#### **CHAPTER 1**

## What Is JASPER?

## 1.1 Introduction

This book presents in-depth information about the Joint Attention, Symbolic Play, Engagement, and Regulation (JASPER) intervention, which addresses the core challenges we observe in children with autism spectrum disorders (ASD). JASPER is a targeted, modular intervention in the domain of social communication and included in the broader category of naturalistic developmental behavioral interventions (NDBIs; Schreibman et al., 2015). JASPER aims to improve children's relationships with people (through joint attention and engagement) and interactions with objects (through development of play), while helping children maintain and modulate their affect and behavior (through regulation strategies). In this chapter, we introduce the features of JASPER, including a brief overview about how to implement the intervention, assess the child, and apply strategies to address core domains. These topics are addressed in more detail in chapters to come.

## 1.2 Intervention Details

Before we begin, we will provide a quick example of what JASPER looks like in a session. JASPER is taught through the child's natural learning context, play. Prior to starting intervention, the interventionist assesses the child's play and communication skills, identifies developmentally appropriate targets, and selects motivating toys that build upon the child's current skill level. Here is a fictional example of what you might see if you were observing a JASPER session (see Figure 1.1).

A small play area is set up to promote the child's engagement and regulation. There is a table in the corner of the room, with some building materials partially built into a house and extra pieces off to the side and a set of toy fruit pieces with a knife and bowl. On the floor, cardboard bricks are partially stacked into a tower adjacent to a handful of small animal figures.

The environment is set up to facilitate a smooth transition into the session by providing motivating and developmentally appropriate toys arranged and ready for the child. The goal is for the child to show interest in a toy and begin playing.

The adult and child step into the room and the adult exclaims, "We have so many fun toys today!" The child moves toward the table, picks up a block, and adds it to the house. The adult follows suit by adding a block to the house and moves the fruit out of the way, so they can focus on building the house.



FIGURE 1.1. The JASPER session is set up with play choices for the child.

The child and adult begin to create a play routine. These routines are densely packed with opportunities to foster the child's play ideas and communication and to support the child's engagement and regulation.

After the adult and child build the block house together, the adult puts some chairs and small people onto the table. The child picks up a figure of a boy but does not know what to do with it, so the adult picks up a figure and puts it into the house while commenting "People," with a big smile. The child follows in and comments, "House," as she puts a figure inside. The adult responds, "Big house!" and they continue taking turns putting people into the structure. After a few turns, the child starts to stand up from the table. Noting her waning engagement, the adult moves a few blocks closer and the child starts to build a second story for the house. The adult quickly follows in again while pairing his turns with simple comments.

The adult is responsive to the child in the interaction. When the child decides to put some people in the house, the adult reinforces this idea and follows along, imitating the actions and adding on to the child's communication. When the child loses engagement, the adult helps the child get back on track. The adult also facilitates opportunities for the child to work toward new play and communication skills.

As they complete the house, the adult adds more related materials to the environment to continue growing the routine. The child starts adding animals to the house. As the adult takes

his turn, he shows a dog to the child and says, "Puppy." They continue to add new steps and communication opportunities until the child is done playing with these toys. The adult makes the other toy options clear, the child makes another choice, and they begin to create a new routine.

Throughout the routine, the adult ensures that there are clear opportunities for new play and communication skills. There are extra materials in the environments for the child to add new steps, and the adult capitalizes on motivating moments to help the child use new skills. The adult creates an environment that encourages the child's ability to initiate and provides additional strategies when the child needs more support to build skills in play, communication, engagement, and regulation. In the sections that follow, we will provide additional details about the intervention.

### 1.2.1 Objectives

The objectives for each JASPER session are to increase (1) the child's time regulated and jointly engaged in a shared activity with a social partner; (2) the diversity, flexibility, and complexity of the child's spontaneously initiated play skills; and (3) spontaneous initiations of both nonverbal and spoken (and/or augmented) language for the purpose of joint attention, requesting, and overall intentional communication.

### 1.2.2 Participants

The intervention is most commonly delivered one-on-one with an interventionist and a child with ASD. It is designed for children 12 months of age through early childhood and older children who have minimal spoken language. JASPER strategies may also be relevant and effective for children with other developmental disorders who experience challenges in the areas of engagement, regulation, communication, and play skills.

