

CHILDREN WHO MAKE ARTICULATION ERRORS: A GUIDE'S RESOURCE FOR DEVELOPING SPEECH SOUNDS IN A MONTESSORI ENVIRONMENT

by Pam Shanks

Pam Shanks describes the stages in the child's development of language and reminds us that the Montessori principle of observation should guide the support of the child with articulation errors. For most children with developmental articulation delays, the directress can implement Montessori materials and use conversational strategies to emphasize the correct pronunciation of sounds. The clear, succinct, and easy to understand examples make this article valuable to teachers and parents especially of children under six.

Thought is the blossom; language the bud; action the fruit behind it. (Emerson)

Spoken language is central to being human. If language is seen as the basis for thought and thought as the basis for action, then it is easy to see that the development of language is the single most important accomplishment of early childhood. "The child of six who has learned to speak correctly, knowing and using the rules of his native tongue, could never describe the unconscious work from which all this has come. Nevertheless, it is he, *man*, who is the creator of the speech" (*The Absorbent Mind* 115).

Children who struggle with the development of spoken language face added challenges. Reduced ability to converse in the language

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of one's culture makes it difficult to get needs met, prove cognitive development, socialize, follow directions (and therefore be seen as compliant and competent), write words, sentences or stories, solve problems, form plans of action, and negotiate daily life.

The development of language begins before birth. Recent research has shown that "infants begin picking up elements of what will be their first language in the womb, and certainly long before their first babble or coo" (Cell Press). If spoken language is to emerge, several systems must be intact and working in concert to formulate the correct articulation of words (Turnbull, Turnbull, Shank, & Smith). Articulation development assumes an intact hearing system that can take the sound of language to the brain. It also assumes an intact neurological system that can analyze sounds and words and effectively create a motor response. Finally, articulation development requires an intact motor system capable of producing the necessary sounds and sound combinations. But what happens if one of these systems is not intact? How can a child learn to correct persistent articulation errors?

Articulation errors, or an incorrect pronunciation of speech sounds, are the most common of the communication disorders of early childhood (Turnbull et al.). Articulation errors can make spoken language difficult for a communication partner to understand. Articulation errors can occur in isolation (one at a time) or in clusters (multiple errors). Children who make many errors in articulation will be more difficult to understand than children who make only a few. Many of the errors that guides hear daily during classroom conversation are considered "developmental," that is completely within the range of normal development. These kinds of articulation errors will generally correct themselves without outside intervention. In fact, for 75% of children who experience mild to moderate articulation disorders of unknown cause (not due to a neurological or structural cause) the speech sound errors spontaneously resolve by age six (Phonological Disorders). However, some children make so many errors that their speech becomes difficult to understand, reducing intelligibility significantly. This can lead to frustration, isolation and a loss of self-esteem while negatively affecting educational performance (Turnbull et al.).

According to the American Speech, Language and Hearing Association, by eighteen months of age, you should be able to understand 25% of your toddler’s speech. By the age of two, average intelligibility should be 50% to 75%. By age 3, you should be able to understand nearly everything your child says, or 75% to 100%. At age 4, strangers should also be able to understand what your child says and by age 5, despite a few lingering errors, your child should be understood by most people in most situations (Dougherty).

Typical articulation development proceeds in a fairly predictable sequence detailed in the following table (table 1). The table details norms, in this case, the age at which 85% of children included in the test sample produced the listed consonant and consonant cluster sounds. Children who make errors a year or more outside developmental norms, whose errors negatively affect interactions or educational performance and/or whose errors make them extremely difficult

Articulation Development			
By age:	Initial Sound	Medial Sound	Ending Sound
2	b d h m n p	b m n	m p
3	g k t f	f g k n g p t	b d g k n t
4	kw	d	f
5	ch j l s sh y bl	s ch j l sh z	l n g ch j s sh r v z
6	r v br dr fl fr gl gr kl kr pl st tr	r v	
7	z sl sp sw th	th	th

Table 1. Speech sound norms taken from the Golden Fristoe Test of Articulation-2, 2000 (Hanks, 2010)

to understand should be screened for special services (Turnbull et al.). Additionally, children who make articulation errors outside the realm of typical development should be screened for hearing loss. If a child cannot hear clearly all remediation will be much more difficult, whether guided naturally by development or guided by the actions of communication partners.

