

Slip into
View

Appearances can be Deceiving



What do you see?

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Slip into View

Individuals who are learning to read and those who have had a brain injury frequently have trouble with confusion words. This CD is the first in a series of games that provide intensive practice in visually discriminating between words that are confusingly similar. The CD primarily focuses on words that appear visually similar—they have a confusing figure-ground relationship. It also addresses words that sound the same but are spelled differently (homophones), words that are spelled the same but are pronounced differently (homographs), and words that have two definitions that are nearly opposite (contronyms or Janus words).

Why “Slip into View”?

If you try to walk on ice or wet leaves your feet slide or “slip” and you lose your balance. Losing your balance distracts you from what you were doing; all you can think about is not falling. You can also lose your balance while reading by misreading a word. You must struggle to make sense of a sentence that doesn’t make sense. These “slips” can make it difficult to comprehend the content of the text. If they occur frequently, they slow down the reading rate and overall comprehension.

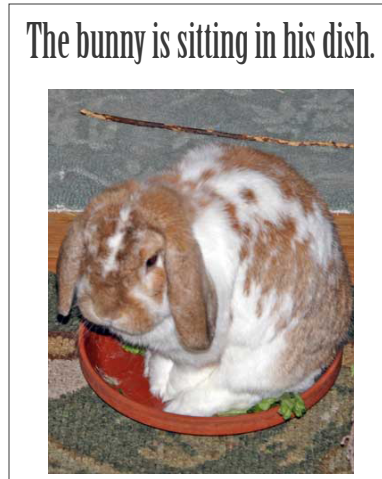
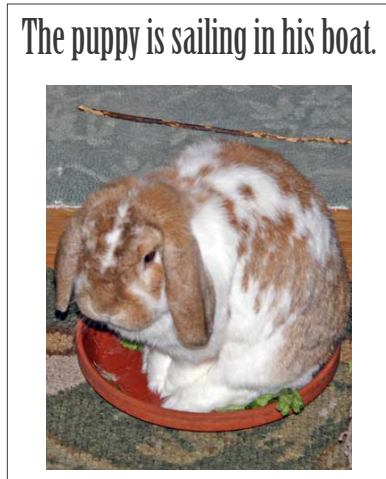
The mistaken identity can be attributed in part to the figure-ground relationship of the words. The figure is the space occupied by the text. The ground is the space around the text and the interior or enclosed space created by letters (e.g. the space inside of “q”). Letters that have a similar figure-ground relationship are easy to confuse.

Appearances can be Deceiving is a tool to help individuals become aware of the figure-ground relationship as it applies to text. The graphic below shows how, on first glance, the text in each sample can appear very nearly the same. Changing a “d” to “b” an “a” to “e” and an “o” to a “u” doesn’t greatly change the visual appearance, but it does greatly change the meaning of the text. The switched letters have a similar figure-ground relationship to the letters they are replacing.

| | | |
|--------------------------|--------------------------|---------------------------|
| she has a rad dog | SHE HAS A RAD DOG | She has a rad dog. |
| she has a red bug | SHE HAS A RED BUG | She has a red bug. |
| she has a rad dog | SHE HAS A RAD DOG | She has a rad dog. |
| she has a red bug | SHE HAS A RED BUG | She has a red bug. |
| <i>she has a rad dog</i> | <i>SHE HAS A RAD DOG</i> | <i>She has a rad dog.</i> |
| <i>she has a red bug</i> | <i>SHE HAS A RED BUG</i> | <i>She has a red bug.</i> |

Figure-Ground Relationship

Everything visual is seen in relation to its surrounds. That is especially true when viewing text. When you open a book, what do you see first? Do you see the photos and illustrations first? Do those photos and illustrations convey to you the meaning of the text?



Do you see the text as letters and words or do you see what is on the page as a black and white pattern?

*When you open a book,
what do you see first?
Do you see the photos and
illustrations? Do you see the text?*

When you visit a website can you see the text in the sea of graphics, animations, and ads?

It is important to be able to discriminate between the external elements (photos, illustrations, and the background) from the content that is conveyed in the text. A photo can assist one in understanding the meaning of the text, but what if someone places the incorrect photo and text together? The visual clues provided by the photo are incorrect. Will you read the text correctly, understand its content?

New readers first learn to start at the top of the page and scan from left to right. They learn that the symbols representing the letters of the alphabet are combined in various ways to compose words. Some of the symbols appear similar to other symbols because they are made up of the same components (lines, circles, and curves), some are of similar width and height, and some occupy similar space on the page. Later they learn that the same symbols can have a variety of appearances (type or fonts). And when these other fonts are used the symbols appear visually quite different. The visual similarity of upper case letters can increase the potential of confusion.

The **Visual Appearances Letter Similarities Chart** (in the Appendix) divides the letters of the alphabet into six groups. The letters that are not in the group are categorized based on visual similarity: letters that are least similar to each letter, that have similar components, and are most similar in appearance. These similarities are used to determine the targets (the word we are looking for) and foils (the rest of the words on the screen) in the game. The chart is based on visual similarities of lower case letters because in most fonts, the upper case letters are all visually similar to one another.

Appearances can be Deceiving

Objective

Practice differentiating between visually similar letters and words based on their figure-ground relationship. Figure is the text that makes up the words and ground is the area surrounding the text.

Overview

The game has six chapters and each chapter has three parts. The first chapter is based on letters and letter pairs. The words in the remaining chapters are gradually more difficult. The order is similar to the order of introduction in reading, spelling, and vocabulary curricula. The visual difficulty is based on the [Visual Appearances Letter Similarities Chart](#).

Chapters and Parts Targets

Chapter 1 progresses through single letter targets with single letter foils to single letter targets with the addition of letter pair foils (l/o/b); ending with letter pair targets with letter pair foils.

Chapter 2 contains two and three letter targets and foils. The words are selected from words that are introduced in pre-school and elementary school.

Chapter 3 contains three to seven letter targets and foils. The words are at an elementary school level.

Chapter 4 contains words with suffixes and composite words (compound words and words within words).

Chapter 5 contains words that junior high, high school, and college students should know.

Chapter 6 contains words that are specific to some disciplines and unusual words often found in crosswords and word of the day lists.



Appearances
can be Deceiving

Select a Chapter and Part

1 *Introduction-Letters*
Part 1 2 3

4 *Tenses, Plurals, & Composites*
Part 1 2 3

2 *Wee Words*
Part 1 2 3

5 *Beginnings, Endings, &...*
Part 1 2 3

3 *More Letters, Longer Words*
Part 1 2 [3]

6 *Challenge*
Part 1 2 3

Help

Menu

Options

Play

Quit

Foils

Foils are words that are visually similar to the targets. Once a word is introduced it can be a foil in subsequent Chapters and Parts. For example a target word in part 3.1 can then be used as a foil in parts 3.1 through 6.3.

Game Screen Layout and Background Options

The game screen is laid out as a grid of cells. Each cell contains either a target or a foil. There are four layout options: 3x3, 5x5, 6x6, and 9x9. The grid size determines the number of targets. When the 3x3 layout is selected the target word will occur three times. The target word will occur five times in the 5x5 layout, six times in the 6x6 layout, and nine times in the 9x9 layout.

The layout size also determines the number of times each foil appears. In a 3x3 layout there are two foil words each occurring three times; the 5x5 layout has four foils each occurring five times; the 6x6 has five foils each occurring six times; and the 9x9 has eight foils each occurring nine times.

The default layout is a white background with a black grid (stroke around each cell) with black monospaced text.