This book is primarily written for practitioners who have received some prior training with children with autism, such as clinicians, educators, early interventionists, clinical psychologists, applied developmentalists, special educators, and speech–language pathologists. JASPER has also been successfully implemented by caregivers, paraprofessionals, and other community members. Those who wish to implement the intervention must go through training and reach fidelity with a certified JASPER expert. Additional information is on our website *www.jaspertraining.org*.

## 1.2.3 Setting

JASPER takes place in the child's home, school, clinic, or other community setting. Ideally, sessions range from 45 to 60 minutes but vary based on the age and ability of the child. Some children may need to start with a shorter session and work up to longer sessions, particularly infants, toddlers, children new to intervention, and those with frequent episodes of dysregulation.

## 1.2.4 Adaptations

This book focuses on one-to-one implementation between an interventionist and a child; however, it is meaningful to note that JASPER has also been tested with other implementers and specific subgroups of children. Several studies have been conducted teaching caregivers to implement JASPER with their children who are toddlers (Kasari, Gulsrud, Paparella, Hellemann, & Berry, 2015; Kasari, Gulsrud, Wong, Kwon, & Locke, 2010), preschoolers (Kasari et al., 2014b), or older and minimally verbal children (Kasari et al., 2014a). We have taught teachers and paraprofessionals to implement JASPER in small groups (Chang, Shire, Shih, Gelfand, & Kasari, 2016) or one to one (Lawton & Kasari, 2012; Shire et al., 2017). We have also implemented JASPER with an augmentative and alternative communication (AAC) support (Kasari et al., 2014a), and in dyadic peer-to-peer groups (Shire, Shih, Bracaglia, Kodjoe, & Kasari, 2020a). After learning to deliver the intervention directly with children, there are also opportunities to learn to coach others to use JASPER, supporting caregivers to use the strategies at home with their children or teachers to use the strategies in classrooms with their students, or to train other interventionists and trainers. This training is beyond the scope of this book, but information can be obtained from our website:

#### 1.2.5 Materials

All that is needed for a session is a small space to play, a child-sized table and chair, toys at the child's developmental level, and containers to keep the toys organized (e.g., bags, bins, or shelves within reach). If the child uses an AAC system, then the system should be present during the session. Visual supports, positive behavioral supports, and other systems of support can be incorporated as well.

## 1.3 Intervention Framework

In this section, we explain the JASPER approach, including its extensive evidence base and its place within the field of early interventions for children with ASD.

### 1.3.1 Evidence-Based

JASPER is evidence-based. By this, we mean it has gone through rigorous testing and has been shown to be efficacious. The JASPER intervention has been tested in 10 published randomized controlled trials by our research team, as well as other independent research teams involving nearly 500 children with ASD over the course of 20 years. Many other trials are currently underway. Altogether, these trials demonstrate gains in children's time jointly engaged in play activities with others (noticing both the partner and the shared activity; Kaale, Fagerland, Martinsen, & Smith, 2014; Kaale, Smith, & Sponheim, 2012; Kasari et al., 2006, 2010, 2014b, 2015), initiations of joint attention (e.g., Kasari et al., 2010, 2014b), and language (e.g., Kasari et al., 2008), and in play level (e.g., Kasari et al., 2014b) and play diversity (e.g., Kasari et al., 2010). Short-term longitudinal follow-ups find that most children maintain these skills, and long-term follow-ups find maintenance of social communication skills as well as language and cognitive gains (Kasari et al., 2012). As you can see in Figure 1.2, the research leading up to JASPER started with experimental studies exploring the characteristics of ASD in the mid-1980s and early joint attention and play studies in the late 1990s. Subsequent work focused on translating this work into community settings. JASPER has made significant strides to make intervention accessible to those in the community who need it most, starting with caregiver-focused interventions in the early 2000s, and then leading into teacher-implemented interventions, adaptations for minimally verbal children, and extensions into community health systems and international settings. For a more comprehensive list of JASPER evidence, see the annotated bibliography on this book's companion website.

#### **JASPER Intervention Research Timeline**



FIGURE 1.2. JASPER intervention research timeline.

### 1.3.2 Targeted and Modular

JASPER is targeted and modular. It is *targeted* in that it focuses on the social communication core challenges of ASD and *modular* in that it can stand alone as an intervention or it can be added to the child's ongoing intervention programs. While it is comprehensive within the domain of social communication, it does not specifically address a wider range of outcomes, such as cognitive, motor, and academic skills (though these may be indirect outcomes) over a longer period of time.

