

# Supporting play and executive function— It's how children learn

**D**ramatic play begins at about 1 year of age, when young children begin to pretend, and continues throughout the elementary school years, when children engage in fantasy, literary, or media play (Kostelnik, Soderman, Whiren, Rupiper and Murphy Gregory 2015).

The content of pretend play initially revolves around imitating familiar actions, such as stirring an empty pot or feeding a baby doll. As children approach 3 years of age, they become able, at least briefly, to include other children in their pretend play. In contrast, 4-, 5-, and 6-year olds spend much of their pretend play time in sociodramatic play. The play themes of older preschoolers grow from the familiar (pets, grocery store, and fire station, for example) to include fantastic (superheroes and mermaids, for example), future-oriented (careers), and science-based (such as sea creatures, space travel, and planets) themes.

Sociodramatic play is rich with learning opportunities in all domains of development for preschool children. They expand their vocabularies as they engage in conversations with peers, fine tune motor skills as they manipulate dramatic play props, practice perspective-taking skills as they respond to the play role of a peer, and enhance their thinking skills as they discuss themes and pretend play ideas with others.

Teachers can support the sociodramatic play of older preschoolers in a number of ways, including providing a mix of realistic and open-ended props. Children need this mix in order for the play to sustain their attention and challenge their imaginations. Further, teachers can help children expand their play through reading aloud fiction and nonfiction books, suggesting how to use props, and providing people, events, and objects that inspire children's interest and facilitate their engagement in sociodramatic play.

Participation in sociodramatic play helps older preschool children improve three important thinking processes known as **executive functions** (Diamond 2014a). These processes are essential to children's current and future well-being. According to Diamond (2014a), preschool children who score high on assessments of executive functions demonstrate greater kindergarten readiness and school success than other children. They also have higher high scores on math and language assessments.

Teens with greater proficiency in executive functions are less likely to have unplanned pregnancies, smoke, drop out of school, or experience drug addiction. Adults who scored high on assessments of executive functions as preschool children are more likely to be gainfully employed, commit fewer crimes, and enjoy greater emotional and physical health. These same adults report greater happiness and life satisfaction.

In sum, the importance of these thinking processes



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to the well-being of children cannot be overemphasized. The following sections will explore why executive functions are so integral to children's well-being, how older preschool children's participation in sociodramatic play can improve these thinking processes, and what teachers can do to facilitate involvement in developmentally appropriate sociodramatic play.

## Development of executive functions

Typically developing preschool children have the innate potential to develop executive functions. The seat of these thinking processes resides in the cerebral cortex of the brain. This portion of the brain sits like a wrinkled cap on the top of the rest of the brain and develops over a long period from infancy through early adulthood.

This lengthy period of development indicates a gradual maturation of the core executive functions (Center on the Developing Child at Harvard University 2011). For example, young children can be impulsive, often acting upon the first idea that comes to mind in response to a situation. When they grab a toy from a peer, they are not misbehaving; rather, they are acting in accordance with their level of brain development.

Although the potential to develop executive functions is innate, the level of competence achieved with each depends upon how much practice older preschool children have with three specific processes:

**inhibitory control** or self-regulation, **working memory**, and **cognitive flexibility**.

Competence levels are also associated with the impact of children's environment on their mental, emotional, and physical health (Diamond 2014b). Children who are depressed or have experienced high levels of stress (such as child abuse or punitive discipline) or are in poor physical health have demonstrated less competence with executive functions (Center on the Developing Child at Harvard University 2011). These lower levels of competence may manifest in the classroom as disruptive or disorganized behavior. Teachers need to provide a warm, emotionally safe, nurturing as well as cognitively stimulating classroom environment in order for older preschool children's executive functions to flourish.

## Executive functions: A closer look

As mentioned above, the three core executive functions are inhibitory control, working memory, and cognitive flexibility (Penn State Extension 2014). Rudimentary forms of these thinking abilities become apparent when children are about 3 years old; however, it is not until children are approaching kindergarten that executive functions begin to blossom. Each of these functions makes unique contributions to the thinking abilities of preschool children (Diamond 2014a, 2014b).

