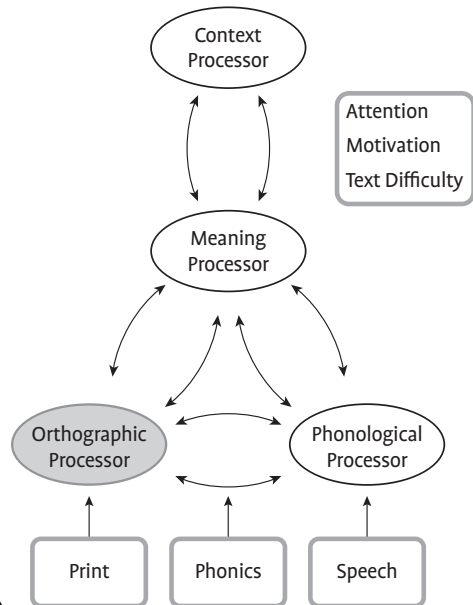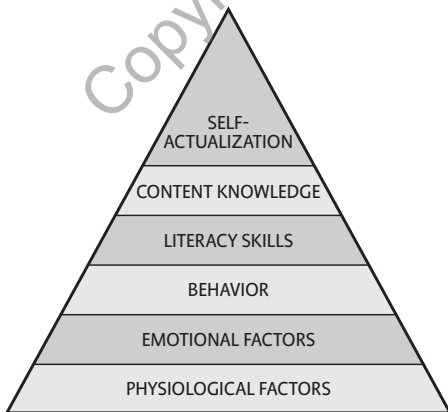# 5

# What Should I Do If My Child Is Having Difficulty with Visual Processing?

I believe that life is a process of continuous change and a constant struggle to make that change one for the better.

—LEE KUAN YEW (overcame reading difficulty to become the first prime minister of Singapore)

This chapter can help you and your child if:

❑ A professional has told you that your child has visual processing difficulty.

❑ You've used the Visual Processing Checklist in Chapter 4 to determine that your child has visual processing difficulty.

❑ Or you're seeing signs that might point to a visual processing difficulty, such as:

● Your child squints when reading.

● Your child holds reading material very close to her face.

● Your child has trouble distinguishing shapes accurately in printed material.

In this chapter I will:

1. Help you understand how print is effectively processed during reading.

2. Review the likely culprits that interfere with efficient print processing.

3. Provide you with activities and resources that can help you to help your child strengthen his visual processing system.

**Before you get started on this chapter . . .**

Check off all of the following items to make sure that your child's brain is optimally prepared for visual processing. *If you can't say "yes" to any item, refer back to Chapter 2.*

❑ My child usually eats a diet high in fruits and vegetables and low in processed foods (food packaged in a box or bag that has more than one ingredient).

❑ My child usually gets 8–10 hours of sleep per night.

❑ My child usually gets 1 hour of vigorous physical activity per day.

❑ My child is able to feel, talk about, and appropriately manage a wide range of emotions.

❑ My child's behavior usually seems focused and on task.

✦   ✦   ✦

## How Does the Brain Learn to Read Letters?

The visual processing of print takes place in both the eyes and the brain. Briefly, the centers of our retinas, the foveae, take in print and transmit it to a small section of the visual processing system located on the left side of the brain known as "the brain's letterbox" (*Reading in the Brain: The New Science of How We Read,* Dehaene, 2009, p. 53). Through brain imaging, researchers have been able to determine that everyone who reads, regardless of the language in which he is reading, transmits print in the same way: from the fovea to the brain's letterbox.

> *" I took my son for vision therapy, and it really helped."*
> —Julie Franklin, mother of a formerly struggling reader

The brain's letterbox itself is developed within a neural system called *connectionism* (*Overcoming Dyslexia: A New and Complete Science-Based Program for Reading Problems at Any Level,* Shaywitz, 2004), in which the more often stimuli are perceived together, the stronger and faster their connections become. The brain uses connectionism in learning to iden-tify letters. For example, when learning the capital letter *L*, the brain sees the pairing of a single vertical line, |, and a single horizontal line, __. Eventually these two images will be connected in the reader's mind into the capital letter *L*. The more often that the brain simultaneously sees the pairing of these two images, the stronger and faster the identification of the letter *L* becomes. The same process take places for all capital and lowercase letters. The more often that the reader sees the paired graphic images (the lines and curves that create specific letters), the faster and stronger the recognition of these letters becomes.

