

Stroop Effect and Vision

Your eye can see color as well as black and white images. Your eye is especially equipped with two different kinds of light-sensitive cells. These cells are found on the back of your eye.

- The cells that are sensitive to **dim light** are called **rods**. When you get up in the middle of the night to stumble to the bathroom, your rods are working overtime to help you see in the dim light. Rods do not detect color. That's why everything on the way to the bathroom looks dark gray.
- The cells in your eye that are sensitive to **bright light and color** are called **cones**. When you turn on the light in the bathroom, the rods start "turning off" because they don't like the bright light and the cones start "turning on." That's why (once your eyes get used to the bright light) you can see color again. Sometimes people are born with cones that don't work correctly and they cannot see some colors well. These people are said to be color-blind.

By now you are very familiar with your colors. In fact, your brain might be *too* familiar with the colors. Let's do some experimenting to show how your brain reacts when you send it some "mixed messages."

Materials

- Colored pencils, markers or crayons
- Graphing paper
- Stroop Effect Test Cards
- Scissors

Procedures

- Choose a partner to work with
- Cut out the Stroop Effect test cards (There are twelve cards altogether).
- Color in the names of colors found on each card, but do not color the word in the color of the name of the color. Instead:
 - Color the word "BLUE" with the **red** pencil or marker or crayon.
 - Color the word "GREEN" with **blue**
 - Color the word "YELLOW" with **red**
 - Color the word "PINK" with **blue**
 - Color the word "RED" with **green**
 - Color the word "ORANGE" with **purple**
 - Color the word "GRAY" with **yellow**
 - Color the word "BLACK" with **red**
 - Color the word "PURPLE" with **blue**
 - Color the word "TAN" with **purple**
 - Color the word "WHITE" with **black**
 - Color the word "BROWN" with **green**
- Check to make sure you and your partner colored the words correctly.
- Start by testing one partner at a time. Test by quickly showing each card to your partner. Your partner should call out the name of the COLOR of the word appearing on the card. Place the cards they named correctly in one stack

on your desk. Place the card they named incorrectly in another stack. After you have shown all twelve cards to your partner complete Trial 1 in **Data Table 1**. Mix the cards up and repeat these steps four more times, for a total of 5 trials. (NOTE: To get a correct response your partner must name the COLOR correctly, not the name of the word itself. For example, we colored the word “BLUE” red. To get a correct response your partner must say **red**.)

- Switch roles and repeat the experiment. Complete **Data Table 2**.
- Complete **Challenge Activities**.

Data Table 1

Subject Name (Your partner's name): _____			
Trial #	Number of correct responses	Number of incorrect responses	Other observations
1			
2			
3			
4			
5			

Data Table 2

Subject Name (Your name): _____			
Trial #	Number of correct responses	Number of incorrect responses	Other observations
1			
2			
3			
4			
5			

Challenge Activities

1. In which trial did *your partner* name the most cards correctly? _____
2. In which trial did *you* name the most cards correctly? _____
3. Did there seem to be some colors that were more difficult to name correctly?
_____ If there were, what were they? _____
Why do you think these colors were so difficult to name correctly? _____

4. You probably became frustrated when you couldn't name the color correctly.

Describe some activities that depend upon your ability to see different colors correctly. _____

Now imagine how frustrating it would be to be born color-blind. What would you do if you were a teacher and one of your students was colorblind and you still wanted that student to participate in this experiment? _____

5. Now use the graphing paper to graph the results of your experiment. You might want to include some of the results of others on your graph. Try using different colors to present your data. (NOTE: *If you're familiar with spreadsheet computer programs, ask your teacher if you can use the computer to create and print your graph.*)

6. If your class has a computer with Internet access, check out these websites for more information about the Stroop Effect:

<http://faculty.washington.edu/chudler/words.html>

<http://faculty.washington.edu/chudler/colors3.html>

<http://www.uwm.edu/People/neuropsych/Strpmast.html>

<http://www.cgl.uwaterloo.ca/~cjboutil/stroop.html>

Idea adapted from *Neuroscience for Kids*,
<http://faculty.washington.edu/chudler/neurok.html>

Stroop Tester Page

Cut out these cards. Then color them according to the steps describes in **Procedures**.

BLUE

GREEN

YELLOW

PINK

RED

ORANGE

More Stroop Test cards

GRAY

BLACK

PURPLE

TAN

WHITE

BROWN