adults set up fun routines and play activities that naturally bring children together. Even if children might be initially motivated only by the activity and the materials, the repeated engagement in meaningful and rewarding activities in close proximity to the peers, under the guidance of the adult provides the ideal scenario to appreciate and practice social communication and reciprocity. In this context, the adults actively target individualized learning objectives based on evidence-based behavioral strategies.

Mastering each of the 13 aspects of delivering the therapy described here can be challenging for staff members, especially when multiple behaviors must be kept in mind at the same time and blended within existing systems and practices. The G-ESDM fidelity tool can be used to facilitate this process, by providing initial guidance on the skills to learn, as well as ongoing monitoring to determine the level of mastery of the procedures. In Appendix 1, we will illustrate the criteria used to determine if these strategies are implemented 'at fidelity level'. Importantly, in order to reach and maintain fidelity of treatment delivery, significant investment in staff training, and ongoing support and monitoring of implementation are needed. Nevertheless, there is evidence indicating that a high level of treatment fidelity is achievable by therapists in community intervention settings. This provides an optimal foundation for the successful delivery of effective treatment programs (Stahmer et al., 2015; Symes, Remington, Brown, & Hastings, 2006).

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