

Treatment Strategies for Young Children with Suspected CAS

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Speaker Disclosure

- Financial Disclosure: Cari Ebert owns Summit Speech Therapy, LLC/Cari Ebert Seminars and draws a salary. She receives royalties from product sales on her website. Ms. Ebert also receives compensation from CASANA for presenting this course.
- Nonfinancial Disclosure: Cari Ebert has a son with autism and apraxia and shares her personal experiences in her seminars.

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Learning Objectives

At the end of this course participants will be able to:

1. Recognize how motor planning therapy differs from traditional therapy approaches typically utilized in early intervention
2. Outline ten motor planning treatment goals for use with very young, minimally verbal children with suspected childhood apraxia of speech (SCAS)
3. Give examples of developmentally appropriate motor planning activities that focus on enhancing repetitive speech practice without using flash cards or drill work

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sCAS: The Challenge for SLPs

Clinical reasons why very young, minimally verbal children with suspected childhood apraxia of speech (sCAS) can be challenging to treat:

- Child may not have a firm diagnosis of CAS
- Child is not yet a willing participant in therapy
- Child may have fleeting attention and minimal time on task
- Child is not a communication risk taker

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- Receptive language is usually a strength for the child and is naturally easier to address in therapy
- Traditional play-based therapy that focuses on language stimulation is often ineffective in eliciting speech
- Therapy with these young clients must be based on the principles of motor learning and some SLPs have not received extra training in this area

(an excellent resource is a 2008 journal article by Edwin Maas and colleagues titled "Principles of Motor Learning in Treatment of Motor Speech Disorders"
https://faculty.unlv.edu/wpmu/gwulf/files/2014/05/Maas-et-al_AJSLP-2008_PML-tutorial.pdf

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First Things First

- Before we begin to address the motor speech issues, the SLP needs to work closely with the family to establish an immediate form of functional communication
- Gestural communication/sign language, picture communication or a combination of both
- If the child has strong gross and fine motor skills, then sign language might be a viable option; if gross and fine motor imitation skills are weak, then picture communication is a more developmentally appropriate choice

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IFSP Outcome Example

- *Carlos will use signs, pictures and/or words to communicate what he wants to play during center time at daycare, 3 days per week, for a period of 4 weeks.*

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Now the Motor Planning Therapy Can Begin

Repetition of appropriate interactions will help the brain reinforce existing synaptic connections & make new ones

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Questions to consider:

1. How much repetition?
2. What are "appropriate interactions" for young children?

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Make Learning to Talk Fun & Functional: Appropriate Interactions

- Young children learn best through play that is relevant and meaningful to their life – not through direct instruction, flash cards or drill work
- Young children learn through their senses – they learn by doing, by experiencing
- Young children learn best in context
- Focus on embedding motor planning strategies into naturally occurring routines and activities

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Therapy Should be Based on the Principles of Motor Learning

Because speech is a motor skill, the research on motor learning provides critical information on best practices for therapy with children with motor speech disorders.

Motor Learning: The process of acquiring a skill by which the learner, through practice and assimilation, refines and makes automatic the desired movement.

- Medical Dictionary for Health Professions and Nursing 2012

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Principles of Motor Learning in Treatment of Motor Speech Disorders

(Edwin Maas et al 2008)

Motor learning is related to several factors:

1. Pre-practice
2. Structure of practice
3. Stimulus selection
4. Nature of feedback

Performance vs. Learning: There is a distinction between motor performance during skill acquisition (temporary change during the therapy session) and motor learning (transfer and generalization outside of therapy)

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Neural Pathways

Purpose of motor planning therapy is to build new neural pathways or fix existing ones & teach these children HOW to talk



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Speech = Motor

- Speech requires rapid and accurate alternating movements of the articulators
- Dr. Lof reminds us that kids with CAS don't have strength issues, they have movement issues – these kids don't need strong articulators, they need agile articulators (speed and agility; rapid and accurate alternating movements of the articulators)

