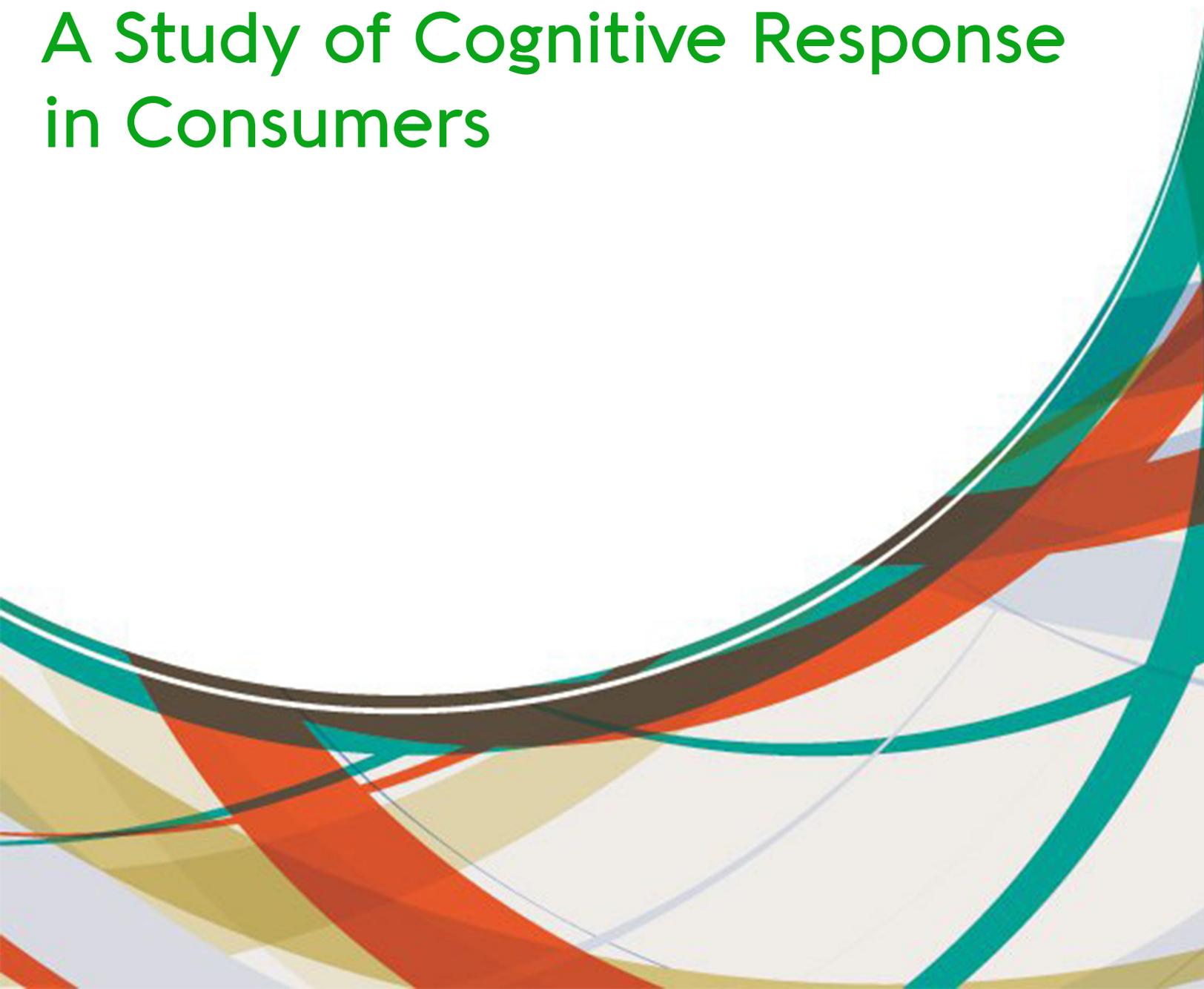


The Science of Logos

A Study of Cognitive Response
in Consumers



Abstract

The purpose of this experiment was to determine which type of logo was the most effective to use in businesses, along with different colors, styles, and shapes. It was hypothesized that between a combination logo, symbol logo, and text logo with different color, style and shape variables, a combination logo with a globe of mixed people, a blue background and dark blue border, and a straight line border will be the most liked.

In order to test this hypothesis, an eye tracker was used to track the total fixation duration for each participant on each area of interest for each logo. The device uses infrared illumination with two high resolution sensors that accurately show where on the screen a person is looking at the screen. The participant had to first undergo a calibration test, where they follow a dot around the computer screen to ensure that it is working correctly. The different logos were then shown and the eye tracker displayed where each participant looked on a computer-generated heat map.