In general, a single light-colored background makes scanning for targets easier. However, some colors can make the task visually more difficult. Most individuals find it

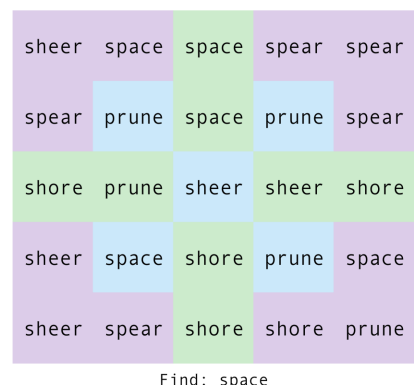
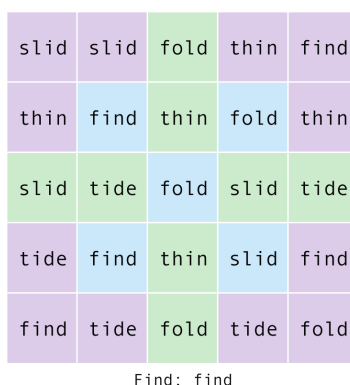
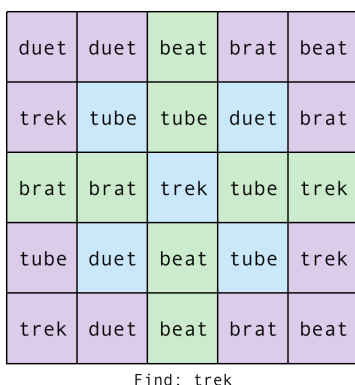
easier to read dark text on a light background. If you select one of the dark background colors with light text it may give you more of a challenge.



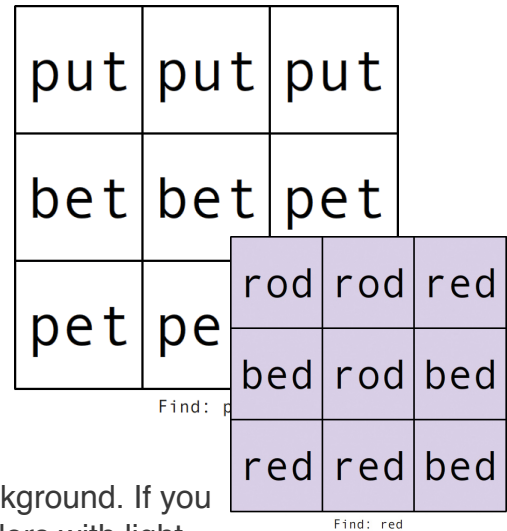
There are two background options for individuals who have a difficult time reading black text on a white background. The background color is black and there is a choice of the text in pale yellow or orange.

Selecting one of the three color pattern backgrounds can offer an even greater visual discrimination challenge, at times acting as a significant distractor while scanning for targets.

The Options screens allow you to change the colors and patterns to tailor the exercises for the needs of each individual. As the examples below show, changing just one element—in this case the grid—can change the visual difficulty dramatically.



The options will be discussed in detail later in the manual.



More About Figure-Ground

A simple way of understanding the figure-ground relationship is to think of the letters as occupying the positive space and the space surrounding the letters as negative space. In the graphic, the “ez” is the figure and the colored space surrounding it is the ground. Positive space is in the foreground and negative space is in the background.



When we look at text on a page, the amount of negative space around each individual letter can vary or can be the same. If the amount of negative space is the same around each letter it is an example of monospaced type (often referred to as font). The letters in the “ez” graphic are displayed in a monospaced font. The “iz” graphic is an example of proportional spaced type. Notice that the negative space around the “i” is less than the space around the “z”.



Most text in books and the web is displayed in a proportional spaced font. The graphic below shows how this can create problems for readers. The graphic (e.g. lo/b) illustrates how the amount of negative space surrounding each letter can cause confusion. The close proximity of a letter pairs can make reading the individual letters difficult especially when the positive space occupied by the letters and the negative space is very nearly the same.



One of the first tasks of new readers is to learn to “see” the specific details of the elements of the letters. Ignoring or misreading the negative space can cause unnecessary confusion and mistaken identity can occur.

The graphic below is from Chapter 2.3 and shows an example of a target and its foils with a monospaced font. Note that the exterior shape around the words bop and hop are identical. If an individual is experiencing confusion in letter orientation, the shape around the word pop may appear to be very nearly the same shape as hop and bop. This is an example of what is sometimes called Bouma, which refers to the shape of the whole word or cluster of letters. Psychologists are still researching whether people read by deciphering boumas or by deciphering individual letters.



As the example below shows, when a script font is used the negative space around (and sometimes inside) the letters decreases and the letters within words are visually connected. This increases the possibility of mistaken identity if the individual is not “seeing” what is actually written but instead assumes a certain shape is a particular letter or word.

More About Fonts



The fonts for **Appearances can be Deceiving** were chosen so that you can practice with fonts that will be encountered in normal reading. Newspapers and magazines usually use serif fonts for the bulk of the text and sans-serif for headlines. Text on the web is usually displayed using sans-serif fonts. Advertising and headlines often use decorative fonts. Tables of numbers often use monospaced fonts—the spacing taken up by each character is the same. The ease of reading a particular font is determined by the thickness of the lines used to create the letters, variation in the thickness, height in the line (leading), appendages (serifs or decorative elements), and the amount of space that surrounds the letters.

The default font for this game, Andale Monospace has clean letters of uniform thickness and spacing. Helvetica retains the clean lines of Andale but is proportionally spaced. Georgia is a font that is similar to the font used in books and newspapers. Courier is an old-style font that is similar to Andale but has mild serifs. There are several decorative fonts like Kidprint, Typo Upright, and Braganza. The appendix discusses the differences in more detail.

Notice in the following examples how much space surrounds the letter “i”. Compare the amount of space given to the letter “i” in the monospaced sample to the amount of space given to the letter “i” in the proportional spaced sample.

| Monospaced | | Proportional Spaced | | Decorative | | |
|------------|------------|---------------------|------------|------------|------------|------------|
| Serif | Sans Serif | Serif | Sans Serif | | | |
| <i>i</i> z | <i>i</i> Z | <i>i</i> z | <i>i</i> Z | <i>i</i> z | <i>i</i> Z | <i>i</i> z |
| Courier | Andale | Georgia | Helvetica | Birch | Braganza | Typo |
| <i>i</i> z | <i>i</i> Z | <i>i</i> z | <i>i</i> Z | <i>i</i> z | <i>i</i> Z | <i>i</i> z |

Text, like everything visual is seen in relationship to its surroundings. Background colors and patterns can increase the visual discrimination challenge. What do you see first when viewing the following?

Is it easier to read dark text when it plays on a white background? Or the reverse? When a pattern is added, what do you see first?

| | | | | |
|------|------|------|------|------|
| wore | warn | wore | wore | yarn |
| wore | warn | yarn | wore | norm |
| yarn | warn | worn | yarn | warn |
| yarn | norm | norm | worn | worn |
| worn | norm | warn | norm | worn |

Find: norm

| | | | | |
|------|------|------|------|------|
| tidy | fish | wild | tidy | with |
| tidy | with | wild | with | with |
| wild | wild | fish | with | fish |
| fish | fish | tidy | tidy | twig |
| twig | wild | twig | twig | twig |

Find: twig

| | | | | |
|------|------|------|------|------|
| foal | soil | soil | foal | lost |
| cell | self | soil | foal | cell |
| soil | soil | foal | cell | self |
| lost | self | lost | cell | self |
| self | foal | cell | lost | lost |

Find: self

Is it more challenging to see the targets when a 9x9 pattern is selected for the background?

| | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| treat | treat | treat | trout | stout | stale | train | stale | steal |
| treat | stale | stale | trout | stain | trout | stout | train | stole |
| steal | train | trout | stain | stole | trout | stale | trout | steel |
| steel | train | train | treat | steal | stain | steal | train | trout |
| stale | stout | stole | steal | stole | stale | stole | stout | steel |
| treat | stole | trout | treat | steel | train | stain | steel | steel |
| stole | stout | trout | stain | steal | treat | stale | stole | steal |
| train | steel | train | stout | steel | steal | stain | stout | stale |
| treat | stout | stain | stole | stain | steel | steal | stout | stain |

Find: treat

Does rearranging the pattern colors offer more visual challenge?

