Introduction

Over recent years, we found that more of our clients were having difficulty with vowels, but we could not find a comprehensive, therapeutic resource to use with them. This motivated us to create *No-Glamour Vowels* to give other professionals an opportunity to work more efficiently with their clients.

Research related to treating vowel disorders is very limited. Most of the research has focused on errors in consonant production. In their book, *Vowel Disorders* (2002), Ball and Gibbon reviewed the research related to vowel therapy and noted, "The tentative conclusion that emerges from the limited evidence is that direct therapy for vowel errors has a positive effect, with improvements in vowel production occurring over and above that expected from spontaneous development." Metz, Samar, Schiavetti, and Sitler (1990) suggested that work on vowels helps to improve intelligibility, and Stoel-Gammon (1990) proposed that it restores a more normal developmental pattern of speech production. In our own experience with children who are experiencing vowel production errors, direct work on vowels has resulted in improvements in intelligibility and overall communication success.

It is important to select appropriate therapy goals based on a detailed assessment of a child's speech (Stackhouse & Wells, 1997). Therefore, we have provided the Vowel Production Screener, pages 14-15, which is a screening tool to help you determine a child's areas of strengths and weaknesses. This screener will also aid you in selecting appropriate targets and in measuring the child's progress.

No-Glamour Vowels targets long a, e, i, o, and u; short a, e, i, o, and u; hooked u; and diphthongs oi and ow. The following pages are provided for each vowel sound.

- **Vowel Information Page**: This page provides information about how the vowel is produced, its phonemic designation, common spellings, expected age of mastery, and some techniques for eliciting the vowel sound.

- **Word List**: Research indicates that treatment for childhood apraxia of speech (CAS) should target a variety of syllable shapes and phonetic contexts (Tremblay, Houle, & Ostry, 2008). Traditional articulation therapy methods also support a variety of word shapes (Van Riper, 1947; Van Riper & Emerick, 1984). To support this research, we have presented each vowel sound in a variety of word shapes (e.g., CV, VC, CCV, CCCV, CVC, CCVC, CVCC) allowing for practice at different age levels and abilities. Each word list is on a single page, so you can easily copy it and use it with children who do not require picture prompts.

- **Activity Ideas**: This page contains several activities specific to the vowel sound you are targeting.

- **Picture Pages**: The use of pictures has been noted to be very effective for children with CAS (ASHA, 2007). We have chosen picturable words from each word list and presented each word in the following hierarchical formats. You may photocopy any of these pages and send them home with the child for additional practice. Each page contains space at the bottom for you to write instructions for home practice.

    Single Word Level: Each page pictures 6-12 labeled target words of a specific word shape. Sometimes, when there weren't enough picturable words for one word shape, we grouped several word shapes together under the umbrella of "Other." For example, the "Other" single-word page for long i includes both CVCC and CCVCC words.

Word/Phrase/Sentence Level: Instruction for CAS should include focus on multisyllabic utterances in order to change speech behaviors (Hodge, 2008). To support this research as well as traditional articulation therapy methods (Van Riper, 1947; Van Riper & Emerick, 1984), we have presented each target word in phrases and sentences loaded with the target vowel sound, giving the child maximum practice opportunities during each elicitation.

Generalization: In this section, we have presented a short, rhyming story loaded with the vowel sound for each target word. The goals are twofold. First, treatment goals for children with CAS should include longer speech routines to improve generalization (Gildersleeve-Neumann, 2007). Secondly, children with communication delays, especially those suspected to have CAS, may be at risk for literacy difficulties, including rhyme (Agin, Nicholl, & Geng, 2004; ASHA, 2007; Marion, Sussman, & Marquardt, 1993). The use of rhyme helps to provide a literacy component to your therapy program. (Note: The generalization pages are on the enclosed CD-ROM.)

Personalized Practice: Research has shown that successful intervention for children with speech sound production errors, especially those with CAS, includes a home program and interaction with the child's family and teachers (ASHA, 2007). We have provided personalized practice pages that present each pictured word followed by blank writing lines. You can customize these pages for each child. (Note: The personalized practice pages are on the enclosed CD-ROM.)