## 1.3.3 Naturalistic Developmental Behavioral Intervention

JASPER, included in the broader category of NDBIs, is a blended approach of developmental and behavioral principles (Schreibman et al., 2015). It works within a natural, developmental framework, while also incorporating explicit teaching strategies drawn from behavioral theory (Skinner, 1957). Like most NDBIs, JASPER takes place in a naturalistic context, specifically play routines. This allows the child to experience natural contingencies within a developmentally appropriate learning environment. Sessions are child led as much as possible and structured to promote social engagement. JASPER is developmental in all areas of the intervention. The core domains focus on early skills that are critical to the development of play, engagement, and social communication. Using data from our assessments, we identify each child's current developmental level. We then apply a developmental framework to set appropriate goals and track progress. With our understanding of the child's current level, we support the growth of new skills by embedding opportunities to learn and initiate these skills throughout different contexts and routines in a JASPER session. Within these opportunities, we use behavioral strategies and principles, such as using natural reinforcement, modeling, and prompting to help a child achieve success. When challenging behaviors arise, we hypothesize the function (i.e., motivation) of the child's behavior in order to create an effective plan to respond.

### The Child as Initiator

In JASPER, children are expected to share their own thoughts and ideas, that is, *spontaneously initiate*, within the interaction. It is not sufficient for the child to respond to the prompts and bids of another. To help achieve this, the adult models the role of a supportive "playmate" and conversational partner. For instance, instead of choosing the activity, teaching a discrete skill, and then removing the toy once the task has been completed, the adult actively leaves room for the child to make choices and share ideas, responds to the child's initiations, and provides support to help the child play productively and stay engaged. Thus, the adult adjusts the type and level of support based upon the needs of the child in the moment.

## 1.4 Domains

JASPER aims to facilitate growth in social communication skills across four domains: *joint attention* (the *JA* in JASPER; targeted in conjunction with other social communication skills), *simple to symbolic play* (the *SP* in JASPER), *engagement* (the *E* in JASPER), and *regulation* (the *R* in JASPER; see Figure 1.3). All of these domains are core challenges for children with ASD, closely linked to social communication and predictive of later language development. We will provide a brief introduction here, and each domain will be discussed in detail in Chapter 2.

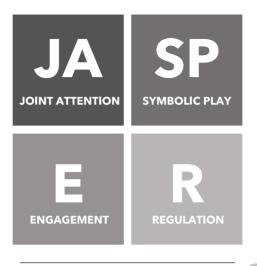


FIGURE 1.3. Four domains of JASPER.

## 1.4.1 Joint Attention and Social Communication Skills

JASPER aims to teach joint attention, among other social communication skills. *Joint attention* is the coordination of attention between objects and people for purposes of sharing. In our early research studies, we learned that children with ASD have specific challenges in joint attention. In one study, joint attention skills alone correctly classified the majority of children with ASD compared to children with general developmental delays or typical development (Mundy, Sigman, Ungerer, & Sherman, 1986). While the majority of children with ASD demonstrated delays or differences in their joint attention skills, the more joint attention skills children demonstrated, the better their language skills were when tested at the same time, and a year later (Mundy et al., 1990). We target other social communication skills as well, including both nonverbal and verbal modes of requesting.

# 1.4.2 Simple to Symbolic Play

Another primary goal of JASPER is to teach play, as children with ASD often have delays and differences in this domain when compared to typically developing peers. Play is a universal way for children to learn about the world and provides an important context to teach social communication and language skills. To teach play, we assess the child's current developmental play level, choose a play target based on the child's mastered play level, and then systematically work toward higher, more symbolic levels of play. The intervention follows a hierarchy of play skills (adapted from Ungerer & Sigman, 1981; Lifter, Sulzer-Azaroff, Anderson, & Cowdery, 1993). In all, there are 16 play levels that follow a typical developmental framework (more about this in Chapter 2). While teaching specific play skills, we also focus on the social aspects of play as a developmentally appropriate context for learning.