There are two main types of articulation errors common among children under age eight. One is the deletion of sounds. Deletions can occur in any position in the word and are very commonly heard at the beginning or ending of words and in blends. For example a child who deletes the *s* sound might say *nake* instead of *snake*. A child dropping a final *d* sound might say, *win* instead of *wind*. Finally, a child deleting the *n* sound of the *sn* blend might say, *sow*, instead of *snow*.

...When you “learn to understand” a child new to the classroom after a couple of weeks, your brain begins to automatically fill in the deletions and correct the substitutions, which in turn makes it easier to understand the child. So while the child’s speech or articulation has not improved, your ability to understand the child’s spoken language has.

Another kind of articulation error is substitution. This error occurs when a child substitutes one sound for another. One common substitution is *t* for *k* so that *cat* becomes *tat*. Other common substitutions are *f* for *th* as in “I fink it is mine,” or “I ran down the paf.”

Once an adult recognizes the pattern of articulation errors, the child’s speech can often be translated. This is what happens when you “learn to understand” a child new to the classroom after a couple of weeks. Your brain begins to automatically fill in the deletions and correct the substitutions, which in turn makes it easier to understand the child. So while the child’s speech or articulation has not improved, your ability to understand the child’s spoken language has.

Habituation, however, is not the answer. Adults should not ignore children’s speech sound errors. To begin to help, adults must understand that children who make articulation errors do

not discriminate the error sounds. In order to learn to discriminate troublesome sounds, children must hear the sounds produced correctly over and over again. Repetition can come through normal everyday conversation of course. However, the child whose errors persist beyond when they are expected to fade has not responded to such natural opportunities. Therefore, one key to helping children who make articulation errors is to increase opportunities for the child to hear the sound correctly.

To increase opportunities, begin by actively listening and practicing repeated corrected production. When conversing with children, listen actively for articulation errors in speech. When you hear an error, repeat the child's sentence or utterance with vocal emphasis on the correct production of the sound that is troublesome for the child. Vocal emphasis requires a pause, slightly louder, and slightly longer production of the target sound.

Child: I have a tat at my house.

Guide: Really? You have a ...**c**at at your house? What is the...**c**at's name?"

Child: "His name is Fluffy."

Guide: "My! What a descriptive name for a ...**c**at! Does your ...**c**at feel fluffy?"

In the exchange above, the guide first identified the substitution of *t* for *c* through active listening. Next the guide used vocal emphasis and repeated the word *cat* four times in close proximity to the child's own articulation error. This repeated and corrected pronunciation of the error sound allows the child to hear the sound. The more often the child hears the sound, the more likely it is that discrimination will occur. Active listening and using vocal emphasis when repeating the child's words takes advantage of the child's interests. By listening and talking with the child on a topic of the child's choice, the adult ensures that the exchange will be meaningful and that the child will be engaged and listening.

As noted by Dr. Montessori in *The Absorbent Mind*, speech sound development proceeds in a developmental continuum no matter the simplicity or complexity of the language. Children first learn

to produce sounds in isolation followed by syllables. These stages are commonly known as babbling. An infant’s move to syllables is often celebrated when “Ma-ma” and “da-da” emerge. After syllables, children begin to produce a sound in words. “Ba” becomes bottle, ball, and box. Once they are comfortable producing the sound in words, the child will begin producing it correctly in sentences. This stage is represented when a child can repeat the word *cat* correctly, but reverts back to *tat* when asked to repeat a sentence. The final stage of development is production of the sound correctly in “connected speech.” This means that the child uses the sound correctly throughout all conversation opportunities. The length of utterance does not matter. The child uses the sound correctly in very simple sentences as well as in the paragraph-like sentences connected by and....and...and... so common to young children.

In addition to increasing opportunities for the child to hear error sounds correctly, a guide can actively work on sound production. Classroom work can augment and enhance progress whether or not a specialist is seeing the child. To work on speech sound production, the guide must first make his/her own speech clear. All consonants and vowels must be clearly and purely articulated. For example, the sound for the letter *c* must be only that sound and not a *c/u* combination. *Cuh* is a combination of *c* and *u* and is not the sound for the letter *c*. Similarly, the sound for the letter *p* is airy and not *puh*,

Speech Sound Development	
Stages	The child can correctly produce...
Isolation	...a single sound uttered alone
Syllables	...a sound in combination with other sounds
Words	...a sound in words spoken alone
Sentences	...a sound in words that occur in sentences
Connected Speech	...a sound correctly when conversing and telling stories

Table 2

which is a combination of the sounds for *p* and *u*. To teach sounds, we must be sure we pronounce each clearly and correctly.

