



## **“Do This” Doesn’t Cut It: Helping children with autism learn to imitate**

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Two years ago, in our October 2012 WigWag Minute issue, I wrote about working on imitation with children with autism. I summarized two articles which highlight the importance of “contingent imitation” (imitating what the child is doing), as well as providing principles for helping children imitate others.

This topic is worth re-visiting two years later as imitation continues to be underscored as a pivotal developmental skill for children with autism, on which many social communicative behaviours are dependent. A recent study by Poon, Watson, Baranek & Poe (2012) found considerable delays in imitation and play skills in infants with autism as early as 9-12 months of age. Furthermore, children in their study who demonstrated higher levels of imitation, object play, and joint attention as infants were more likely to have stronger communication and intellectual skills in the preschool and school age years.

A key researcher in the area of imitation in autism is Brooke Ingersoll, a psychologist from Michigan State University. Ingersoll developed “Reciprocal Imitation Training” (RIT), an approach to teaching children with autism to imitate in social-interactive contexts, that is based on naturalistic behavioural and developmental strategies (Ingersoll, 2012). The bulk of the content of this article comes from Ingersoll’s body of work regarding imitation in autism.

Before going any further, take the imitation quiz below to see how much you know about imitation with regards to children Autism:

### **Imitation Quiz**

1. Imitation is a social skill. TRUE/FALSE
2. The primary developmental function of imitation in infancy is to help the infant acquire new information and skills. TRUE/FALSE
3. In Autism, children develop joint attention skills before learning to imitate. TRUE/FALSE
4. Teaching imitation skills to children with autism can result in improvements in other social skills. TRUE/FALSE

5. Imitation is an important intervention target for young children with autism. TRUE/FALSE
6. Imitation can only be taught through discrete trial training methods. It cannot be taught via more naturalistic interventions. TRUE/FALSE
7. Imitating actions with objects (e.g. banging on a drum with a stick) is easier for children with autism than imitating actions without objects (e.g. clapping hands or gestures like waving). TRUE/FALSE

The answers to the quiz will be revealed below as you read on.

## The social function of imitation in typical development

Imitation emerges early in typical development. Early interactions between babies and their caregivers are often characterized by mutual imitation of each other's vocalizations and facial expressions. This back-and-forth imitation helps infants learn to:

- express interest in a social partner
- develop shared affect
- engage in turn taking (Ingersoll, 2008)

Typical infants begin to imitate their caregiver's actions with toys and objects by the end of the first year, and imitate affective gestures during the second year of life (Ingersoll, 2008). As toddlers, children have interactions by imitating each other's actions with objects, and this increases during early childhood. Therefore, imitation is used throughout infancy and early childhood to convey social interest, engage in social exchanges, and further develop a child's social communication abilities (Ingersoll, 2008; 2012).

Imitation is commonly thought of as a mechanism through which children learn new skills and acquire new information. And certainly this *learning function* of imitation continues to help us learn new behaviours throughout our lifetime. Just yesterday, my personal trainer introduced a new exercise, which I only mastered after I imitated her demonstration. But equally important is the other function of imitation, which is the *social function*. This social function allows children to engage in reciprocal social exchanges with caregivers and peers and lays the foundation for later social competencies. According to Ingersoll (2008), "it is through this social use of imitation that typically developing infants acquire the social communication skills that are found to be deficient in children with autism" (p. 107). And it is this social function which is often neglected in many current approaches to imitation intervention.

### Answers to quiz questions 1 and 2:

1. Imitation is a social skill  
TRUE
2. The primary developmental function of imitation in infancy is to help the infant acquire new information and skills  
FALSE There are two functions – a learning function and a social function.

## Imitation in Autism

Children with autism evidence significant difficulties with imitation, including imitating actions with objects, gestural imitation, and vocal imitation. Some researchers have suggested that imitation may be a core deficit in autism, and that this deficit has a profound impact on learning and development, including the development of social communication skills (Ingersoll & Schreibman, 2006). Ingersoll (2012) explains that “although it has yet to be established whether imitation deficits are a cause or a consequence of social impairment in autism, a number of studies have found a significant relationship between imitation and other social behaviours in children with autism” (p. 1768). For example, (Ingersoll, 2006 & 2008):

### Links between imitation and other social behaviours

- Gestural and motor imitation skills predict **language outcomes**
- Gestural imitation skills predict **communicative gesture use**
- Object imitation skills are correlated with the development of **play skills**
- Children with autism demonstrate less imitation of other children’s actions than typically-developing children. This affects their **peer play**, which is heavily dependent on reciprocal imitation with toys.
- Object imitation precedes the development of **joint attention** (this pattern is the reverse of what happens in typical development)
- Object and oral imitation are correlated with **initiating joint attention**

Furthermore, improvements in joint attention skills have been shown to result in improved object imitation (Whalen, Schreibman, & Ingersoll, 2006). Therefore, there may be a reciprocal relationship between joint attention and imitation skills in autism, whereby improvements in one area may support improvements in the other. Ingersoll (2008) hypothesizes that relationship may exist because both object imitation and joint attention behaviours involve triadic engagement (between child, caregiver, and object).