## 1.4.3 Engagement

JASPER also aims to improve the child's engagement with others. *Engagement* is a state of being connected with objects and/or people, with higher states of engagement involving more

coordination between objects and people. We follow the developmental model of engagement that Adamson, Bakeman, and Deckner (2004) have described for typically developing children. Engagement is an important domain in JASPER, given that children must be engaged in order to learn. It is in the highest state of engagement, *joint engagement*, that children coordinate between objects (such as toys) and people. In this state, they can notice the actions and words of others in the context of the shared activity. Because children with ASD show delays in establishing and maintaining states of joint engagement, JASPER places great emphasis on the child's ability to initiate and ultimately to coordinate the interaction, as measured by play and communication initiations.

### 1.4.4 Regulation

JASPER stresses the importance of emotion and behavior regulation, as children with ASD have greater difficulty regulating, compared to their typically developing peers (Konstantareas & Stewart, 2006). *Regulation* is a process of appropriately monitoring, evaluating, and modifying a range of emotions, responses, and behaviors to a given context. A child is regulated if she is calm, attentive, and amenable to learning. Rich episodes of play, communication, and engagement are only possible if a child is regulated. While there is much that we do to promote regulation, we recognize that it is common for dysregulation and challenging behaviors to arise. This becomes a concern when the behaviors interfere with the child's ability to participate effectively in the interaction. Therefore, it is imperative to both promote regulation and respond to dysregulation.

## 1.5 Assessment

Intervention targets are set during initial assessments using the *Short Play and Communication Evaluation* (SPACE; Shire, Shih, Chang, & Kasari, 2018). The SPACE is a brief play-based tool designed to identify the child's mastered and emerging skills and to set intervention targets for social communication (verbal and nonverbal joint attention and requesting), play, engagement, and regulation. The SPACE is based and validated on longer research instruments (Structured Play Assessment and Early Social Communication Scales; Ungerer & Sigman, 1981; Mundy et al., 2003) and has been used in community partnered research to track change over time (Shire et al., 2017; Shire et al., 2020a). Using this information, the interventionist selects developmentally appropriate play materials at the child's mastered and targeted social communication and play levels. The child's progress is recorded on a separate tracking log each session, and additional assessments can be conducted every 3 months or so. See Chapters 3, 4, and 18 for additional information.

## 1.6 Strategies

We have many strategies to support the child's engagement, regulation, play, and communication. In Chapters 5–17, you will learn the ins and outs of each strategy, as well as how each strategy works together to create a whole that becomes the JASPER approach. These strategies are introduced in Figure 1.4, and a more detailed list is provided in Appendix A. In addition to the strategies, we will introduce the JASPER characters, which serve as visual reminders of the key strategies and components of the intervention.

#### **CORE STRATEGIES**



#### Environmental Arrangement

Environmental arrangement is the process of setting up and maintaining all aspects of the physical space to support the child and limit distractions. It includes the layout of the room, the child, toys, and even yourself.

Chapter 7

Imitating and Modeling Play



Imitation is the act of repeating and responding to the child's productive play skills. Modeling is the act of demonstrating a developmentally appropriate skill when the child needs support to play productively.

Chapter 9



#### Establishing Play Routines

Play routines are the context for teaching our targets and goals. Routines include developmentally appropriate toys, two active play partners, repeated practice, and a combination of familiar and flexible steps.

Chapters 5 and 10

Expanding Play Routines



Expanding is the process of adding new steps to an established play routine. We prepare the environment to support the child to initiate new ideas, and we provide support to increase play diversity and complexity as the routine grows.

Chapter 11



Many strategies support communication, such as imitating and expanding the child's initiations and modeling developmentally appropriate words and gestures about the play routine. For some children, we also include an AAC device.

Chapters 12, 13, and 14

Programming



Programming is the process of providing explicit and systematic opportunities for the child to practice joint attention and requesting skills. We use a prompting hierarchy as needed to help the child successfully use the targeted skill.

Chapter 13



Many JASPER strategies support engagement and regulation. We prepare the environment, set the child up for success in the session, and try to get ahead of challenges before the child loses engagement or becomes dysregulated.

**Core Strategies and Chapter 8** 

#### TROUBLESHOOTING





We provide a three-step process for troubleshooting: Assess the situation, Create a plan, and Test for success (ACT) to address challenges during the session.

Chapter 8

#### **CONDITIONAL STRATEGIES**



Conditional Play and Communication Strategies When children need more support to make progress, we use a prompting hierarchy and introduce additional strategies to promote productive play.