After testing each participant and determining which part of the logo they looked at, the results showed that the combination logo was the most effective. The text logo had an average fixation duration of 6514.25 ms, the symbol logo had an average fixation duration of 7869.14 ms, and the combination logo had an average fixation duration of 8694.65 ms. Other graphs support the data above and show each logo that the participant chose. Three participants chose the text logo, eight participants chose the symbol logo, and nine participants chose the combination logo. Another graph was used to show each variable that the participants chose. Six participants chose globe variable one, and three chose globe variable two. Seven selected color variable one, and two selected color variable two. Five participants chose shape variable one, and four chose shape variable two.

In this experiment, the results supported the hypothesis that the combination logo, followed by the symbol logo, would be most popular with globe variable one, color variable one, and shape variable one. The text logo only captured three participants' attention, and proved to be the least effective logo.

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Review of Literature

Logo design has always been important in people's lives and is essential in advertisement. Logos are intended to be the "face" of a company while depicting the company's uniqueness through colors, fonts, and images. It is also important that the logo is easily identifiable by customers. However, one question still remains unanswered: What is the best logo to use for companies? For this experiment the three most popular logo types were chosen: a text logo, symbol logo, and combination logo. The color, shape, and style were edited for each logo to give it individual properties that make it eye-catching.

The type of the logo is one of the most important variables in a logo. When choosing which kind of logo to represent the company, there are many considerations to keep in mind. Some of these are how the logo will look on products, how it will display the company, and consumer response to the logo. One common type of logo is a text logo. A text logo usually uses a unique font that spells out the company or brand name. Many companies create their own fonts to use for this logo that are also used across all of their marketing. Some examples of these logos are Facebook, Disney, and Sony. Another frequently used type of logo is a symbol or emblem logo. These logos represent the company in a simple but bold manner. They usually encase the company name within the logo which usually involves an abstract image. Some examples of these include Starbucks, the NFL, and Harley-Davidson Motorcycles. The last type of logo

included in this experiment is a combination logo. A combination logo combines the elements of an image and text. The wordmark and icon give the logo flexibility for the use of it across other marketing. Some combination logos are Hawaiian Airlines, Adidas, and Sprint. The type of logo is an important factor in choosing the perfect logo.

The color variation of a logo is a huge factor in picking the most appealing logo.

Studies show that 93% of consumers look at visual appearance when choosing what to buy, and 84.7% of people say that color is the primary reason to buy a particular product. Different colors say different things to customers. Red is considered a color to evoke strong emotions, often stimulating people to take risks. It usually symbolizes passion, intensity, and love. Many restaurants use it to stimulate appetite. Yellow is a color that stimulates feelings of optimism and hope. It is used by many companies because it grabs attention of window shoppers. Blue is associated with water and peace. It calms down the senses and lowers blood pressure and is used in businesses because it is productive and non-invasive. Orange is often used to stimulate feelings of energy, balance, and warmth. It creates a call to action: buy, sell, subscribe and is found used to impulse shoppers. The color green represents nature, health, and good luck. It can symbolize money and nature. It is used to relax in stores and is associated with being wealthy. The last major color, purple, creates feelings of spirituality, mystery, and royalty. It represents a creative, imaginative, wise brand and also is used to soothe or calm.

Different shapes can send different messages. Minds of consumers respond in different ways to different logo shapes. Straight lines, circles, curves, and jagged edges all have different effects on consumers. Circles, ovals, and ellipses are often used to project a positive emotional message. It can represent community, friendship, love, relationships, and unity. Shapes such as squares and triangles show balance. They also represent strength, professionalism and efficiency. It is thought that triangles can be associated with power, science, religion, and law. Companies aimed towards men use triangles since the traits mentioned previously are associated with being masculine. Jagged and angular edges can be interpreted as aggressive or dynamic, while round edges can appear to give a youthful appeal. Depending on the target audience, different shapes should be used for different people.

Logos can have many different styles. One example of a style variable is the font used. One important factor for using fonts is making a font that matches the brand. Slab fonts and blocky fonts are associated with strength where as elegant and curvy fonts are associated with class and style. It is also important not to use more than two fonts, to keeps the logo uncluttered. Another example of a style variable is the alignment of text. For example, left, middle, and right alignment. Multiple studies have shown that left and middle alignment are the easiest to read. Left aligned and middle aligned text allow the consumer to read the label quickly and easily.

These examples of style variables show how a slight change can lead to a big difference in a consumer's reaction.

Grabbing the customer's attention is essential in picking the perfect logo. Novelty is one way to keep the viewer's attention, because the unknown demands attention of the brain.

One example of keeping novelty is not making a logo text-heavy. The novelty factor of a logo can disappear if it is in the same, uniform style cluttered by text. Another way to capture attention is to inspire emotion. Once people feel something about the logo, they not only pay attention to the logo, but also remember it. Another way used to grab people's attention is by demonstrating contrast. The brain pays more attention to things in contrast compared to things that are uniform. Our brains are also wired to pay attention to disruptions or changes. Attention grabbing is very important in logo design.