Ingersoll highlights the impact of the imitation deficits observed in children with autism:

“...since imitation serves both as a learning tool and a social strategy, its disruption is likely to have a profound effect on learning and development” (2008, p. 110).

Due to its significant impact on children’s development, many researchers have suggested that imitation is an important focus of intervention for children with autism, and that teaching imitation should result in broader improvements in children’s overall social functioning (Ingersoll, 2008, 2012).

### Answers to quiz questions 3, 4 and 5:

3. In Autism, children develop joint attention skills before learning to imitate.

FALSE Children with Autism develop object imitation before joint attention.

4. Teaching imitation skills to children with autism can result in improvements in other social skills.

TRUE

5. Imitation is an important intervention target for young children with autism

TRUE

## “Do This” doesn’t cut it

Ingersoll (2008) explains that one of the most commonly used methods for teaching imitation skills to children with autism is discrete trial training (structured behavioural approaches). In this approach, imitation is taught in a highly structured, adult-directed environment. Imitation is broken down into smaller subskills and drilled over successive trials. The prompt “Do this” is often used to cue the child to imitate the adult’s actions, and reinforcement is provided.

While discrete trial training can successfully teach verbal and nonverbal imitation skills within the structured environment, Ingersoll (2008) highlights three reasons why this method has received some criticism for teaching imitation:

### Criticism of discrete trial training for imitation

- **poor spontaneous use of skills** due to the highly structured and adult-directed teaching environment
- **poor generalization** due to the use of artificial reinforcement
- **imitation is taught in isolation**, and not within the context of other co-occurring social communicative behaviours. This is unrepresentative of naturally occurring adult-child interactions.

Discrete trial training targets only the **learning function** of imitation, and not the **social function**. This means that it may not serve as a stepping stone for building other social communication skills. Ingersoll (2008) suggests that intervention which targets the *social use* of imitation may be more effective in promoting spontaneous imitation that generalizes, and lays the foundation for other social communication skills. She explains that “naturalistic interventions, with their focus on child motivation, may be more likely to increase general imitative capacity than highly structured approaches...” (2011, p. 430). This was the impetus for the development of Reciprocal Imitation Training (RIT).

### Answers to quiz question 6:

6. Imitation can only be taught through discrete trial training methods. It cannot be taught via more naturalistic interventions.

FALSE

## Teaching the social function of imitation

Ingersoll’s Reciprocal Imitation Training (RIT) is a naturalistic behavioural intervention which was designed to teach the social use of imitation to children with autism (Ingersoll,

2008). The idea of RIT is to teach imitation within social interactions with an adult. Several strategies are used within RIT, including (Ingersoll, 2008):

#### **Naturalistic strategies used during RIT**

- **Contingent imitation** – the adult starts by imitating the child's actions, gestures, and/or sounds during play using duplicate sets of toys (so the adult has his or her own version of the child's toy). This strategy enhances the child's responsivity and helps the child attend to the adult.
- **Linguistic mapping** – the adult describes what the child is doing using simple language while imitating the child
- **Modeling** – once the child has noticed that the adult is imitating him, the adult demonstrates a familiar action with the child's object (an action that the child has produced before). By modeling actions that are directly related to the child's current play, it increases the child's natural motivation to imitate the action. Once the child can imitate familiar actions, the adult models novel actions related to the child's object of interest. The adult models a variety of interesting actions so that the child is interested and motivated, and to promote generalization.
- **Social praise and contingent imitation** – these social reinforcers are used any time the child attempts to imitate, even if it is not completely accurate. The attempt is more important than the accuracy of the imitation.
- **Prompting** – if the child doesn't imitate the adult's model, the adult models the action and uses a verbal marker that describes it (e.g. "vroom" or "the car is going fast!"). The adult doesn't use specific commands like "Do This" or "Push the button" to avoid the child becoming prompt dependent. Instead, the adult's verbal model draws attention to the action. If the child doesn't imitate after three adult models, the adult uses physical prompting (hand-over-hand) to help the child imitate.