## How Does the Brain Learn to Read Words?

The neural system of connectionism also underlies how our brain learns to read words. It does so by connecting the common patterns of letters within words. The system of letter recognition that organizes the patterning of letters that form words in the brain is called the interletter associational unit system (*Overcoming Dyslexia,* Shaywitz, 2004), which was introduced in Chapter 3. Despite its long name, this system is easy to understand if you think about how your smartphone works. On your phone, if you type in the letters *Li,* your phone generates the word *Like.* Similarly, if you type in the letters *Lo,* your phone generates the word *Love.* The letterbox in your brain works in the same way. Based on connectionism, and like your smartphone, the brain generates letters that are likely to follow the target letters. For example, after the letterbox identifies the letter *L* it generates letters that are likely to follow it: *a, e, i, o,* and *u.* At the same time, the letterbox (and your smartphone) suppresses letters that are unlikely to follow, such as *l, b, d, f, g.* The more often our brain sees specific letters sequenced together, the more quickly and easily it recognizes that sequence as a word. It is this system of likely letter activation and suppression, based on neural connectionism, that allows skilled readers to easily and quickly process sequences of letters into formed words.

> *"I found that having my son read on the computer and enlarging the font size for him really helped."*
>
> —Roselind Frontenac, mother of a struggling reader

Keep in mind however that in the human brain the letter activation and suppression system is dependent on instantaneous letter recognition. If it takes a reader too long to recognize any individual letter, the entire system of activating letters that are likely to follow a target letter, and suppressing letters that are unlikely to follow a target letter, will not be engaged. If this happens, you will notice that your child is reading "letter by letter." I more fully explain how to address this important aspect of visual processing in the sections that follow.

# Why Is My Child Having Visual Processing Difficulty?

Print processing difficulty can occur at the three levels described earlier: (1) in the eye where print is initially perceived, (2) in brain's letterbox where letters are identified, and (3) in the brain's letterbox where letter sequences become recognized as words. The recommendations, activities, and resources I offer can help you address the likely causes of visual processing difficulty.

## Addressing Visual Processing Difficulty

### The Importance of an Eye Examination

Since visual processing of print starts in the eye, it is essential that a child who is having any difficulty at all processing print have a thorough eye examination. A reader must be able to see print clearly to quickly and efficiently process it. Hints that your child may be having vision problems include squinting when reading, moving the text closer and farther away during reading to try to make the print clearer, and/or losing track of where she is on the page. Be sure to get your child a thorough eye examination if you suspect any problem at all in the area of visual processing.

### The Importance of Speed of Letter Recognition

After a vision problem has been ruled out or corrected by an eye care professional, the next step to strengthening your child's visual processing is to help him with speed of letter recognition. It is not enough for your child to be able to correctly name letters; to be able to read well, your child must be able to name letters *instantaneously*. Again, the reason for this is that if your child's letter name recognition is not instantaneous, the entire interletter associational unit system will not be activated, and you will find your child reading letter by letter. So, let's get started with some activities, books, and online resources that you can use to help your child achieve automatic letter recognition.

## Speed of Letter Recognition Activities

Although there are only 26 letters in the English alphabet, due to our print system of uppercase and lowercase letters, children actually need to learn to instantaneously identify 52 letters (26 uppercase and 26 lowercase letters). I strongly suggest helping your child master the 26 uppercase (capital) letters first. According to reading researcher Elizabeth Sulzby, developmentally, children learn to print capital letters first. Therefore, reading capital letters first also tends to be easiest for them. After mastering the 26 capital letters, help your child master the 26 lowercase letters.

One approach to increasing your child's speed of letter recognition skill is to work with *multisensory materials*. Multisensory materials are those that use all of your child's senses (seeing, touching, moving, tasting, smelling, and hearing) to enhance learning. Some multisensory materials that children enjoy using to enhance speed of letter recognition include shaving cream, pudding (before it sets), finger paint, and sand. These materials can be used on waxed paper, paper trays, or aluminum pans to practice letter shapes. Children also enjoy making letters with playdough, clay, pipe cleaners, and letter stamps. Letters that are already made of plastic, wood, sponges, and sandpaper are also considered multisensory and can be used for art activities, bath time, and matching games.