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| ward | ward | down | down | grew | whoa | grew | ward | down |
| drew | drew | whoa | drew | grow | wrap | grew | brow | whoa |
| down | whoa | grew | drew | grew | gnaw | whoa | gnaw | grow |
| brow | down | wrap | gnaw | wrap | whoa | brow | brow | ward |
| drew | grew | down | brow | wrap | down | wrap | grew | grow |
| ward | ward | gnaw | grew | brow | down | ward | gnaw | grow |
| brow | drew | grow | ward | gnaw | drew | down | whoa | wrap |
| grew | brow | gnaw | drew | whoa | wrap | gnaw | gnaw | brow |
| grow | wrap | drew | whoa | grow | grow | wrap | ward | grow |

Find: grow

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| club | cold | duel | duel | duel | duel | clay | lube | club |
| cold | clay | lube | loud | club | blue | blue | blue | club |
| clay | clay | loud | loud | luck | blue | duel | lube | clod |
| lube | lube | cold | blue | blue | luck | cold | cold | duel |
| clay | club | clay | cold | clay | luck | clod | lube | loud |
| clod | lube | luck | club | clod | blue | luck | loud | clod |
| club | clod | blue | loud | duel | loud | clod | clay | club |
| loud | clod | clay | lube | cold | duel | luck | clod | luck |
| blue | luck | lube | luck | duel | cold | club | cold | loud |

Find: luck

Round 11/100

9 To Find

Chapter 1 Introduction–Letters

The targets and foils in Chapter 1 are single letters and letter pairs. The foils become progressively more visually similar in appearance to the targets as one progresses through the parts. Refer to the **Visual Appearances Letter Similarities Chart** in the appendix for the guidelines used to determine similar looking letters.

Part 1

Targets and foils are single letters. This part starts out with foils that are visually the least similar to the target. The game automatically increases the visual similarity of the letters when there are more consistently correct responses than incorrect responses.

Part 2

Targets are single letters. Foils are single letters and letter pairs that appear visually similar to single letters e.g. b with lo, p with at. The game automatically increases the visual similarity of the letters when there are more consistently correct responses than incorrect responses.

Part 3

The targets and foils are letter pairs. The target and foil pairs can be the same letter (bb, ee) or a letter paired with any other letter (dz, ai). There is no progression to more difficult levels in Part 3.

To increase the visual discrimination challenge, change the Visual Difficulty on the Settings page or select your own combination of Font, Pattern, and Grid in the Options. All Upper Case are more visually challenging than Random or Lower case. For an even greater challenge select either the Birch font (narrow width letters) or the Typo Upright font (script). For most people, the most difficult font to read is the Goudy Outline font in the All Upper Case Option. and 5x5 or 9x9 grid.

| | | | | |
|----|----|----|----|----|
| LL | JL | LI | JT | II |
| II | JL | LI | II | JL |
| JT | JL | JL | II | LL |
| LL | LL | LL | LI | JT |
| II | LI | JT | LI | JT |

Find: JL

| | | | | |
|----|----|----|----|----|
| XW | VW | XW | YM | YX |
| YX | YX | YX | YM | YM |
| VW | NZ | YX | YM | XW |
| XW | NZ | NZ | YM | XW |
| NZ | VW | VW | VW | NZ |

Find: YM

Chapter 2 Wee Words

This chapter contains 2 and 3 letter words. The 2 letter words contain a vowel and consonant (am, be, it). The target and the foil may not have the same number of letters. A two letter target may have three letter foils.

The 3 letter words have a consonant in the first position, a vowel in the second position, and either a vowel or consonant in the third position. When the word contains two vowels, the vowels are the same letter (baa, coo, gee).

In this chapter, the game automatically increases the visual similarity of the letters when there are more consistently correct responses than incorrect responses.

Part 1

This part is similar to Chapter 1 Part 3 except that the targets and foils are now words. The targets are all two letter words and the foils are two or three letter words that have one letter the same as the target. The remaining letters of the foil will be substituted based on the **Visual Appearances Letter Similarities Chart**.

Part 2

Building on the previous chapters and parts Chapter 2 Part 2, the targets are now three letter words. The foils are three letter words with one letter in the same position. The remaining letters will be substituted based on the **Visual Appearances Letter Similarities Chart**.

Part 3

The targets in this part are three letter words. The foils are three letter words with two letters in the same position. The remaining letters will be substituted based on the **Visual Appearances Letter Similarities Chart**.

| Chapter 2 Part 1 Visual Difficulty Level 1 | Chapter 2 Part 3 Visual Difficulty Level 2 | | | | | | | | | | | | | | | | | | |
|---|---|-----|----|----|----|----|-----|-----|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <table border="1" data-bbox="326 1352 695 1717"><tr><td>oh</td><td>tag</td><td>oh</td></tr><tr><td>to</td><td>to</td><td>to</td></tr><tr><td>tag</td><td>tag</td><td>oh</td></tr></table> <p data-bbox="228 1728 797 1774">Round 5/20 Find: to 3 To Find Help Menu Options Find Shuffle Next Quit</p> | oh | tag | oh | to | to | to | tag | tag | oh | <table border="1" data-bbox="948 1352 1317 1717"><tr><td>cud</td><td>cud</td><td>bun</td></tr><tr><td>bud</td><td>bun</td><td>cud</td></tr><tr><td>bun</td><td>bud</td><td>bud</td></tr></table> <p data-bbox="850 1728 1419 1774">Round 6/20 Find: bud 3 To Find Help Menu Options Find Shuffle Next Quit</p> | cud | cud | bun | bud | bun | cud | bun | bud | bud |
| oh | tag | oh | | | | | | | | | | | | | | | | | |
| to | to | to | | | | | | | | | | | | | | | | | |
| tag | tag | oh | | | | | | | | | | | | | | | | | |
| cud | cud | bun | | | | | | | | | | | | | | | | | |
| bud | bun | cud | | | | | | | | | | | | | | | | | |
| bun | bud | bud | | | | | | | | | | | | | | | | | |

Chapter 3 More Letters, Longer Words

The words in Chapter 3 are typical reading, spelling, and vocabulary words found in early elementary curricula. The targets and foils are three to nine letter words. The words in this chapter have letters paired in consonant blends, consonant digraphs, vowel digraphs, double vowels, double consonants, and silent letters.

Words from previous chapters and parts are used as foils. The selection of foils is based on the **Visual Appearances Letter Similarities Chart**. The word in each part are of similar visual difficulty so the program does not change the visual similarity of the letters when the student consistently identifies more targets correctly than incorrectly.

Part 1

The targets and foils contain three or four letters. The foils will contain at least one letter that is the same as the target (in any position) and the remaining letters will be substituted based on the **Visual Appearances Letter Similarities Chart** using the *Most Similar* category. An example is the target word “any” with the words “was” and “naw” as foils.

Part 2

The targets and foils contain three, four, or five letters. The foils will contain at least two letters that are the same as the target (in any position) and the remaining letters will be substituted based on the **Visual Appearances Letter Similarities Chart** using the *Most Similar* category. An example is the target word “part” with the foil words “dart, brat, ripe, goat”.

Words in this part have the following consonants and vowels:

CCV, CVC, CVV, VCC, VCV, VVV, CVVC, CVCC, CVCV, CCVC, CCVC, CCVV, CCVC, CVVV, CVCVC, CCVCV, CCVCV, CCVVC, CCVVC, CCVCC, CCVCC.

Part 3

The targets and foils contain five to nine letters. The foils have at least two letters in common with the target and may be in the same position. The remaining letters in the foils will be substituted based on the **Visual Appearances Letter Similarities Chart** using the *Most Similar* category. An example is the target word “boast” with the foil words “brain, heart, trash, beast”.

5 Letters

VCCCV, VCCCV, VCCCV, VCCVC, VCCVC, VCCVC, VCCVC, VCCVC, VCCVC, VCCVV, VCVCC, VCVCV, VCVCV, VCVVC

6 Letters

VCCVVC, VCCVCC, VCCVCV, VCCVVC, VCCVCV, VCCVCC, VCVVCC, VCCVCV, VCCVCV, VCVVCV,

The words with 7-9 letters can have any previous combination of letters.

Chapters 4–Tenses, Plurals, and Composites

In this chapter words are formed by appending letters to the words from the previous parts. The words in this chapter visually change not just by adding an appendage, but they can even change contextually. For example, words can be changed from a verb to a noun or have their meaning change entirely. The spelling of the word can be altered to change its tense or to make it a plural (consonants are doubled, letters are dropped or replaced). Part 3 of this Chapter contains 3-12 letter words that contain two or more words. Some of the words are compound words.

There is a slight increase in difficulty in Part 1 and Part 2 when there are more consistently correct responses than incorrect responses.

Part 1 The words in this part are formed by adding “ed”, “ing”, and “er” to words from previous chapters. Some words that have the same endings and look visually similar are included in this part e.g. after, paper, beaver. Words with a past tense in which the form of the word is changed are included as well e.g. dreamt.