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MOTOR PLANNING TREATMENT GOALS FOR MINIMALLY VERBAL CHILDREN WITH SCAS

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General Goals of Motor Planning Therapy

- Turn the child into a communication risk taker
- Design activities that allow the child to have some immediate success
- Make learning to talk fun, not stressful
- Make therapy engaging by focusing on the relationship
- Establish a relationship with the child based on trust
- Involve the parents

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Goal 1

Establish Eye Contact with Speaker

- a. If child avoids watching the speaker's mouth this must be addressed early on in the therapeutic process
- b. Encourage speakers to hold desired items next to their mouth to elicit eye contact from the child
- c. Use over-exaggerated facial expressions and an animated voice to increase eye contact from child; the gasp can also be very effective

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- d. Sit face to face with child during play time
- e. Seat child higher than adult to naturally elicit eye contact



- f. Wait for eye contact before reinforcing the child with desired item
- g. Read books with child facing the adult (Barbie book video)

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Barbie Book Video

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- h. Elicit indirect eye contact with use of a mirror – suggest a door mirror hung horizontally on the wall at the child’s eye level – playfully interact using the mirror as a surface for play (window gel clings, washable markers)



- i. Child may avert eye gaze when pressured to speak, so remove the pressure and the eye contact will improve – avoid instructing the child to say words (this is not = to poor eye contact in children with ASD which is due to poor social referencing)

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IFSP Outcome Examples

- *Joe and Elise will learn and use strategies to get Everett to look at them when they talk to him during meal time and when reading books with him.*
- *Madison will look at her caregiver’s 3 times per day, for 5 consecutive days when they say “milk” at meal or snack time.*

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Goal 2

Improve Gross & Fine Motor Imitation Skills

- a. This is important because gross and fine motor imitation skills precede verbal imitation skills
- b. Motor planning therapy is *"do as I do, say as I say"*
NOT *"do as I say"*
- c. Explain the purpose and relevance of working on gross motor and fine motor imitation skills – children imitate what we do before they imitate what we say (imitation skills hierarchy: object imitation, gross and fine motor body imitation, oral motor imitation, vocal imitation, verbal imitation)

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- d. This is indirectly related to learning to talk
- e. Examples of motor imitation targets:

Clap hands	Stomp feet
Blow a kiss	Wave bye-bye
Bang blocks	Knock on door
Fly a toy airplane	Fly like an airplane
Knock blocks down	Push toy car
A-choo game	Make toy animals walk
Stir with a spoon	Blink eyes
Pound a hammer	Roll a ball
Jump	Gesture for "be quiet"

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- e. Songs and finger plays with actions can be valuable tools for developing gross and fine motor imitation skills
 - Early on, the focus is on the actions
 - Be sure not to over-prompt the child with excessive hand-over-hand assistance because motor learning requires active participation
 - "Total hand-over-hand assistance inhibits motor learning." Kashman & Mora
 - Preferred songs and finger plays can be highly motivating for young children
 - They can promote fun adult-child interactions while encouraging imitation skills

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Suggested Songs and Finger Plays

- Teddy Bear, Teddy Bear
- Row, Row, Row Your Boat (additional verses)
- Wheels on the Bus/Animals on the Bus
- If You're Happy & You Know It
- Baby Bumblebee
- Twinkle Twinkle Little Star
- Itsy Bitsy Spider
- Head, Tummy, Knees & Toes
- 5 Little Monkeys Jumping on the Bed

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Teddy Bear

Teddy Bear Teddy Bear Turn Around
Teddy Bear Teddy Bear Touch the Ground
Teddy Bear Teddy Bear Show Your Shoe
Teddy Bear Teddy Bear That Will Do

Teddy Bear Teddy Bear Go Upstairs
Teddy Bear Teddy Bear Say Your Prayers
Teddy Bear Teddy Bear Turn Off the Light
Teddy Bear Teddy Bear Say Good-Night