In addition to practicing letters with multisensory materials, speed of letter recognition can be strengthened with rote practice and a stopwatch. For this activity, create random strings of letters, beginning with capital letters, for your child to read. Then, time your child reading the letter strings using either a traditional stopwatch or the stopwatch feature on your smartphone. Help your child keep track of how quickly she can correctly read the letter strings.

Another enjoyable way to work on speed of letter recognition is by playing a letter memory board game, in which participants match pairs of letters. The game can be played in three ways: (1) matching pairs of uppercase letters, (2) matching pairs of lowercase letters, and (3) matching uppercase and lowercase letter pairs.

Books that strengthen children's knowledge of letter names also strengthen their speed of letter recognition skill. Here are a few that I personally recommend:

✦ *Eating the Alphabet: Fruits and Vegetables from A to Z* (Lois Ehlert, 1989). This text provides boldly colorful illustrations and accompanying names of fruits and vegetables for all the letters of the alphabet. Not only will your child improve her speed of letter recognition, but her vocabulary and nutrition knowledge will grow as well. This is a great book to keep in the kitchen, to use to construct a shopping list, or even to take to the grocery store with you.

✦ *LMNOPea-quel* (Keith Baker, 2017). This delicately illustrated rhyming alphabet book features professions for each letter, starting with architects, authors, actors, and botanists. With this book, your child will strengthen his letter name knowledge and also vastly expand his vocabulary for, and knowledge of, career choices.

✦ *D is for Dump Truck: A Construction Alphabet* (Michael Shoulders, 2016). Does your child love the world of construction? If so, this is the book for your family. B is for bulldozer, D is for dump truck, F is for front-end loader! Come strengthen your child's speed of letter recognition, while helping her read the names of favorite construction vehicles and tools.

✦ *ABC Dream* (Kim Krans, 2013). For a quieter time, try *ABC Dream*. This book is filled with intriguing pen and ink drawings, highlighted with watercolors. Each page contains a different letter and pictures of animals and objects that start with that letter. Enjoy a work of art and strengthen letter recognition at the same time.

✦ *Race from A to Z* (Jon Scieszka, 2014). For a fun time, try this book, which features animated vehicles (Monster Truck Max, Hook and Ladder Lucy, and Tow Truck Ted) all racing from A to Z.

In addition to sharing books with their parents, most children enjoy using iPads and laptop computers. Below are five websites that I highly recommend for strengthening children's letter recognition skills.

✦ ABCYa.com. This website provides free, educational games for children ages PreK through 6. In addition to being able to select the difficulty level of the material for your child, you can choose the topic

on which you want him to focus. Letter identification activities include Alphabet Bingo, KPK Talk to Me Alphabet, Alphabetical Order, and Alphabet Bubble.

✦ Starfall.com. This website offers some free online learning activities for children in kindergarten through third grade and additional access to a wider range of educational resources with a low-cost subscription. Many school districts buy subscriptions to this website, indicating its value in educators' eyes.

✦ Literactive.com. This is another free literacy education website; however, registration is required. Many categories of learning activities can be accessed at this website. Activities that enhance the speed of letter recognition include Alphabet Awareness, Alphabet Order, Match Capitals, and Match Smalls.

✦ Mrsjonesroom.com. This website is created by a classroom teacher who shares free online activities that she uses with her students. Just click any letter to see a list of activities, songs, and poems that you can complete with your child.

✦ FunbrainJr.com. This website and computer app extend the famous Funbrain games to serve an audience of younger children. Follow the links to "Letter Splash" to find fun games such as Beaker Bonanza, Puzzle Me, Skater Sequence, and Trading Spaces.

In addition to resources that directly strengthen letter naming speed, your child's speed of letter recognition can be enhanced by using resources that facilitate general visual processing skill:

✦ Ourjourneywestward.com is a website that provides "brain training" activities for visual attention and visual processing.

✦ EyeCanLearn.com is a website devoted to strengthening generalized visual discrimination skills.

✦ Tangoes is a puzzle game in which children use puzzle shapes (tangrams) to recreate picture card images (available online at Amazon).

✦ *Where's Waldo?* (Handford, 1987) is a famous and fun book that parents and children can enjoy together. Here children search

to find the cartoon character, Waldo, in a variety of playful and interesting settings.

# Word Families/Phonograms

In addition to helping children achieve instantaneous letter recognition skills, efficient visual processing is greatly enhanced by the practice of *word families*. Word families are commonly found letter patterns in the English language. For example, *ab*, *an*, and *at* are three common word families. In the literacy world, the technical word for word families is *phonograms*. Practicing the reading of word family words is an optimal route to strengthening visual processing because word family words strengthen the brain's interletter associational unit system. Stated differently, every time a word family word is read, that pattern of letters is strengthened as a unit within the brain's letterbox.