The targets are versions of the words from previous chapters. The foils are words from this part as well as all previous chapters. Targets and foils have the same number of letters (3-10 letters). The letters are substituted based on the **Visual Appearances Letter Similarities Chart**. The default is *Least Similar* and progresses through the *Most Similar*. For example, if the target word is “changed” foils can be “hillier, raining, needing, cracked”.

Part 2 The words in this part are formed by adding “y”, “est”, and “s” or “es” to words from previous chapters. The targets are versions of the words from previous chapters. The foils are words from this part as well as all previous chapters. Targets and foils have the same number of letters (3-10 letters). The first or last letter are the same. The remaining letters are substituted based on the **Visual Appearances Letter Similarities Chart** in the *Similar Elements* and *Most Similar* categories. For example, if the target word is “stages” foils can be “stress, signed, nieces slopes”.

Part 3 The target words in this part are composite words. They are words that contain multiple words. Some of the words are typically categorized as compound words. The words that make up the compound target were introduced in previous chapters. The targets and foils have 3-12 letters. The foils for this part can be any word from this or previous Chapters. The foils for this level have the same first or last letter as the target. The remaining letters are substituted based on the **Visual Appearances Letter Similarities Chart** in the *Similar Elements* and *Most Similar* categories. Example foils for the word “without” can be “wildest, wisest, whitest, wildcat”.

Chapter 5–Beginnings, Endings, & ...

Chapter 5 has an interesting mix of words. The words are typically found in spelling, reading, and vocabulary lists for secondary school. Included in this chapter are words often found on the SAT test, and even some spelling bee words.

There are also short words that are not normally found in the vocabulary of younger children. Words like cad, fey, lee, and rue are common in more mature literature and so belong in this more advanced level. The longer more complex words often contain a prefix, a suffix, a prefix and a suffix, or multiple prefixes and suffixes e.g. “ednesses”, “ening”, “ently”, “ively”, “orical”, “con_ally”, “dis_edness”, “hyper_ive”, “in_ously”, “mis_ness”.

There is a slight increase in difficulty in Part 1 and Part 2 when there are more consistently correct responses than incorrect responses.

Part 1 The target and the foils have the same number of letters. All letters can be substituted based on the **Visual Appearances Letter Similarities Chart**. The default is the *Least Similar* and progresses through the *Most Similar*. Foils for the target word “scouring” can be “fighters, acrobats, flounder, snowsuit” or the target “query” with the foils “hoary, pansy, berry, gurry”.

Part 2 The first or last letter remains the same. The remaining letters are substituted based on the **Visual Appearances Letter Similarities Chart** in the *Similar Elements* and *Most Similar* categories. For example, if the target is “reassess” the foils can be “responds, essences, evenness, suppress”.

Part 3 The foils for this level have the same first or last letter as the target. The remaining letters are substituted based on the **Visual Appearances Letter Similarities Chart** in the *Similar Elements* and *Most Similar* categories. For example is the target is “informally” the foils can be “inherently, internally, intensely, insecurity”.

Chapter 6–Challenge

The words in Chapter 6 are words that have unusual spellings (aardvark, tchotchkes), are specific to a discipline (bioluminescent, jejunostomy, spirea), and words that are archaic or are not common to the general population (dhow, kobold, xysts).

Part 1 The target and the foils have the same number of letters. All letters can be substituted based on the **Visual Appearances Letter Similarities Chart**. The default is the *Least Similar* and progresses through the *Most Similar*. Example foils for the target word “xeroradiography” can be “distrustfulness, surreptitiously, infrastructures, resourcefulness”.

Part 2 The first or last letter remains the same. The remaining letters are substituted based on the **Visual Appearances Letter Similarities Chart** in the *Similar Elements* and *Most Similar* categories. Example foils for the word “arbitrage” can be hesitance, penitence, auctioned, habitable”.

Part 3 The foils for this level have the same first or last letter as the target. The remaining letters are substituted based on the **Visual Appearances Letter Similarities Chart** in the *Similar Elements* and *Most Similar* categories. Example foils for the word “jaeger” can be “joshier, jasper, jabber, jagger”.

Screens and Options

Menu

Appearances can be Deceiving has six chapters each with three parts. Select a **Part** to play by clicking once on it. Double click on it to begin to play.



VIEW

Appearances can be Deceiving

Select a Chapter and Part

1 *Introduction-Letters*
Part 1 2 3

4 *Tenses, Plurals, & Composites*
Part 1 2 3

2 *Wee Words*
Part 1 2 3

5 *Beginnings, Endings, &...*
Part 1 2 3

3 *More Letters, Longer Words*
Part 1 2 [3]

6 *Challenge*
Part 1 2 3

Help

Menu

Options

Play

Quit

The navigation on the lower portion of the screen has buttons for **Help**, **Options**, **Play**, and **Quit**.

The **Help** button contains basic information regarding your current screen selection.

The **Options** button takes you to the **Options** screen to customize the game.

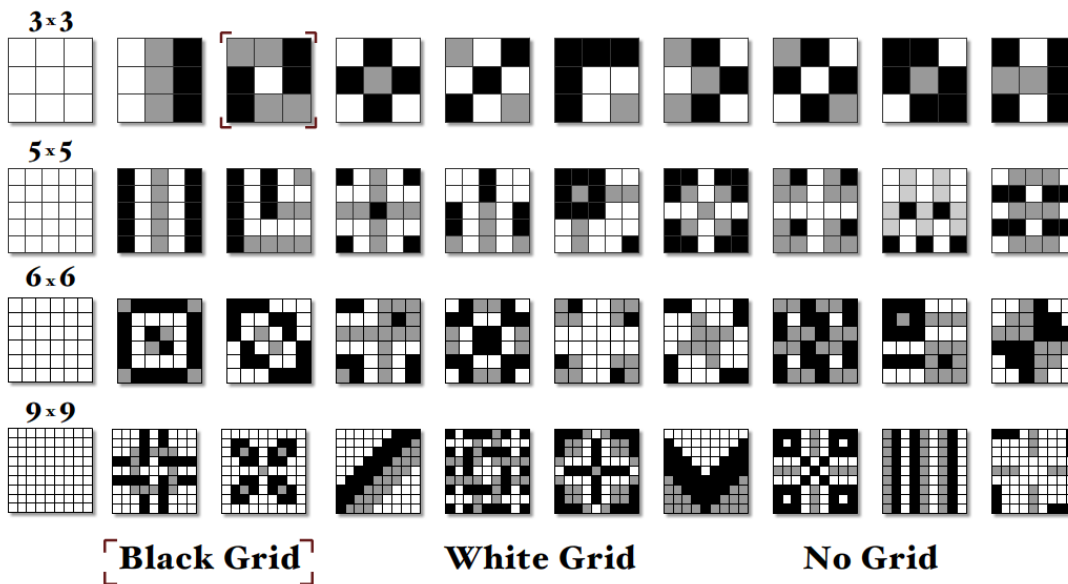
The default for the **Play** button begins with **Chapter 1 Part 1** and proceeds through the parts in that chapter when the correct answers are selected. To play other chapters and parts either double click on it or click once and then click the **Play** button.

When you click on the **Quit** button the **Results** screen appears. Click on the **Save** button to save the results to a log or click on the **Print** button for a hard copy. There is an option to return to the game by clicking on the **Play Again** button.

Screens and Options

Patterns

The **Appearances can be Deceiving** content is laid out in a grid. Each cell of the grid contains either a target or a foil. There are four layout options (3x3, 5x5, 6x6, and 9x9) and three grid options (the stroke around the cells). The cell number corresponds to the number of targets (3 targets in 3x3, 9 targets in 9x9). The size of the cells and grid will vary based on the length of the



Help Patterns Colors Fonts Settings Done

word. When the targets are longer words the grid will appear rectangular rather than square. As shown in the graphics below the first graphic has a four letter target and the second has a 9 letter target.

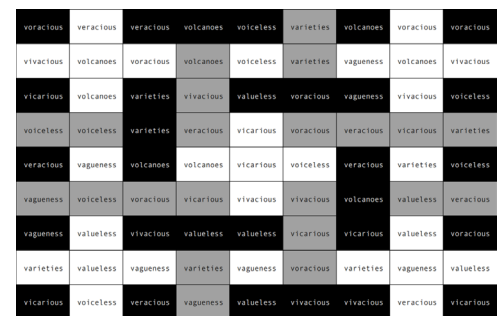
Each layout has a single color or a pattern background with three colors.