Next the guide should determine stimulability. Simply put, we need to determine whether the child can repeat the sound in isolation. If the child can make the sound, then work can happen at the word level. If not, the guide must teach the child how to produce the sound. This is a much more difficult, though not impossible, path.

Speech sounds are produced through combinations of many parts of the mouth and respiratory system. However, there are several keys to production. The first is the position of the tongue. To illustrate this, without allowing your lips to move, say the sound *s* and the sound *sh*. You can make both sounds by moving only the tongue.

The rich language opportunities and natural conversations available in the classroom offer many opportunities for remedial work.

The lips are the second key to speech sound production. The position of the lips is also critical to many sounds. To illustrate this, say the sound for *m* and *u*. Now try producing *m* with your lips apart and *u* with your lips closed. The position of the lips is clearly critical to the correct production of these sounds.

The last key to speech sound production is referred to as *voiced* and *unvoiced*. As the term implies, voiced sounds require the addition of voice to the sound. Examples include the sounds for *c*, *g* and *d*. Unvoiced sounds rely only on air for their production. These include the sounds for *p*, *t* and *s*. To illustrate the difference between voiced and unvoiced, say the sound for *p* (unvoiced) and *b* (voiced). The lip and tongue position is the same for both sounds. The only difference is the addition of voice to the sound for *b*. Such pairs (voiced and unvoiced sounds using the same or similar lip and tongue positions) are commonly substituted. A child might say *bear* instead of *pear* for example. The voiced *b* sound is easier to hear and gets substituted for the more difficult to hear unvoiced *p* sound.

The final key is the position in the mouth where the sound is produced. Some sounds are produced near the front of the mouth with the lips, teeth, and tongue. Some are produced near the back of the mouth using the pallet. To illustrate this key, say the sound for *t*. This is a front sound. Now say the sound for *c*. This sound is produced near the back of the mouth. Children often substitute fronted sounds for back sounds. Common errors that fall into this category are *t* for *c* (*tat* for *cat*) and *d* for *g* (*doddie* instead of *doggie*).

When helping the child learn to say a sound, give instruction based on how you produce the sound. This helps the child learn to use the many parts of their mouth to correctly produce sounds. Following are examples of how to help children target correct sound production:

- For airy sounds like *p*, *s* and *f*: Have the child hold a hand in front of your mouth to feel the air coming out when you say the sound correctly. Then have them try to produce air with their hand in front of their own mouth.
- For back of the mouth sounds like *c* and *g*: Have the child make a coughing sound when trying to produce it. This puts sound production in the back of the mouth and can over time help the child to learn where to make the sound.
- For sounds that require a lot of lip movement like *p* and *b*: Use a mirror to have the child watch your mouth “pop” open.
- For *f*: Have the child gently “bite” the lower lip. This exaggeration of the necessary position will fade as the child learns to produce the sound.
- For *th*: Have the child stick out the tongue. Again, this exaggerated production will disappear as the child learns to produce the sound.
- For *sh*: Have the child push the tongue to the top of the mouth. Again, this exaggerated production will disappear as the child learns to produce the sound.

When the child can say the sound in isolation with ease, work can begin at the word level. Again, remember that at the very least you should be practicing active listening and adding corrected repetition when talking with the child. The rich language opportunities and natural conversations available in the classroom offer many opportunities for remedial work. The guide begins the same way, but adds a model and asks the child to repeat the sound at the correct level of production whether at a word level, a sentence level, or in connected speech. The following are similar examples targeting each level of production. Note the use of added vocal emphasis as a teaching technique.

In isolation

Child: I have a tat at home.

Guide: That's right you do have a ...**c**at at home. Say ...**c**.

At word level

Child: I have a tat at home.

Guide: That's right you do have a ...**c**at at home. Say ...
cat.

At sentence level

Child: I have a tat at home.

Guide modeling the sound: Remember your special sound
Say, "I have a **c**at."

Guide with a prompt only: Can you say that with your
special sound? Or: Be sure to use **c**.

Connected speech

Child: I have a tat at home.

Guide reducing the amount of help: You have a tat?

Child: No, I have a cat at home.