Inhibitory control makes it possible for older preschool children to:

- set a goal (complete a puzzle or build a block tower, for example),
- resist temptations that might otherwise cause the goal to be abandoned,
- exert the self-discipline necessary to achieve the goal,
- ignore people, events, objects, and other distractions not pertinent to the goal,
- tune in to people, events, and objects that could assist in achieving the goal,
- stifle impulses that could get in the way of achieving the goal,
- become intensely involved with materials pertinent to the goal, and
- persist in working toward the goal until it is achieved.

An example of inhibitory control is an older

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preschool child who can concentrate on successfully completing a puzzle despite the noisy interactions of classroom peers.

Working memory enables older preschool children to:

- think about something no longer in their presence and mentally work with it (silently make rhymes with a word the teacher says, for example),
- respond to a teacher's question,
- connect events that take place over time (take turns over several days with a desirable toy),
- relate an early part of story to the end of story (listen to a storyteller), and
- make sense of a string of words or a string of sentences in a storybook.

Older preschool children employ their working memory when they watch puppets demonstrate acts of kindness and then answer questions about similar acts of kindness in which they have engaged, for example.

Cognitive flexibility, the most complex of the three core executive functions, allows older preschool children to:

- think outside the box when overcoming an obstacle to a goal,
- take advantage of unplanned events that could help achieve a goal,
- generate creative solutions to a challenge, and
- empathize with other children by viewing the situation from their perspectives.

In this example, two preschool children are engaging in cognitive flexibility. The children have quarreled over who wears a pair of gloves. The teacher offers the common solutions of taking turns wearing the gloves, or wearing similar pairs. But the children create a unique solution—each child wears one glove.

In reality, the three thinking processes work together so that older preschool children can set a goal, create a workable plan for achieving the goal, carry out the plan, modify the plan as needed, and remain goal-oriented until the plan is finished (Center for the Developing Child at Harvard 2011). Older preschool children can also generate solutions to problems they encounter and reason why the solutions are or are not successful. They can later recall their modified solution and apply it to subsequent, similar situations.

For example, older preschool children in the block

center set the goal of creating racetracks that intersect in the middle of the block center. The children spend 20 minutes creating racetracks, but once they begin racing their cars, they find that there are frequent crashes at the intersections. With teacher assistance, they are able to reason that they could use bridges at the track intersections to avoid crashing cars. They use block arches to symbolize the bridges and play with their modified racetrack until clean-up time.

## Teacher strategies for enhancing executive functions

As indicated in the above example, older preschool children improve their executive functions when caring adults support their practice of inhibitory control, working memory, and cognitive flexibility during play throughout the day. As with other developmental processes, executive functions result from the interplay of nature (brain development, physical health) and nurture (interactions with the environment, teachers, parents, and peers).

Adele Diamond (2012), who has written extensively about supporting the unfolding and maturation of children's executive functions, suggests that adults provide older preschool children concrete reminders of desired behaviors. For example, a teacher can support pairs of older preschool children in exercising inhibitory control when they are taking turns telling stories. The child in the listener role is given a card imprinted with the outline of an ear as a reminder that ears listen; they don't talk. In a program designed to encourage improvement of executive functions, a teacher helps children learn different ways to act when angry or upset. Rather than impulsively striking out at a peer, children can hug themselves—be a turtle—as a concrete reminder to think about alternatives to hitting.

Diamond (2012) also advises that older preschool children need lots of practice in order to improve their executive functions. Teachers can provide this practice throughout the day by encouraging children to engage in play activities that require the use of cognitive inhibition, working memory, and cognitive flexibility. Sociodramatic play with peers is rich with such opportunities.