The other important information for this experiment is knowing how the eye tracker works and the concept of eye tracking. The eye tracker used in this experiment was provided by The Eye Tribe. It records eye movement patterns and can easily record human attention. The Eye Tribe eye tracker records this eye movement using a recording of the participant's face and eyes. In order for it to function properly, the eye tracker must be placed below the screen where participants will be looking. The eye tracker then must be calibrated because different people have different eye characteristics. Eye tracking has two different types of applications: active and

passive. Active allows users to use their eye movements as an input to control a device, application, or game. The gaze point can be combined with other inputs such as buttons, keyboards, mouse, or touch in order to create a more engaging interaction. Some examples of this is a web browser that scrolls automatically based gaze, allowing icons to be activated by looking at them, and an on-screen keyboard that allows people with motor disabilities to write, send emails, participate in online chats, etc. Passive eye tracking is used to observe and evaluate human attention, which is used in this experiment. Eye movements can be classified into fixations and saccades. Fixations occur when someone is locked onto an image and saccades are a rapid movement of the eye between fixation points. This can be applied to marketing and can show what parts of an ad catches people's attention. The eye tracker is a useful tool in finding the best logo for a company.

A study of logo design is important because it can help businesses pick out the best logo for their company. Technology and the arts are always evolving, and a logo study would allow businesses to design new ways to create logos and catch people's attention. Logo design is important in our day to day lives, and with the increase of businesses, there is no doubt that a logo design study would be helpful.

Statement of Problem: **What is the best business logo a company can use based on physical attributes?**

Hypothesis: **If different business logos are tested based on their physical attributes, then the combination logo with globe variable one, color variable one, and shape variable one will be the most liked.**

Experimental Design

I. Project Title: The Science of Logo Design - A Study of Cognitive Response in Consumers

II. Statement of Problem: What is the best business logo a company can use based on physical attributes?

III. Hypothesis: If different business logos are tested based on their physical attributes, then the combination logo with a globe of mixed people, a blue background and dark blue border, and a straight line border will be the most liked.

IV. Subjects:

Manipulated Variable: The logo's style, shape, and color

Responding Variable: Customer Response/Feedback (Time spent looking at each area of interest, Rating out of 5 for each logo, Memory)

Controls: Same amount of time for testing, Same survey given, Same logos shown

V. Measures:

- Attention Span (Eye-Tracker)
- Where the logo catches customer's attention (Eye-Tracker)
- The participant's opinion on the logo (Survey)
- Memory (Survey)

VI. Materials:

- Computer
- Adobe Photoshop CS6
- AutoCAD Student License
- Eye Tracker - The Eye Tribe
- The Eye Tribe Server Application
- The Eye Tribe UI Application
- The EyeProof Application
- Eye Proof Beta Access
- Pen
- Survey
- Human Participants

VII. Procedure

Note: I will be using my own company name, logos, and color scheme for this project.

Part 1: Creating the Different Logos

A. Creating the Text Logo Template

- 1) Optional - Go to www.dafont.com and download AquaMax font.
- 2) Open up Adobe Photoshop CS6 and create a new file 1000 by 1000 pixels.
- 3) Create an ellipse using the circle tool with a height of about 8 inches and a width of about 13 inches using the ruler guidelines on the side of the page. It's okay if it is not exact, the ellipse can be resized in the end.

- 4) Set the ellipse color to transparent which should be represented by a white rectangle with a red line running diagonally through it. Change the stroke of the ellipse to 1pt and make sure that the color is black. The colors will be filled in later.
 - 5) Double click on the image of the ellipse where it shows all of the layers. A menu should pop up titled “Layer Style.”
 - 6) Click on the tab titled “Stroke” and click the checkmark which will turn it on. Set the stroke to black. This will be changed when the color variables are added.
 - 7) Create a text box for every word pertaining to the company. (The company used in this experiment is Global Graphics PA, so three different text boxes will be created)
 - 8) For these text boxes, set the size of the font to around 130 size letters and make the first letter of each word around 260 size letters. The “pa” in the title should be kept to 130 size letters throughout. Also, make sure to set the font color to black so you can see it.
 - 9) Align the letters so that they all fit in the center of the ellipse.
 - 10) Save the file, the first logo template is now complete
- Refer to Figure A to see the finished look of the first logo template

B. Creating the Symbol and Combination Logo Template

- 1) Open AutoCAD and create a new file.
- 2) In AutoCAD, use the circle diameter tool to make a circle have a diameter of 13 inches.
- 3) Using the rectangle tool, create a rectangle that is .25 inches wide and .5 inches tall.
- 4) Create a circle with a diameter of .5 inches and align it so that it is tangent to the middle of the width of the rectangle.