Of course, there are many materials in the classroom that could be used to target speech sound production. One such material is the sandpaper letters. This material offers a natural opportunity to practice sounds in isolation. Guides can easily target sounds that are difficult to produce when choosing sounds, or conversely, limit

those sounds if the child is becoming frustrated. When the child is working at a word level, thinking of words with the target sound together with the child is a natural extension of the activity. Additionally, the words can easily be put into sentences for a child needing practice at that level. Remember to think of words that use the sound in all positions of the word.

ISpy is another activity that easily and naturally supports learning speech sounds. The critical element to remember is that a child who cannot produce a sound in isolation is not discriminating that sound. Understanding this helps a guide to know how to use an object containing a targeted sound. Clearly an object containing a sound that a child cannot articulate should not be the target of I Spy until the child can easily and independently produce the sound at the word level. Begin by asking the child to name each object as it appears in the array. This ensures you know both what a child is calling an object (*kitty* rather than *cat*) and which sounds can be correctly produced (*tat* versus *cat*). When selecting objects and target sounds for a child making the t/c substitution (saying *tat* for *cat*), you cannot “spy” the sound *c* or *t*. You can, however, place a cat in the array of objects. In this way, the child can name the object, work on the sound production at their own level during the naming of the object.



When playing I Spy, plan to use objects that provide articulation error practice. Remember that the misarticulated sound should not be the target sound.

In isolation

Guide: What is this?

Child: A tat.

Guide: It is a ...**cat**. Say ...**c**.

(Cannot spy an object with the “c” or “t” sound.)

Continue with the game.

At word level

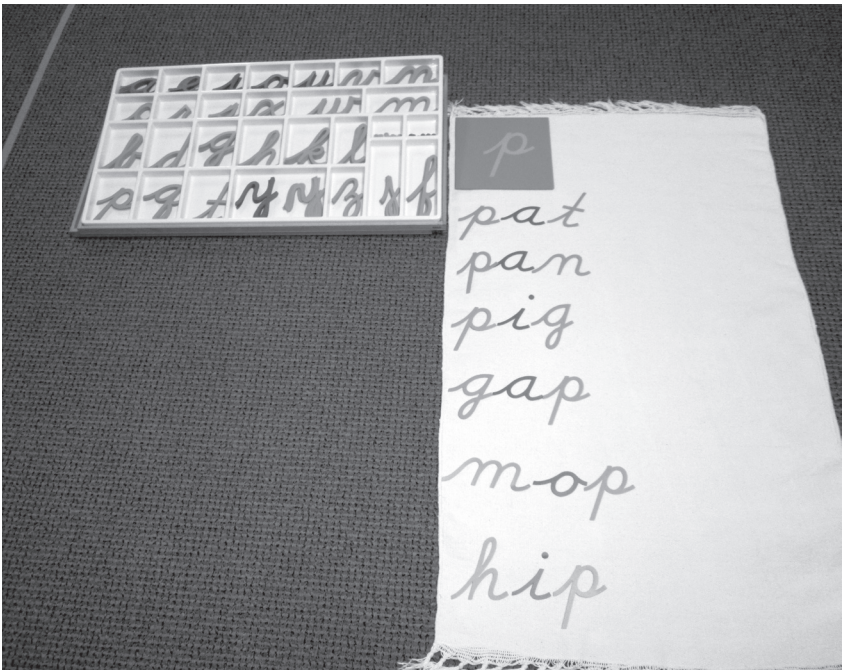
Guide: What is this?

Child: A tat.

Guide: That’s right it is a ...**cat**. Say ...**cat**.

(Cannot spy an object with the “c” or “t” sound.)

Continue with the game.



Dictation allows older children repeated practice with misarticulated sounds. Remember to make the targeted sound appear in more than just the initial position.

For older children who are working at a word level, dictation also provides a natural opportunity for repeated practice of targeted sounds. This is especially true of blended sounds like *dr* as in *dresser* (*jresser* is a common substitution) and *tr* as in *tree* (*chree* is a common substitution). Writing word lists from dictation, be it with a moveable alphabet or a pencil depending upon the skill level of the child, allows the child to hear the sound produced repeatedly and correctly. It also allows the child repeated practice with saying the sound both in isolation when sounding out and at a word level. For children who are reading, word lists provide repeated practice.

Our ability to communicate adds complexity and richness to our existence. The development of communication is often an entirely natural process. Central to Montessori philosophy is our responsibility to be an aide to development by providing the best environment possible. This responsibility extends to spoken language for those children who struggle with speech sound production in our classroom communities. A guide who actively listens and responds to speech sound errors can easily have a positive impact on the articulation development of the classroom community.

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