For example, children exercise inhibitory control when they choose to engage in dramatic play with peers, determine the theme of the play, choose a role

and stay in character (without being distracted and acting out of character), and sustain interest in the play. They practice cognitive flexibility when they take the perspective of the role they have chosen and keep in mind the perspective of the other children's roles. They also engage in cognitive flexibility when they modify the play theme to accommodate the addition of other children to the play. They use working memory when they remember the theme of the play and pull pertinent ideas from their experiences, knowledge, or imagination.

Some older preschool children will readily engage in sociodramatic play, while others need help. To be effective coaches, teachers must first be familiar with the play skills of the children in their preschool classrooms, which requires ongoing observations. For example, teachers will want to observe to discover which children watch and hover around group play without ever joining as well as which children rush in, disrupt the play, and annoy peers.

Teachers can coach older preschool children to use their core executive functions to observe, analyze, and then enter the play. For example, Sarah usually bursts into the play of other children and demands changes in the theme. Ms. Myer, the teacher, can approach Sarah and draw her outside the play but within close viewing and hearing distance. Ms. Myer acknowledges Sarah's desire to play, briefly summarizes observations of the unsuccessful play entry attempt, and offers a suggestion: "Let's watch what the children are playing. They are pretending that

the block enclosure is a castle and that they are princesses, knights, dragons, and horses." After talking about the content of the sociodramatic play, Ms. Myer suggests ways Sarah can become a part of the ongoing play. "Look! The horses are hungry. Here's some hay (several unit blocks). Let's feed it to the horses." Ms. Myer approaches the play group with Sarah and says, "The horses are hungry. Sarah has some hay to feed them. Which horse should she feed first?" Ms. Myer then observes whether the coaching suggestions are successful. If not, she and Sarah can watch the play again and look for another way to enter the ongoing play.

## TYPICALLY DEVELOPING PRESCHOOL CHILDREN HAVE THE INNATE POTENTIAL TO DEVELOP EXECUTIVE FUNCTIONS.

Teachers can use a similar coaching strategy to facilitate the entry of a child hesitant to join the play. In this case, the teacher can use open-ended questions to draw out the child's observations: "Rudy, what are the children pretending? Who is Max pretending to be? What is Aida doing?" Once the child has analyzed the play, the teacher can ask, "Who would you like to be?" or "What could you do that's like what the other children are doing?" When Rudy points to the horses, the teacher could say, "You would like to be one of the horses? Maybe you could be a lost baby pony who is looking for his mommy and daddy. We could ask the horses if they are missing a baby pony." The teacher could then pretend to be a horse, and prance with the child toward the group: "Hello, I found this lost baby pony. He is looking for his mommy and daddy. He wants to join your herd so other horses can take care of him while he searches for his parents." The teacher may need to stay in character, modeling for the hesitant child how to interact with the other horses. Effective teachers would continue coaching children like Sarah and Rudy until they can successfully enter ongoing sociodramatic play on their own.

Teachers may find that the older children in the classroom (5-year-olds) will begin coaching the

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younger children (4-year olds) about how to enter the sociodramatic play. For example, 5-year-old Moses is adept at sociodramatic play, often determining the play theme and, with the other children's unspoken agreement, directing their pretend play. In contrast, 4-year-old Justin, often bursts into ongoing play and tries to introduce a character irrelevant to the play theme. One afternoon, after teachers have shared several unsuccessful coaching attempts, Justin approaches the block castle and again announces, "I'm a shark. I'm going to eat you!" Several of the children shout in exasperation. As the teacher approaches Justin to distract him to another play area, Moses walks up, puts his hands on Justin's shoulders, looks at him eye-to-eye, and firmly states, "Justin, listen. There are no sharks. You are a horse. Go over there with the other horses." Justin hesitates and then runs to where he has been directed. He pretends to be a horse for the rest of the play period.

## **Sociodramatic play can nurture executive functions**

Sociodramatic play provides fertile ground for nurturing the blossoming executive function skills of older preschool children. Due to the nature and content of dramatic play with peers, it offers multiple opportunities for children to use the thinking skills of inhibitory control, working memory, and cognitive flexibility. These thinking skills are essential to children's current and future well-being.

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## **About the author**

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