Click **Help** for information, **Colors** or **Fonts** to select colors and a font, **Settings** to customize how the game functions, and **Done** when you are ready to play.



Round 1/10

Find: taxi



9 To Find

Round 1/10

Find: voracious

9 To Find

Screens and Options

Colors

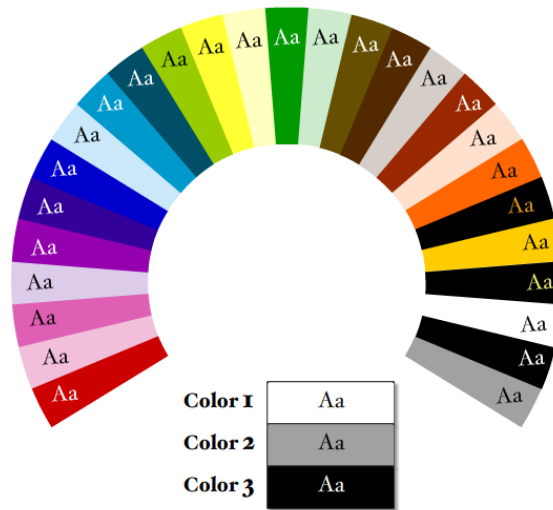
The **Appearances can be Deceiving** Colors for the background and three color patterns are selected from the color menu. Roll over the color swatch to see its name; click on it to select. The colors load from the top down so the first color selected will drop down to the Color 3 position; the second color will drop down to the Color 2 position; and the third color be in the Color 1 position.



VIEW

Appearances can be Deceiving

Select 1 to 3 Pattern Colors



Help

Patterns

Colors

Fonts

Settings

Done

To change a color, click once on the color swatch, then select the new color from the color swatches. Rearranging the colors will give a different appearance to the pattern selected.

The black with orange and yellow text are for individuals who are visually impaired.

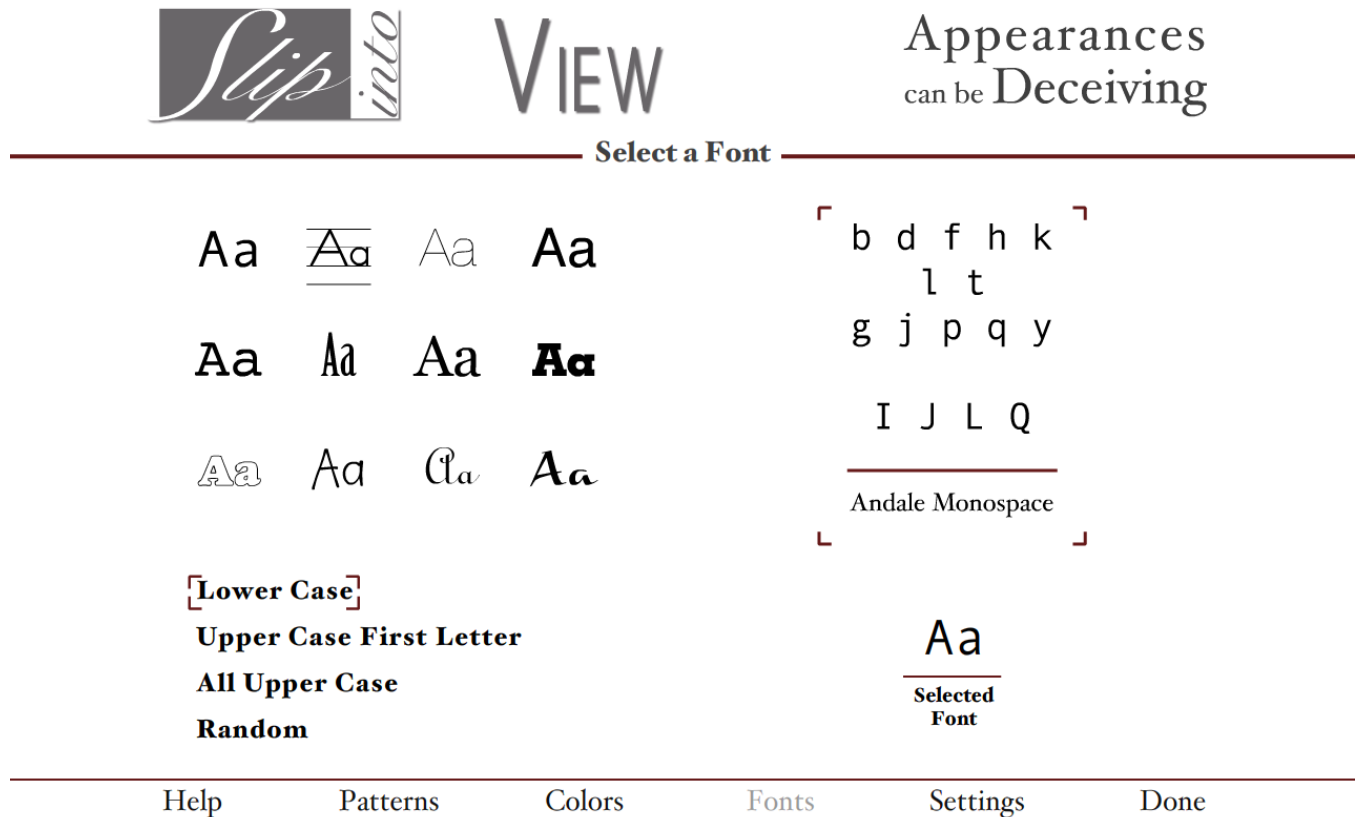
For default settings for specific visual impairments select **Settings**, then select one of the *Visual Difficulty* settings (Visual Impaired-1, Visual Impaired-2, Protanopia, Deuteranopia, Tritanopia).

Click **Help** for information, **Colors** or **Fonts** to select colors and a font, **Settings** to customize how the game functions, and **Done** when you are ready to play.

Screens and Options

Fonts

Appearances can be Deceiving has twelve font options. Roll over the font icon on the left side of the screen to see a sample of the font in upper and lower case letters. Click on an icon to select the font.



The default is Andale (a monospaced font) in **Lower Case**. Select **Upper Case First Letter**, **All Upper Case**, or **Random**. The **Random** option is similar to seeing text on the page or on the screen with the first letter of the targets and foils either upper or lower case.

Ten Visual Difficulty settings (fonts and colors selected) are available on the Settings screen. Level 1 is the Andale font (black text on a white background with a black grid). Levels 2-10 are progressively more visually difficult for differentiating the text from the background.

Click **Help** for information, **Patterns** or **Colors** to select patterns and colors, **Settings** to customize how the game functions, and **Done** when you are ready to play.

Screens and Options

Settings

Appearances can be Deceiving has multiple ways to customize the game. Select the number of rounds to play (5 to 25); select one of the visual difficulty settings; select the time for the target to be displayed, the pause after the target, and when the next round begins. The graphic shows Ms Warren as the Guide for Elliot who will be playing 10 rounds. The target will be displayed for 3

VIEW

Appearances can be Deceiving

Choose the Game Settings From the Options Below

Name:

Guide:

Rounds: Rounds to play: (5, 10, 15, 20, 25)

Difficulty: (5, 10, 15, 20, 25)

Visual Difficulty:

Word Spacing:

Display and Delay: Display target for: (3s, 0s, 2s)

Pause after target for:

Start next round after:

Feedback: Visual Auditory

Reset Settings

Help Patterns Colors Fonts Settings Done

seconds without a pause.

The target display option is 1, 2, 3, 5, and 10 seconds. The pause option is 0, 5, 10, 20, and 30 seconds.

When Elliot completes the round the game will proceed to the next round after 2 seconds. The options to start the next round are 2, 5, or 10 seconds. Never is also an option which allows time for discussion of the round.