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IFSP Outcome Examples

- *Alexis will imitate five or more actions when singing her favorite songs with her caregivers 3 days per week for 2 consecutive weeks.*
- *Marco will imitate 5 different actions when singing songs with peers during circle time 2 days per week for 4 consecutive weeks.*

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Goal 3

Increase Awareness of Articulators

- a. Mirrors are critical for increasing awareness of lips, tongue and jaw (children with poor oral awareness may drool)
- b. Provide access to a non-breakable, self-standing speech mirror (\$13.99 each at www.quill.com Item #901-JV36828)
- c. Chapstick increases awareness of lips
- d. "Blah" game increases awareness of tongue



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- e. For children who have never gone through a period of oral exploration, consider creating a "Biter Bucket" filled with objects that are safe and stimulating for the mouth to increase oral awareness
 - Vibrating toothbrush
 - Chewelry
 - Ps & Qs
 - Icemaker tubing



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Goal 4

Increase Vocalizations

- a. We need to help silent toddlers find their voice ("turn your motor on") – first step in becoming a communication risk taker
- b. Vocalize into an empty bucket, echo microphone, megaphone, paper towel tubes, kazoo
- c. Have child say "ahhh" while playing with a toy doctor kit and small flashlight
- d. Other verses to Row Row Row Your Boat (to elicit scream & roar)

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Additional Verses to Row Your Boat

Row, row, row your boat
Down the jungle stream
If you meet a crocodile don't forget to scream!
AAAHHHHHHHHHH!!

Row, row, row your boat
Gently back to shore
If you meet a lion
Don't forget to roar! ROOOOAAARRR!

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f. Focus on non-speech movements and sounds (vocal play)

- Open and close mouth (use puppets/oven mitts)
- Tongue clicking
- Blow raspberries (lip and tongue)
- "Indian" sound (not a politically correct term)
- Blalling
- Kissing sound



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IFSP Outcome Example

- *Oscar will engage in vocal play by imitating 5 different non-speech movements and sounds when playing with his caregivers, 4 days in 1 week.*

This is a great outcome for that silent child who rarely turns his voice on.

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Goal 5

Establish Variety of Sound Effects

- a. Sound effects are a fun and effective way to:
 - elicit intentional sounds
 - transition from pre-speech to speech sounds
 - develop vocal imitation skills
 - practice moving articulators
 - develop prosody (the melody of speech)
- b. 4 categories of sound effects: animal sounds, vehicle sounds, exclamations, other sound effects

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1. Animal Sounds

oo-oo-ah-ah (monkey)

roaarr (lion/dinosaur)

*pant/woof (dog)

meow (cat)

*bubble sound (fish)

moo (cow)

neigh (horse)

trumpeting (elephant)

giraffe (tongue wag)



baak baak (chicken)

tweet tweet (bird)

baa baa (sheep)

hoo hoo (owl)

ssssss (snake)

quack quack (duck)

oink (pig)

bzzzzzz (bee)

seal (arrpppp)

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First Animal Sounds

First animal sounds to introduce to minimally verbal children to increase awareness of their articulators

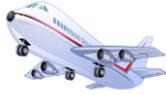
1. Fish
2. Dog
3. Giraffe

WHY?

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2. Vehicle Sounds

Siren (police car, fire truck)
Vroom, brmmmm (car sounds)
Beep beep
Honk honk
Choo choo
Airplane sound



Pair sounds with actions during play time
Be playful & animated

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3. Exclamations!

These words have distinctive pitch patterns and a strong emotional component:

Whee!	Ta daa!
Boom!	Boo!
Uh-oh!	Yuck!
Yeah!	Wow!
Oops!	Whoa!
Oh no!	Ow!
Oh man!	No no!
Pee-u!	I did it!