The book *The New Reading Teacher's Book of Lists* (Fry, Fountoukidis, & Polk, 1985) lists the 88 major phonogram families and the 126 minor phonogram families (see the Appendix for lists of these word families). The book also lists all the words that fall into each family. So, for example, the book shows that the *ab* family contains the words *cab, gab, jab, tab, crab, drab, grab, scab, slab*, and *stab*. Similarly, the book shows that the *ace* family contains the words *face, lace, mace, pace, race, brace, grace, place, space*, and *trace. In my opinion, helping your child master all of the words in the major and minor word families is one of the single most important things that you can do to help your child become a strong reader.*

## How to Approach the Study of Word Families

As in studying individual letters, word families should be studied and mastered in an incremental manner. What I mean by this is, if you are using the lists in the Appendix, begin with the first family (*ab*) in the major phonogram list. Once your child can read all of the words in the *ab* family quickly and easily, proceed to the next family (*ace*) in the major phonogram list. However, be sure that when your child is studying the *ace* family, you continue to practice the *ab* group. Likewise, when both of these families are mastered, and you add the third phonogram (*ack*),

continue to practice the already mastered families. Proceeding in this manner will help your child incrementally learn all the words in the major and minor phonogram families, while simultaneously strengthening the interletter associational unit system responsible for efficient print processing.

Many different activities can be used to study word families. A simple do-it-yourself activity can be made with index cards. Mark one index card with the phonogram itself (let's say *ab*) and the other index cards with the starting letters needed to make words in that family. So, for example, for the *ab* word family, create index cards marked *c, g, j, t, cr, dr, gr, sc, sl,* and *st.* Then have your child practice making words by attaching the starting letters to each letter pattern.

Word family activities can also be purchased. A great resource for buying these activities is Lakeshore Learning, a company that creates and sells high-quality educational materials. Three great purchases to strengthen word family knowledge are Word Building Blocks, Word Family Flip Books, and Word Family Practice Cards. In the Word Building Blocks activity, letter blocks snap together to make word families, and then children add initial letters to make words from that family. The Word Family Flip Book package contains 30 flip books, each featuring a different word family. Children turn the pages to create new words in that family. The Word Family Practice Cards provide 40 write and wipe practice cards. Each card features a different family. Children add initial letters to make words from that family.

In addition to using hands-on word family activities, reading books to your child that emphasize word family knowledge is very useful. Four classics are *The Cat in the Hat* (1957); *One Fish, Two Fish* (1960); *Green Eggs and Ham* (1960); and *Hop on Pop* (1963)—all by Dr. Seuss.

As with strengthening the speed of letter recognition, word family knowledge can also be facilitated using online activities. Here are three websites that I like for attaining this goal.

✦ TurtleDiary.com. This website provides educational games for children, with some resources available for free and others available for a nominal fee. To locate Word Family Games, click on "Games," then "Language Games," and last "Word Families." The website will take you to links for a wide selection of word families. Click on any family to see

all the words in that family and a section of games to improve knowledge of that family.

✦ ReadWriteThink.org. Created by the International Literacy Association, the world's largest professional literacy association, this website is completely free. Its purpose is to provide high-quality learning resources to educators and parents. The website offers a variety of activities for practicing word families, but one that I particularly like is called Word Family Sort (click on "Student Interactives" under "Classroom Resources"). In this activity, children are presented with words and need to sort them into their current word families.

✦ Enchantedlearning.com. This website for parents and teachers provides both free and low-cost educational resources. Parents can access free lists of word families and corresponding words for each family. In addition, activities for practicing word families can be accessed.

## Sight Words

In addition to mastering instantaneous letter recognition and word families, children need to master sight words to be proficient at visual processing. Sight words are words that educators believe students need to be able to recognize instantaneously. There are two subcategories of sight words: high-frequency sight words and thematic sight words.

## High-Frequency Sight Words

High-frequency sight words are words that occur very often in the English language. A few examples are *the*, *this*, *these*, and *those*. It is critical that children be able to read these words instantaneously because they are so often seen in printed text. High-frequency words are also often phonetically irregular, meaning they are very difficult to sound out. Therefore, children need to read them "by sight," and these sight words are taught using activities and techniques that are different from those used to teach words from phonetically consistent word families.