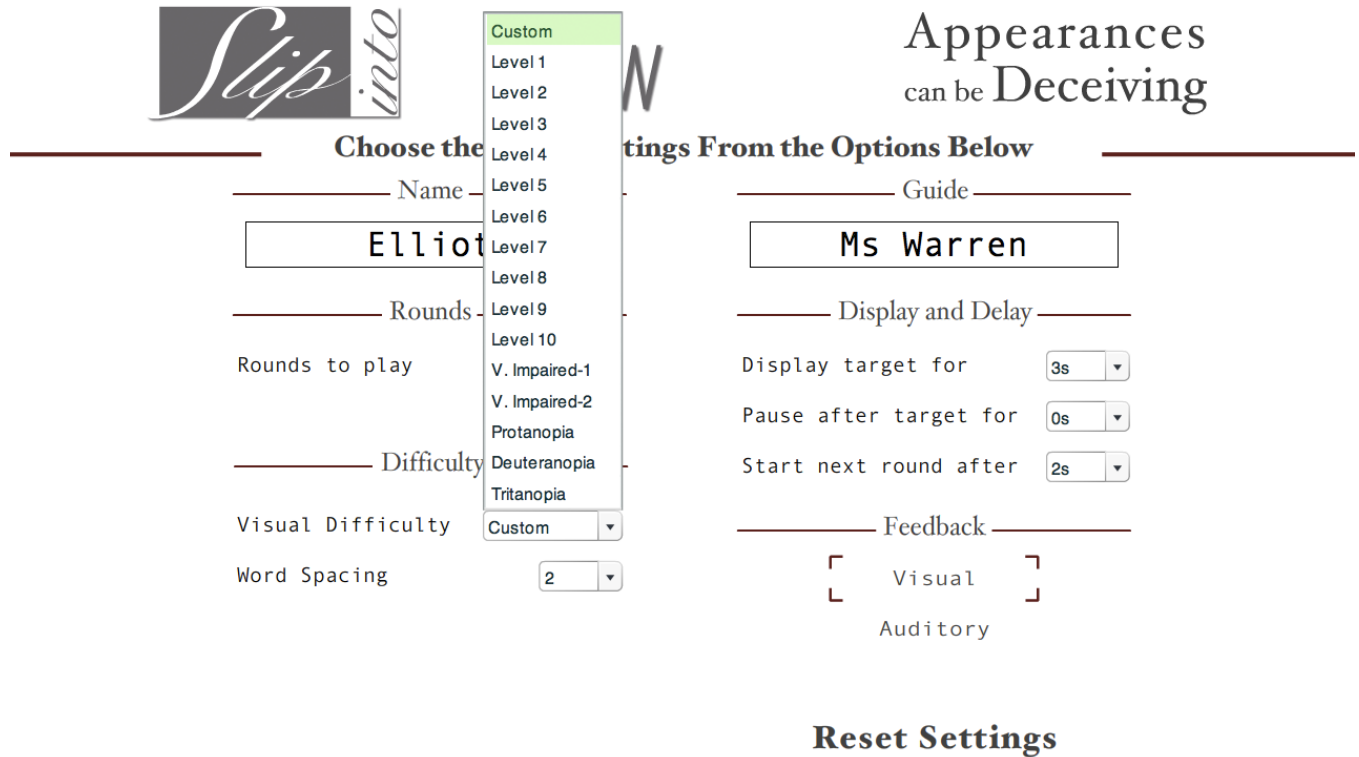
Visual feedback is an animated line drawn under a correct response and a bit of a shake of the word for an incorrect response. It is rather like the shake of the head. “Nope, that’s not it.” The feedback is subtle to keep it from being distracting.

Elliot will not have auditory feedback. The auditory feedback is one sound for a correct response and another sound for an incorrect response.

Screens and Options

Settings (cont.)

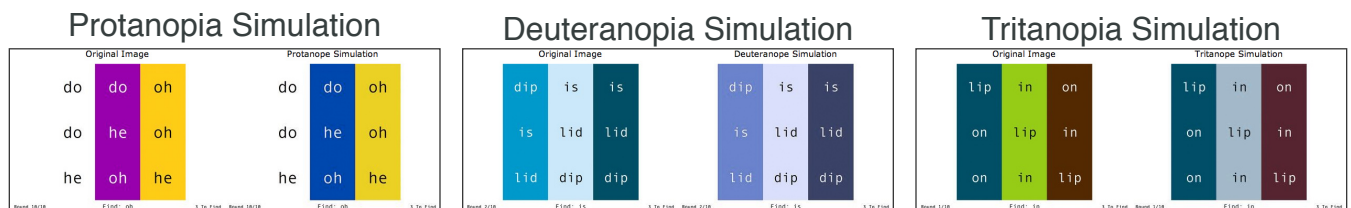
Appearances can be Deceiving is designed to hone visual discrimination skills, but what if not everyone perceives colors in the same way. Many people may see or understand a particular color to be a particular name, but others may not. There are ten levels, that are for most people, will progress from the least difficult figure-ground relationship to the most difficult. But there are some people who are not able to distinguish particular colors from other colors.



V. Impaired 1 has a black background with pale yellow and V. Impaired 2 has a black background with orange monospaced text.



Protanopia, Deuteranopia, and Tritanopia are combinations of colors that may be easier to distinguish for people who have color impaired perception. The colors on the left of the graphics are included as **Appearances** color swatches. The colors on the right of the graphic are color simulations. The simulator used is at <http://vischeck.com>.



Screens and Options

Settings-Visual Difficulty Levels

Appearances can be Deceiving has 10 Visual Difficulty levels. The Visual Difficulty Levels drop-down box contains ten background color, pattern, and font combinations of increasing visual difficulty. It includes two options for visually impaired learners; and three options for individuals who have color vision deficiencies. The following is the ranking used for the Visual Difficulty Levels.

Fonts Ranked

(Lower Case, Upper Case First Letter, Random, All Upper Case)

Andale Monospace/Courier Monospace

Helvetica/Georgia

Helvetica Neue/Birch

Kidprint/Geometric Slabserif

Typo Upright/Braganza

SchoolHouse Printed/Goudy Outline

Colors Ranked

Light Background with Dark text

White, pink, lilac, pale blue, pale yellow, pale green, tan, peach, gray

Bright Colors with Dark Text

bright green, yellow-orange, orange, bright pink

White/Yellow text on Dark background

black with white, black with yellow, black with orange

White text on Dark Colors

bronze, brown, rust, bright blue, dark blue-green, purple, violet, dark blue, green, red

Specialty

black with yellow text

black with orange text

Dark font on yellow-orange or orange

Patterns and Grids Ranked

Single color background with or without grid.

3x3 patterns with all light colors and dark text is the least challenging.

9x9 patterns with all bright or dark color, or a combination of bright and dark is most challenging.

The greatest challenge should be the fifth 9x9 pattern.

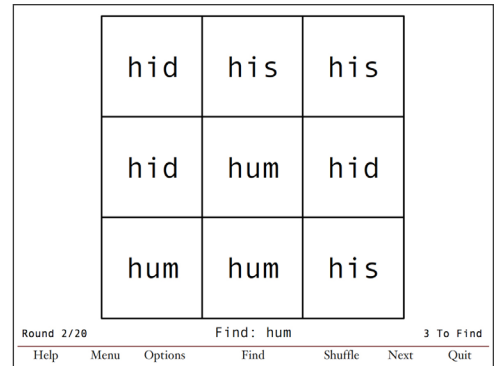
The grids can define the cells for each word or can act as distractors when they are the same color and width to the font being used. When the white grid option is chosen with bright or dark colors the cells may appear to float in space and the grid will seem to have vanished. The reason for this is the game background is white and the white grid will be viewed as part of the background.