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4. Other Sound Effects

Drinking/slurping sound
Tick tock (clock)
Sneezing
Pretend crying
Shhhhhh (quiet sound)
Eating sound
Drinking sound
Snoring
Grunting
Coughing, sighing, giggling



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IFSP Outcome Example

- *Lupita will produce 10 different sound effects when looking at books with her caregivers, 3 days in 1 week.*

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Goal 6

Establish Phonemic Repertoire

- This is not appropriate for kids who are already verbal – but it is a crucial step when working with young children who have a limited repertoire of speech sounds
- *This goal is NOT supported in the literature* - motor planning therapy should be based on sequencing sounds together – however, these very young children often don't have any sounds to sequence yet so this goal helps to establish phonemes

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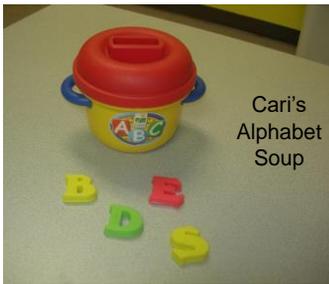
- Need to teach child how to use his jaw, lips and tongue to make speech sounds - focus on eliciting new movements with the articulators
- Meet the child where he or she is at – select sounds the child has success with (not necessarily earliest developing speech sounds)
 - If the child's "go-to" sound is "kuh" - then it makes sense to start with back sounds such as /k/, /g/, /h/
- At this point the child is unable to sequence sounds together/coarticulate, so we take the sounds in isolation and begin to string them together
 - Rome "u-p" video

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Rome "u-p" Video

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- e. "Alphabet Soup" is a successful activity for eliciting speech sounds in isolation



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Alphabet Soup

- Toddlers love to put in, dump out and do it again
- Gather refrigerator magnet letters and a container with a lid – make an opening in the lid so the letters will easily fit into the container (don't use "Q" or "X")
- Dump all the letters into your lap, take one letter, hold it next to your mouth and say the speech sound (NOT letter name), pause and allow opportunity for a response
- Allow the child to put the letter into the container (whether she says anything or not)
- Repeat with other letters as long as child is interested

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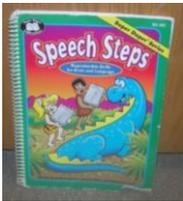
Goal 7

Establish Vowel Differentiation

- a. Move rapidly from speech sounds in isolation to simple syllable shapes, focusing on the vowels (vowels carry the intelligibility of the word)
- b. Do not inadvertently reinforce overuse of the neutral vowel "uh" (duh-duh-duh-down)
- c. Once child can say "buh" we want "bay, bee, buy, bow, boo"
- d. Begin shaping single word approximations with consonants and vowels with which the child has success

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- e. Speech Steps and Word Flips are two commercial products available that focus on CV combinations with the emphasis on vowel differentiation (both are available at www.superduperinc.com) – these products are good for speed and agility training (but may be difficult to use with very young children)



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Goal 8

Establish Syllableness

- a. Single syllable utterances (ma, da, pa)
- b. Reduplicated utterances (mama, dada, papa)
- c. Two syllable words with same consonant and changing vowel (puppy, baby, daddy, mommy)
- d. Two syllable words with changing consonant and vowel (monkey, happy, dino, hippo, potty)
- e. 3 syllable utterances (my baby, go bye-bye)
- f. 4 syllable utterances (blowing bubbles)

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- g. Rhythm sets the stage for syllableness so incorporate rhythmic activities such as marching, stomping, clapping, and rhythm sticks (wooden spoons work well too!)



- h. Try pacing boards, blocks or other visual cues to show syllableness
- i. Use the phonemic break to establish success between reduplication and CVCV (example: ma, mama, ma-mee, mommy)

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Goal 9

Establish Functional Core Vocabulary

- a. Once the child has a few phonemes and some level of syllableness, select 5 target words
- b. Target words will not be the same for each child
- c. Family should help identify target words/core vocabulary words
- d. Core vocabulary words should be functional, high frequency words that are relevant and meaningful to the child

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- e. Core vocabulary of words should not be chosen based on word shape (e.g. CV, CVC) or by phoneme (e.g. /b/ words), but rather based on how functional they are
- f. Examples of early functional core vocabulary words: child's name, "mama/dada," siblings' names, pets' names, friends' names, favorite foods, favorite toys, & other power words (e.g. *no, mine, help*)
- g. Teach the child how to say approximations of these target words (we need some early success)
- h. Because the words are high frequency words, the child should get lots of repetition at home too