Object imitation is targeted before other forms of imitation because it is easier for children with autism and more intrinsically motivating (Ingersoll, 2008). It has been suggested that object imitation is easier because the range of possible movement is constrained by the object (Ingersoll & Meyer, 2011).

Ingersoll and her colleagues have conducted several studies evaluating the effectiveness of RIT, in which RIT was delivered during 1-hour sessions, two or three times per week for 10 weeks.

These studies show that RIT:

- **increases object imitation** (Ingersoll & Schreibman, 2006). Improvements were maintained at 1-month follow-up. Furthermore, the children increased their use of imitative language, joint attention, and pretend play.
- **increases gestural imitation** (Ingersoll, Lewis, & Kroman, 2007). Gains were maintained at 1-month follow up, and generalized to novel environments. Furthermore, some of the children also demonstrated improvements in their spontaneous use of gestures.
- **increases object or gestural imitation when delivered by parents** (Ingersoll & Gergans, 2007)



- **improves elicited and spontaneous imitation** (Ingersoll, 2010)
- **improves joint attention and social-emotional functioning** (Ingersoll, 2012). Social-emotional functioning was assessed via the Bayley Scales of Infant Development (Bayley 2005), which looks at self-regulation, interest in the world, communicating needs, engaging others, establishing relationships, and using emotions in a purposeful manner. However, mediation analysis did not reveal whether these gains were due to improvements in the children's imitation. Ingersoll hypothesized that improvements could be due to the intervention's effect on some other behaviour.

The work of Ingersoll and her colleagues demonstrates that imitation can be taught using naturalistic methods, with collateral effects on children's social and communication functioning.

### Answer to quiz question 7:

7. Imitating actions with objects (e.g. banging on a drum with a stick) is easier for children with autism than imitating actions without objects (e.g. clapping hands or gestures like waving).

TRUE

## Hanen's spin on teaching the social function of imitation

The extant literature about imitation, its social function, and its importance as a target for young children with autism has influenced the development of a new Hanen resource which will be published this fall. The second Make Play ROCK™ booklet, titled "Take out the Toys: Building Early Toy Play for Children with Autism Spectrum Disorder and Other Social Communication Challenges" by Fern Sussman and Elaine Weitzman, includes a major focus on imitation which goes somewhat beyond how imitation and play are addressed in the More Than Words® guidebook (Sussman, 2012).

*Take out the Toys* describes a method that parents can use to encourage their child to imitate functional play actions with toys. Functional play involves engaging with toys in expected or conventional ways, such as pushing a toy car, stacking rings or blocks, or putting shapes in a shape sorter. These are not symbolic/pretend actions. By teaching children to imitate some simple, functional actions with toys, adults are helping them develop object imitation skills, expand their toy play repertoire, learn to engage with toys within naturally-occurring social interactions, and possibly even develop symbolic play skills. Some research has shown that object imitation is uniquely correlated with symbolic play (e.g. Toth, Munson, Meltzoff, & Dawson, 2006; Ingersoll & Meyer, 2011).

The focus of *Take out the Toys* is on building cued imitation of functional toy play, gradually facilitating spontaneous imitation and eventually more spontaneous, appropriate toy play. This is accomplished by teaching parents to:

- observe their child's functional play, including their actions with toys and objects
- determine their child's stage of functional play

- think about next steps for their child (e.g. imitating a new functional play action, imitating an existing functional action on a variety of toys, imitating combinations of functional play actions)
- ROCK their child's functional play. The acronym ROCK in this context stands for:
  - Repeat (imitate) the child's actions – parents start by imitating what their child is doing to get an interaction going; and then
  - Repeat the new “play step” which the child will learn to imitate
  - Offer the child an opportunity to imitate the action
  - Cue the child to imitate - parents wait about 10 seconds to see if their child will imitate on their own before providing hand-over-hand help. Verbal prompts (telling the child what to do) are not used so that the child does not become prompt dependent.
  - Keep the play fun and keep it going – by showing enthusiasm and commenting about what the child has done.

By following their child's lead and building on toys and objects in which their child shows an interest, parents can help their child learn to imitate a variety of functional actions with toys. This will expand the child's play skills and set the stage for the development of other social communication skills.

### **In summary . . .**

Teaching children to “Do this” doesn't cut it when it comes to teaching the social function of imitation. But by using contingent imitation to start the interaction, having toys in which the child is interested, giving social reinforcement and hand-over-hand help that provides a motor plan for the action, we can teach the social function of imitation in our naturalistic interventions. And by empowering parents to teach this pivotal skill in this way, we build on the child's motivation to engage with his parents, and facilitate the generalization of these critically important skills.

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