General Vowel Information

For ease of reading by professionals in all fields, we have labeled the vowels "long" and "short," whenever possible, and provided the following definitions regarding vowel type; place of articulation; and production.

Type of Vowel	
simple vowel	a speech sound generally produced using a vocal tract that is unobstructed by other articulators
diphthong	two vowels produced together in the same syllable and generally interpreted by the listener as a single vowel
Placement	
front vowel	a vowel characterized by focus on the anterior (front) of the vocal tract
central vowel	a vowel characterized by focus on the middle portion of the vocal tract
back vowel	a vowel characterized by focus on the posterior (back) of the vocal tract
Manner	
high vowel	a vowel produced with the tongue raised above the neutral position
mid vowel	a vowel produced with the tongue at the neutral position
low vowel	a vowel produced with the tongue lowered below the neutral position
lax vowel	a vowel produced with less muscular tension
tense vowel	a vowel produced with greater muscular tension
round vowel	a vowel produced with rounded lips
unrounded vowel	a vowel produced with lips that are not rounded

Vowel Placement Chart

This chart for simple vowels provides a quick means of determining a vowel's manner, place of articulation, and tension.

MANNER		PLACEMENT		
		Front	Central	Back
High	*Tense*	Long e		Long u
High	*Lax*	Short i		Hooked u
Mid	*Tense*			Long o
Mid	*Lax*	Short e	Short u	
Low	*Lax*	Short a		Short o

Expected Ages of Mastery

This chart shows developmental ages for vowel production in English.

Sound	Sample Word	Age at which at least 51% of children have mastered the vowel	Age at which at least 90% of children have mastered the vowel
Long a	b<u>ai</u>t	< 3-0	3-0 to 5-0
Short a	b<u>a</u>t	< 2-0	3-0 to 5-0
Long e	b<u>ea</u>t	< 2-0	2-0 to 3-0
Short e	b<u>e</u>t	< 2-0	3-0
Long i	b<u>i</u>te	< 3-0	3-0
Short i	b<u>i</u>t	< 2-0	3-0 to 4-0
Long o	b<u>oa</u>t	< 2-0	2-0 to 3-0
Short o	d<u>o</u>g	< 2-0	3-0
Long u	b<u>oo</u>t	< 2-0	2-0 to 3-0
Short u	b<u>u</u>t	< 2-0	2-0
Hooked u	b<u>oo</u>k	< 3-0	3-0 to 4-0
Diphthong ow	ab<u>ou</u>t	< 2-0	3-0
Diphthong oi	b<u>oy</u>	< 2-0	3-0

Edwards, H.T. (1992). *Applied phonetics: The sounds of American English.* San Diego, CA: Singular Publishing.

General Techniques for Vowel Therapy

Research to support therapy techniques for vowels is limited. Some researchers have suggested that techniques for consonant production can be adapted for vowel therapy (Ball & Gibbon, 2002). Ball and Gibbon described the following research-based strategies in their book *Vowel Disorders* (2002). We have also provided other techniques based on our personal experience and on suggestions from other professionals found online. These suggestions are general techniques for working with children on vowel sounds. Specific strategies are listed on the Vowel Information Page for each vowel sound.

Research-based Strategies

Auditory-Input Therapy (Flynn & Lancaster, 1996)
Read the generalization stories to the child. Do not ask the child to produce the sounds; he should just listen as you read to him. This would make a good homework exercise.

Auditory Bombardment (Hodson & Payden, 1983, 1991)
At the beginning and end of each session, have the child listen as you read a list of 12-15 words using minimal amplification. Then send the list home with the child, with instructions for the parent to read the list to the child. The single-word picture pages in *No-Glamour Vowels* would be good to use for this activity.