Screens and Options

Settings-Visual Difficulty Levels

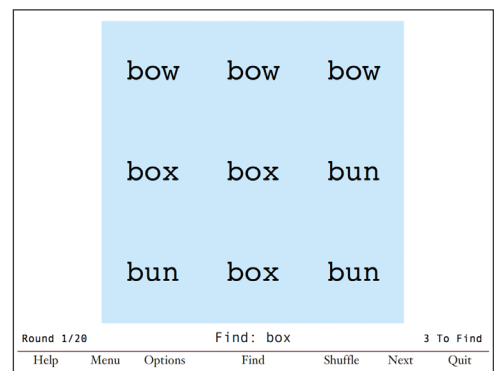
Level 1

Andale Monospace (all lower case)
 Dark text on white
 3x3 black grid
 Default Word Spacing
 Words are from Chapter 2 Part 1



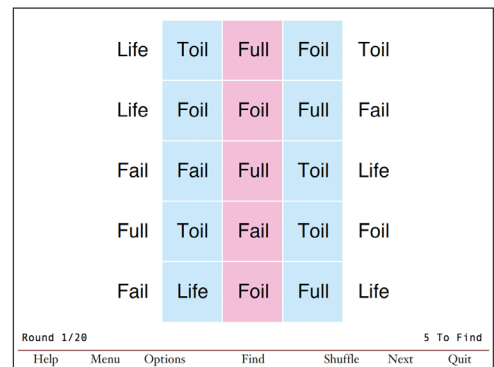
Level 2

Courier Monospace (all lower case)
 Dark text on pale blue
 3x3 no grid
 Default Word Spacing
 Words are from Chapter 2 Part 3



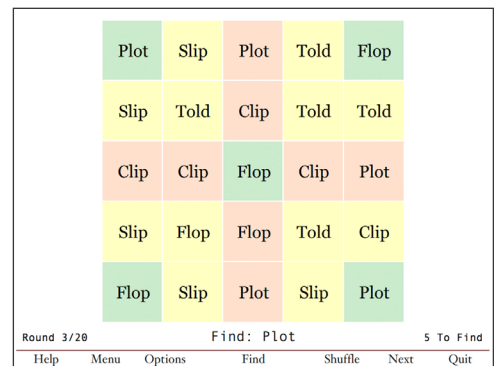
Level 3

Helvetica (upper case first letter)
 Dark text on pale blue, pink, white
 5x5 P1 white grid
 Default Word Spacing
 Words are from Chapter 3 Part 1



Level 4

Georgia (upper case first letter)
 Dark text on pale yellow, peach, pale green
 5x5 P3 white grid
 Default Word Spacing
 Words are from Chapter 3 Part 2

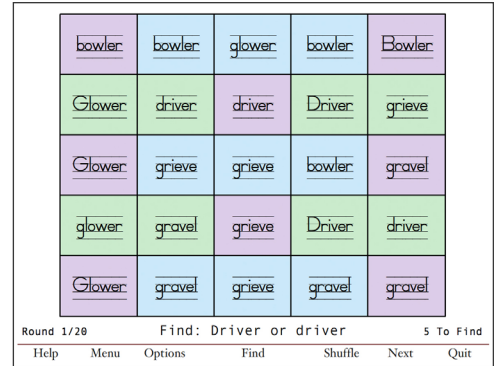


Screens and Options

Settings-Visual Difficulty Levels continued-

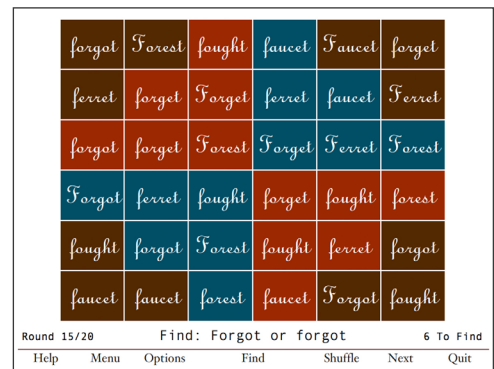
Level 5

SchoolHouse Printed (random)
 Dark text on lilac, pale blue, pale green
 5x5 P9 white grid
 Default Word Spacing
 Words are from Chapter 3 Part 3



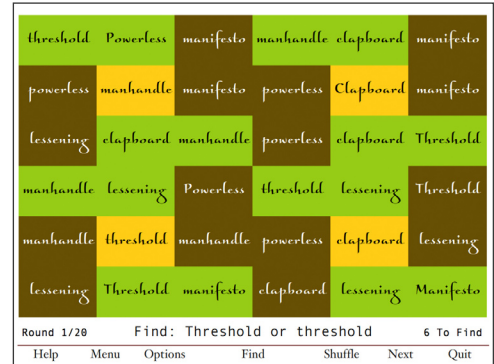
Level 6

Typo Upright (random)
 White text on brown, rust, dark blue-green
 6x6 P9 white grid
 Word Spacing 0
 Words are from Chapter 4 Part 3



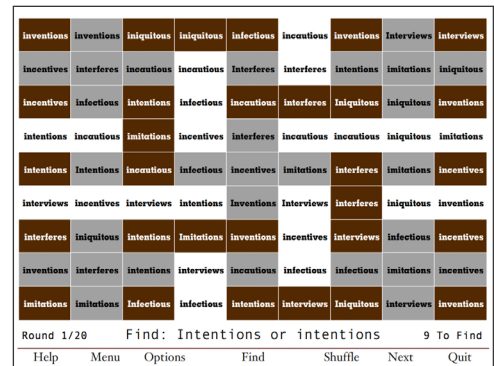
Level 7

Braganza (random)
 Dark and white text on yellow-orange, bright green, bronze
 6x6 P7 no grid
 Word Spacing 0
 Words are from Chapter 5 Part 1



Level 8

Geometric Slabserif (random)
 Dark and white text on white, brown, gray
 9x9 P7 white grid
 Word Spacing 0
 Words are from Chapter 5 Part 3



Screens and Options

Settings-Visual Difficulty Levels continued-

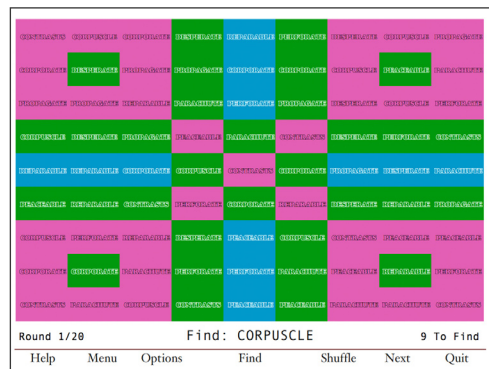
Level 9

Birch (all upper case)
 White with black text
 9x9 P1 no grid
 Word Spacing 0
 Words are from Chapter 6 Part 1



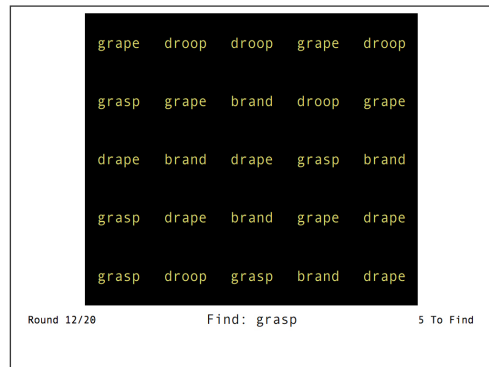
Level 10

Goudy Outline (all upper case)
 Dark and white text on green, bright blue, bright pink
 9x9 P7 no grid
 Word Spacing 0
 Words are from Chapter 5 Part 2



Visual Impaired 1 (V. Impaired-1)

Andale Monospace (all lower case)
 Yellow text on black
 5x5 no grid
 Default Word Spacing
 Words are from Chapter 3 Part 3



Visual Impaired 2 (V. Impaired-2)

Andale Monospace (all lower case)
 Orange text on black
 5x5 no grid
 Default Word Spacing
 Words are from Chapter 3 Part 3



Comments and Credits

Appearances was designed by Nancy Scarry, a sculptor who has worked for LocuTour Multimedia for over a decade as a multimedia artist. She has an MFA, and has taught in a variety of settings—community college, children’s art center, and a forensic psychiatric facility.

Appearances began with the idea, “Why do we see what we see?” and “Why don’t we all see the same thing?” Art courses teach you that your work is to communicate with the viewer. That you can control what the viewer sees, and at times what they feel.

After reading *Planet of the Blind*, by Stephen Kuusisto and *The Island of the Colour-blind* by Oliver Sacks it became apparent that all people don’t see an artwork the same way. So, if all people can’t see an artwork in exactly the same way then perhaps they cannot see text in the same way.

What if you look at text as a figure-ground relationship like you would in an intro design class? First start with individual letters; then add the relationship between individual letters with other the background; then add the relationship between letters with other letters and for fun add some background colors and patterns. How does that change what we see, what we read?

The game is structured like a design class featuring words. The words are placed in Chapters ad Parts based on their visual appearance, structure, and meaning.

Appearances can be Deceiving was programmed by Michael Whipp. Mike has worked on numerous LocuTour software projects and websites.