When thinking about activities to teach high-frequency sight words, my mind immediately goes back to *The New Reading Teacher's Book of Lists*. In addition to listing all of the words in the major and minor

phonogram families, this book lists the 1,000 most-frequent sight words in the English language, in order of frequency (see the Appendix for the list of these words). For example, the first list of 25 words starts with the word *the* because *the* is the most common word in the English language. To read directly from the lists, begin with the first list and practice this one until your child easily and quickly achieves 100% mastery. Then proceed to the next list. While working on the second list, be sure to continue to practice the first list. Similarly, when working on the third list, be sure to continue to practice the first two lists, and so on.

In addition to practicing the lists of high-frequency sight words, there are activities that you can create and/or purchase to help your child learn these extremely important words. For a do-it-yourself activity or game, you can use index cards to make flash cards of the words on the list. If you make two index cards for each word, you can use these to play

*"The challenge of teaching your struggling reader may seem like an impossible undertaking. But with time and patience, the results will amaze you. Your child's teacher is a resource—she plants the seeds—but it is up to you to give your flower water and sunlight. A very common tool is the use of sight words. Frequently used words—from speech and text—can be written on index cards and practiced on a daily basis. This should be practiced at least once a day. Once a word is mastered, place a star or sticker on the card as a visual cue to increase confidence. Then take the conceptual idea of words and give them concrete meaning. Label the world around them. Use index cards to fill your home with labels to provide reading opportunities. Teach your children that everything around them is a word. Although this new home decorating may not be your favorite style, remember that this is only temporary, and you have a long-term goal in mind. Point out text as often as possible: from labels, on signs, on television, at the grocery store, and so on. A flower does not grow overnight, but if you create the right setting, you will watch it blossom."*

—Jessica Vitali, teacher of English

The Memory Game, in which all cards are placed face down, and players take turns finding cards that match. If you prefer to purchase activity materials, Lakeshore Learning offers a Fishing for Sight Words game in which children practice catching sight word fish with a magnetic fishing pole. Another popular and fun choice from this company is Sight-Word Bingo. Write and Wipe Sight-Words Practice Cards, also available from Lakeshore, are additional, valuable practice materials.

If you and your child prefer online activities, you can search for "How to Teach Sight Words" on themeasuredmom.com website. ABCYa .com has two online sight word activities: Out of Sight Words, and Sight Word BINGO. Crawfordthecat.com has a 100-sight-word online search game. Turtlediary.com has four online sight word games: Complete the Sentence with the Correct Sight Word, Spell the Sight Words, Choose the Correct Sight Word, and Make Pairs of Sight Words.

## Thematic Sight Words

Thematic sight words are words associated with any specialized topic. For example, the topic *dinosaurs* is associated with the thematic words *Tyrannosaurus Rex*, *Brachiosaurus*, *Diplodocus*, *Brontosaurus*, and *Stegosaurus*. What is amazing about thematic words is that, even when they are long and complicated like these dinosaur words are, struggling readers can often read them quickly and easily because they often find these words interesting and because they are derived from a relatively closed group of word options.

An ideal way to practice reading thematic words with your child is to find a topic in which she is especially interested. Some favorite thematic topics are particular sports (soccer, baseball, football, tennis, surfing, fishing, skateboarding, dancing, skiing, skating) and/or sports figures, pop culture, music and/or musicians, the environment, cooking, history, self-care, careers, and travel. After you and your child have selected a topic of interest, do some research to generate a list of words associated with that topic, as in the dinosaur example I just gave. In addition, search for books, games, and websites related to your child's special interest area(s). Your child will readily and easily read and learn words associated with topics that she is motivated to learn about.

## Chapter Highlights

The reading process begins with the processing of print. Automatic letter recognition is central to this process, and speed of letter recognition is critical for efficient letter processing. In addition to individual letter recognition, print is processed via word family (phonogram) recognition and through sight words. There are two kinds of sight words: high-frequency sight words and thematic sight words. Letter, word family, and sight word knowledge can all be strengthened by using the activities and resources described in this chapter. The underlying foundations of sleep, nutrition, exercise, emotion, and behaviors all affect the processing of print and should be taken into consideration when assessing and developing a child's print processing. Also, be sure to have your child's eyesight checked by an eye-care specialist if you are at all concerned about his visual processing.