Minimal Pair Contrast Therapy (Blache, Parsons, & Humphreys, 1981)
Present words to the child using opposing contrasts that vary in one feature (e.g., *bed* vs. *bad*). Ball and Gibbon (2002) suggest that vowel contrasts could be high vs. low vowels, front vs. back vowels, or long vs. short vowels. You can use these contrasts to address perception and production of the sound. For production, it is important that the child be able to produce both sounds at least some of the time. The child should then use the words to communicate a message to you.

Maximal Opposition Approach (Elbert & Gierut, 1986; Gierut, 1989)
Use this approach for children who have difficulty with minimal pairs. Some suggested vowel contrasts are long e vs. short o or short a vs. long u.

Metaphon (Dean & Howell, 1986)
This approach is done in two phases. In the first phase, help the child develop specific vocabulary and visual referents for vowel sounds (e.g., lip round vs. spread, long vowel vs. short vowel sounds, or a symbol to represent movement for diphthongs). In phase two, have the child work on identifying those distinctions in minimal pairs and use his knowledge to repair errors when communication breaks down.

Facilitative Contexts (Ball & Gibbon, 2002)

1. Attempt to pair the target vowels with consonants that are produced in the same part of the mouth. For example, pair front vowels (e.g., short i, long e, long a, long i) with front consonants (e.g., /t/, /d/, /n/) and pair mid-back to back vowels (e.g., long u, hooked u) with back consonants (e.g., k, g, ng).

2. Use bilabials with vowels to reduce the competition in tongue movement between the vowel and consonant.

3. Use consonant sounds already in the child's inventory.

Auditory Discrimination (Ball & Gibbon, 2002)

1. Same/Different: Make sure your child can "hear" the targeted vowel sound correctly. You can do this by repeating sounds (e.g., "oo-oo" and "ee-oo") and asking the child whether the sounds are the same or different. Make sure the child understands the concepts of "same" and "different" before attempting this technique.

2. Right/Wrong: Make sure your child can "hear" the target vowel sound correctly. You can do this by showing the child a picture and saying the target word correctly and incorrectly. Have the child indicate if your production is correct or incorrect (or right or wrong).

Other Techniques

Order of Vowel Selection
When targeting vowels, it may be easier to choose early developing sounds first (e.g., long e, long u, short o, long o, and short u). Target/elicit these sounds in early words, such as *see*, *me*, *do*, *you*, *ma*, *go*, *no*, and *up*.

Another consideration for vowel selection would be to consider lax vowels first, followed by stressed vowels, and then diphthongs. This represents the movement from less-to-more complex motor movements.

Vowel Placement Chart
Use the Vowel Placement Chart on page 9 to encourage the child to change positions of the jaw, lips, and tongue.

Hand Cues
Provide a hand cue to represent each vowel sound. The cue should represent the movement of the mouth. Several strategies are available online.

Familiar Words
Have the child attempt to say several familiar words that contain the target vowel. These words could include favorite toys, names of loved ones, or names of pets. If you hear the child make a correct production, use it to shape the vowel into other words.

Sound Identification
Identify the target sound for the child. Then mix in the target sound as you say several other vowel sounds. Have the child identify when you say the target sound by raising his hand, putting a block in a bucket, etc. Make it fun!

Whispering
It may be easier for the child to produce a target vowel sound in a whisper first. Add voicing after the child correctly produces the target sound in a whisper.

Sound Approximation
Start with a sound the child can produce correctly. Then help him shape that sound into the target sound. Shaping can be done using cues to move the jaw, lips, or tongue or by elongating or shortening the sounds.

Analogies
Give the child a visual, auditory, or tactile cue to represent the sound. A visual cue might be shaping your hands to look like the inside of your mouth. An auditory cue might be comparing a vowel sound to a familiar environmental sound. A tactile cue could be stroking down the child's arm to represent stretching out a vowel sound.

Vocal Play
Encourage your child to play with sounds. You might encourage "fire engine sounds" to get the child to produce long e.

No-Glamour Vowels is intended to address a variety of professional needs. It includes this 188-page book plus a CD-ROM that contains an additional 176 printable pages of therapy materials. We hope all of this information makes your job as easy and efficient as it can be!

Denise, Tera, and Kristen

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