Chapters 8 and 17

Conditional Engagement Strategies



If the child loses engagement, such as becoming object engaged, we layer in specific strategies to help the child reconnect and return to a higher state of engagement.

Chapter 15



Conditional Regulation Strategies If the child has significant or reoccurring periods of dysregulation, we identify the function of the child's behavior and create a plan to provide a tailored response.

Chapter 16

### 1.6.1 Layers of Support

Beyond learning each individual JASPER strategy, the interventionist must coordinate all the strategies together and choose the right strategy for the right moment. JASPER provides three layers of support: core strategies, the ACT framework for troubleshooting, and conditional strategies.

- **1.** Core strategies. The core strategies provide the basis of the intervention and include strategies to reinforce the child's behaviors (e.g., imitation) and subtle forms of support to show the child new skills (e.g., environmental arrangement, modeling). We use the core strategies throughout the session to set the child up for success, maintain engagement, model new skills, and respond to challenges.
- **2.** ACT framework for troubleshooting. We provide a three-step process for troubleshooting: Assess the situation, Create a plan, and Test for success (ACT). We refer to this as the ACT framework. It can be used to troubleshoot challenges progressing toward our core domains.
- **3.** Conditional strategies. The conditional strategies offer more explicit forms of support and are only implemented in select cases after using core strategies and troubleshooting. They include a prompting hierarchy for play and communication, as well as strategies to improve regulation and engagement.

In JASPER, we rely heavily on core strategies and are more selective in using the conditional strategies. Ideally, we begin by using the core strategies. If we notice challenges, we troubleshoot using the ACT framework. We then choose to try a new balance of core strategies or begin to introduce some conditional strategies (see Figure 1.5). Through this process, we tailor support to help children reach their goals.

## 1.7 Conclusion

This book includes 18 chapters broken up into seven main parts: Introduction to JASPER, Setting Targets, Preparing for Session, Play, Communication, Troubleshooting, and Conclusion (see Figure 1.6). Throughout the book, we provide additional materials to support learning, such as exercises, case examples, and illustrations, as well as checklists, forms, and tables. The children and clinicians we reference are entirely fictional. While they often build on common scenarios we have encountered over the years, any resemblance to names, individuals, or events is purely coincidental. Answers and explanations for each exercise can be found in Appendix B. If you are interested in learning JASPER, we encourage you to read this book and sign up for JASPER training. Those



**FIGURE 1.5.** When providing support in JASPER, we begin with core strategies, move into troubleshooting, and then return to core strategies or incorporate conditional strategies.

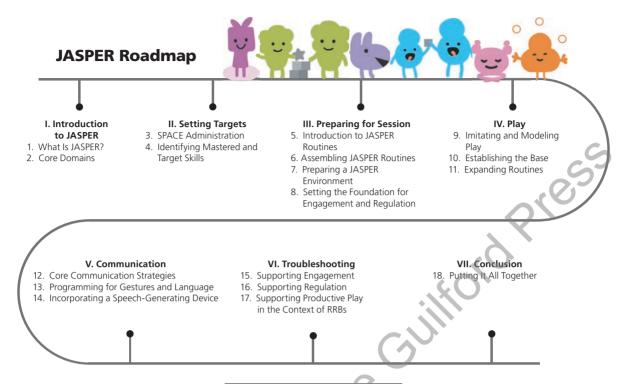


FIGURE 1.6. JASPER roadmap.

who would like to become certified to deliver JASPER must attend an official JASPER training and reach fidelity on practice cases. The most challenging part in learning any intervention is in putting the strategies together into something meaningful and individualized to the child. As you read, we encourage you to reflect on your previous experiences and think of a specific child to practice setting targets and applying strategies. As you are first learning, it is difficult to apply everything at one time, but as you move through training, receive feedback, and gain experience, it will become easier to find balance and integration among key concepts.

A note on terminology. In this book, we alternate between masculine and feminine pronouns and use the person-first descriptor "child with autism" or "child with ASD." We have made these choices to promote ease of reading and not out of disrespect toward readers who identify with other personal pronouns (e.g., they/them) or identity-first descriptors (e.g., "autistic" or "autistic child") as terminology has not yet been settled at this time of writing. We sincerely hope that all persons regardless of age, race, gender, or identity will feel included. In the following chapters, we will expand on the topics discussed here, starting with core domains.