Who Should Play This Game?

by Marna Scarry-Larkin, MA, CCC-SLP

Appearances can be Deceiving is appropriate for children and adults with visual processing disorders, attention deficit disorder, frontal lobe syndrome, autism spectrum disorders, brain injury, stroke, or problems with: concentration; organization; language; memory storage and retrieval of information; and sustained auditory and visual attention.

The game is also appropriate for children learning pre-reading and math skills, children and adults with reading and spelling difficulties, short-term memory problems, sustained and shifting attention difficulties, visual processing, or central auditory processing dysfunction.

Appearances can be Deceiving is appropriate for clients in Rancho Level VI, VII, and VIII; and focuses on visual attention, discrimination, conceptualization, integration, analysis, and visuomotor coordination to analyze visual features of word relationships.

Description of **Appearances can be Deceiving**

Many individuals learning to read or recovering reading skills have difficulty with scanning and visual tracking. The game requires visual attention, perception, analysis, and synthesis of visual stimuli.

The Chapters and Parts have the same game setup and rules. This consistency allows the individual to focus on the task of visual perceptual discrimination without learning new game rules for each Chapter. The difference between the Chapters and Parts is the complexity of the discrimination required.

Chapter 1

The discrimination is between single-letter targets with single-letter foils; single-letter targets with single-letter foils and letter-pair foils; and letter-pair targets and foils.

Chapter 2

The task is to visually discriminate between two-letter word targets with foils with two and three letters.

Chapter 3

The targets and foils have more visual complexity and include two-syllable words.

Chapter 4

The targets include words from previous chapters with suffixes and prefixes.

Chapter 5

The target words increase with visual complexity, the length of the word, and its meaning.

Chapter 6

The targets are very challenging words that may be unfamiliar to many individuals and therefore allows practice in decoding very complex novel words.

Rationale

This task is also intended for clients in Rancho Level VI or VII and above, drawing on Luria's (1973) third functional unit, planning and verification of activity and requiring perceptual analysis and appreciation of spatial information. The client is required to perform a featural analysis of the stimuli, aided by familiarity and language. The task also requires motor persistence, sustained visual attention and scanning, response speed, visuomotor coordination and the ability to hold the information in working memory long enough to complete the response.

Visual Appearances Letter Similarities Chart

The chart was compiled using lower case letters and a monospaced sans serif font (the letters do not have any added appendages and all letters receive the same space).

| Group | Letters | Least Similar | Similar Elements | Most Similar |
|---------|--------------------|---------------------------------|--------------------------|--------------------|
| Group 1 | a c e n o r s u | f i j k l m t v w x y | b d g h p q z | a c e n o r s u |
| Group 2 | b d g h p q | f i j m r v w x y z | a c e k l n o s t u | b d g h p q |
| Group 3 | f i j l t | a c e m n o r s v w x z | b d g h k p q y | f i j l t |
| Group 4 | k | a c e g i j m n o p q s u | f l r t v w | b d h x y z |
| Group 5 | m | b d f i j k l r t | a c e g h o p q s u y | n v w x z |
| Group 6 | v w x y z | a b d f g h i j l o p q r | c e k m n s t u | v w x y z |

In Chapter 1 Part 2 letter pairs are foils for single letter targets. The following are the letter pairs that are foils for single letters.

| |
|---|
| Group 2 Letter Pairs for b d g h p q |
| Similar Elements |
| fa fc fe fn fo fu fs af cf ef nf of uf sf ka kc ke kn ko ku ks ak ck ek nk ok uk sk ta tc te tn to tu ts at ct et nt ot ut st aj cj ej nj oj uj sj ja jc je jn jo ju js |
| Most Similar |
| la le lo lu lc ln al el ol ul cl nl |
| Group 4 Letter Pairs for k |
| Most Similar |
| lt lx fx fr lv fv |

Appendages, Suffix, and Prefix Occurrence Chart

The first and last letters of a word are generally the first pieces of information considered when differentiating the text from the background. The appendages added in Chapter 5 and 6 are prefixes, suffixes, and common letter combinations. The appendages are placed in the Chapter and Part where they occur the most frequently.

When multiple appendages are attached to a root word, the word is visually more difficult and placed in the next Chapter or Part. The word “advantaged” is in Chapter 5 Part 2 while the word “advantageousness” is in Chapter 5 Part 3.

Beginnings

Chapter 5 Part 1

ad, ber, bi, bia, bic, bie, bin, com, du, mid, per, quint, re, self, un

Chapter 5 Part 2

after, ambi, ante, anti, auth, auto, be, bene, bio, cent, centi, circu, co, con, contra, de, dec, deci, des, di, dia, dis, equi, ex, extra, fore, giga, hex, hy, hydra, il, in, inter, intro, ir, magni, mal, mega, micro, milli, mis, mon, mono, multi, non, omni, pan, para, peri, phy, poly, post, pre, pro, prot, quad, sche, semi, sub, super, sym, syn, tele, trans, tri, under, uni

Chapter 5 Part 3

amphi, counter, duo, eu, geo, gram, hemi, hetero, homo, hydro, hyper, hypo, intra, kilo, macro, meta, nano, photo, psy, sept, ultra

Chapter 6

dys, hept, neo, orth, physio, pseudo

Endings

Chapter 5 Part 1

aries, ary, end, ered, ert, ery, ex, ians, iarn, ied, ier, ies, iest, ine, ing, ior/s, ish, or/s, ore, que, tier, vore, xes, zen/s

Chapter 5 Part 2

able, ably, al, ally, ant/s, ate, aur, aux, ble, bly, bute, cal, cy, dy, ening, ent, ential, ently, ess, etic, ey, fied, fies, ful, fully, fy, fying, gory, ia, iage, iary, ic, ically, ify, ious, isk/s, ist/s, ite/s, ities, ium, ly, matic, meter/s, metry, orial, ory, quet, ry, scribe, ship, some, son, sure, tary, tial, tin, tly, tor/s, tory, tric, tude, ture, ty/ities, ute, ze

Chapter 5 Part 3

chet, esis, gram, graph, graphic, graphy, ient, ifying, ism, ive, ively, ize, logy, ment, nce/nt, nym/s, orical, ous, ously, sis, taries, tion, tous

Partial Reading List

Books

- Mogilner, A. (1992). *Children's Writer's Word Book*. Cincinnati: F&W Publications, Inc.
- Madsen, S and Gould, B. (1994). *The Teacher's Book of Lists*. Tucson: Good Year Books,
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- Kuusisto, S. (1998). *Planet of the Blind*. New York: The Dial Press.
- Sacks, O. (1996). *The Island of the Colour-blind*. London: Macmillian Publishers Ltd.

Partial Reading List

Websites and Blogs

Education

CA State Board of Education

<http://www.cde.ca.gov/index.asp>

CA Education Standards

<http://www.cde.ca.gov/be/st/ss/vagrade1.asp>

National Education Association

<http://www.nea.org/>

Texas Education Agency

<http://www.tea.state.tx.us/index.aspx>

US Department of Education

<http://www.ed.gov/>

National Governors Association (Education Division)

<http://www.nga.org>

American Federation of Teachers

<http://www.aft.org/index.cfm>

National Institute of Child Health & Human Development

<http://www.nichd.nih.gov/research/supported/nrp.cfm>

Words

The Phrontistery (Stephen Chrisomalis)

<http://phrontistery.info/index.html>

The Word Frequency Lists (Rob Waring)

<http://www.robwaring.org/vocab/wordlists/vocfreq.html>

Brown Corpus, Frequent Families

<http://www.edict.com.hk/textanalyser/wordlists.htm>

General Service List

<http://jbauman.com/aboutgsl.html>

The Dale-Chall list of 3,000 simple words

<http://rfptemplates.technologyevaluation.com/dale-chall-list-of-3000-simple-words.html>

Partial Reading List

Websites and Blogs

Visual Discrimination

Mueller, S. *Letter Similarity Data Set Archive*. Retrieved (2007) from <http://obereed.net/lettersim/index.html>

Heupel, E. *Try Asking a Typographer*. Retrieved (2007) from <http://heupel.com/eclectic/2003/09/16/try-asking-a-typographer/>

Larson, K. *The legibility of a typeface should not be evaluated on its ability to generate a good word shape*. Retrieved (2006) from <http://www.eyemagazine.com/print/opinion.php?id=110&oid=265>

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<http://www.afb.org/default.asp>

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