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- i. Consider creating core vocabulary word books using a small photo brag book and 4x6 photos of the target words
 - Picture This... is a CD of real photos that can be used to create core vocabulary cards for families (can also use Google images)
 - Picture This... can be purchased through www.beyondplay.com and it can print labels in English, Spanish, German, Italian or French
 - For bilingual families, you can create a bilingual core vocabulary word book by placing the same photo on adjacent pages and using the English word on one side and the Spanish (or other language) word on the other side

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Goal 10

Move Language Forward

- a. We must always work on speech **AND** language with these kids
- b. We need to focus on moving language forward even though speech production skills are delayed
- c. If we don't move language forward until the child has perfectly produced single words, the child could be in kindergarten & still at the single word level
- d. We teach speech skills in the context of simplified language (with appropriate grammar)

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- Recent ASHA Leader (Jan 2017 issue, pages 42-47) had an article on this topic called *"When is Simplified Too Simple?"* and it provided evidence to support using simplified, but grammatically correct language when helping young children learn to talk (simplified vs. telegraphic input)
- Example:
 - Telegraphic input "Open door"
 - Simplified shorter: "Open"
 - Simplified longer: "Open the door"

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- e. Teach child to say approximations of words and mark every word in the phrase/sentence (example: child says "ba-ma" for "Spiderman" and he also says "doos" for "shoes"; we want him to say "ba-ma doos" for "Spiderman shoes" instead of focusing on perfectly produced single words)
- f. Sight Word Reader Books by Scholastic are helpful for moving language forward



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**FUN AND EFFECTIVE SPEECH
THERAPY ACTIVITIES WITHOUT
DRILL WORK**

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Motor Planning Therapy

Critical Components

1. Opportunity without pressure – need to create opportunities for child to talk but without any pressure to do so – this helps to establish trust between adult and child – avoid instructing child to say specific words (*say dog, say cow, say...*)
2. Use of contextually based auditory bombardment – pairing a sound or word with a predictable action or activity in an intended repetitive manner

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- One of the most important strategies we must focus on early on in the therapeutic process is repetition of target sounds and words - this is contextually based auditory bombardment
- In order to design activities to elicit multiple repetitions, we must select activities that have multiple, identical pieces or parts (the number of available pieces = the potential number of repetitions)
- We should use real objects/manipulatives, not flash cards and the activities should be done in the context of play, not drill work

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Activities for Eliciting Multiple Repetitions (in lieu of drill work)

1. When looking at counting picture books, repeat the object name instead of rote counting "1-2-3-4-5"



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2. When walking up/down the stairs, say "up-up-up" or "down-down-down" instead of counting each stair
3. Use predictable books with repeating phrases and have child fill in the repeated word each time
 "Brown bear, brown bear what do you _____?"
 "I see a purple cat looking at _____."
4. Play with Velcro food saying "cut" each time the slices with the toy knife



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5. Use a muffin tin to elicit 12 repetitions of the target word as the child places 12 identical objects in each opening



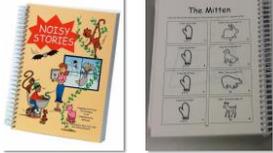
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6. Make boo-boo art by sticking Band-Aids on a piece of paper saying "boo-boo" each time
7. Have toy animals walk, eat and sleep repeating key words "walk-walk-walk, eat-eat-eat, night-night, night-night, night-night"
8. Hammer golf tees into Styrofoam saying "boom boom boom" each time
9. Roll balls down a slide saying "whee" each time
10. Find all the doors in the house knocking on each one saying "knock-knock"



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11. Throw small balls into a basket saying "ball" each time
12. Noisy Stories are designed to elicit multiple repetitions of target sounds and words (available at www.mayer-johnson.com)



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Q & A

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