- 5) Using the line tool, extend a line from the upper half of the rectangle at approximately a 45 degree angle.
- 6) Use the mirror tool to mirror this line on the other side of the rectangle. It should now look like a person with both hands pointed down.
- 7) Line up the person that was just created on the top part of the circle so that it is tangent to the middle of the width of the rectangle.
- 8) Use the “arraypolar” command so that the people are all standing around the circle. Change the settings so that more people can be added making it look like that they are all holding hands.
- 9) Click on plot and for the second dropdown menu change it so that it will export to a PDF.
- 10) Change the dropdown that says display so it says window, and drag over the area that should be exported. After this is completed, hit “OK.”
- 11) Open a new photoshop file that is 1000 by 1000 pixels.
- 12) Drag the PDF from your desktop into the photoshop file.
- 13) Place and scale the file.
- 14) Get a picture of a world map from the internet (black and white), and center it inside the circle.
- 15) Use the magic wand tool to select the large circle and then click on the layer of the world map and click the layer mask button. Afterward, adjust it accordingly.
- 16) Save and export this file.

See figure B for the end result

From this point the steps separate into two parts on how to make the different logos

B1. Making the Symbol Logo

- 1) Using the file from step 15, create a new file 1000 by 1000 pixels and import that same file.
- 2) Use the rectangle tool to create a rectangle that stretches over the logo and goes about 1/8 of an inch past the logo on each side. Make sure that the rectangle's fill is white and has a black stroke of 1.
- 3) Create a new text box and type in the company name. For this example use "Global Graphics PA."
- 4) For the font used in this example, use the font "Neo Sans Std."
- 5) Scale the text so that it fits nicely inside the box and make sure that it is centered within the rectangle previously created. The text color should be black.
- 6) Save the file, the third logo template is now complete.

-Refer to Figure C to see the final product

B2. Making the Combination Logo

- 1) Continuing from letter B, step 15, downscale the logo so that text can fit next to it.
- 2) Create two text boxes. One for the heading, and one for the subheading.
- 3) For the heading, write "Global Graphics PA," and for the subheading, write "Designed for Success." Check that the subheading is smaller than the regular heading. The text should also be black.
- 4) Align all the images so that they fit nicely together on the screen. The subheading should be aligned in the middle of the regular heading.

- 5) Use the rectangle tool to draw a rectangle that goes off the screen but makes an effect so it looks like there is a line above the images and a line below the images. Set the stroke of this line to black with a weight of around 1. The rectangle should be transparent.
- 6) Save the file, the final logo template is now complete.

-Refer to Figure D to see the final product

Part 2: Creating the Variables

Note: Every variable should be combined and saved as a different file so that there are numerous amounts of combinations.

Section 1: The Text Logo

A1. Variables for the text logo - Color Variable #1

- 1) Open up the text logo that was created earlier
- 2) Change the shape color (ellipse or rounded rectangle) to “009cff.” Do this by double clicking the layer and clicking “color overlay.”
- 3) Change the stroke color of the shape to “0757a1.”
- 4) Press “okay” to save these changes.
- 5) Double click on all of the text layers and give them a white color overlay with no stroke.
- 6) Go to “File > Save as” to save the file. The first color variable is now completed.

-See figure E to look at the finished result.

A2. Variables for the text logo - Color Variable #2

- 1) Repeat step 1 in A1.
- 2) Change the shape color to “05a608.”
- 3) Change the stroke color to “0f5205.”
- 4) Repeat steps 4-6 in A1.

-See figure F to look at the finished result.

A3. Variables for the text logo - Color Variable #3

- 1) Repeat step 1 in A1.
- 2) Get a picture of a globe that is black and white. For the picture I used, go to:
<http://tinyurl.com/blank-globe>
- 3) Scale the globe so that it keeps its same shape but is larger than the ellipse.
- 4) Hold command (mac) and click on the layer of the ellipse. Now click on the layer of the globe and press the layer mask button.
- 5) Change the color of the globe to blue and green using the same colors from above with the paint bucket tool.
- 6) Repeat step 3 in A2.
- 7) Repeat steps 5 and 6 in A1.

See figure G to look at the finished result

B1. Variables for the text logo - Shape Variable #1

- 1) Go to shapes and select the “Rounded Rectangle” tool.

- 2) Use this tool to create a rounded rectangle that stretches out over the text created earlier.
- 3) Change the fill color to transparent and the stroke to a black color with a weight of 10

Go to File > Save As. This is the only shape variable needed for this logo. The other variable is the ellipse.

See figure H for the end result

C2. Variables for the text logo - Style Variable #1

- 1) Remove the letter “g” in both of the text boxes titled “global” and “graphics.”
- 2) Align the same two text boxes so that they are directly on top of each other.
- 3) Create a new text box that has the letter “g” but is scaled up enough so that it can fit next to both of the words “lobal” and “raphics.”
- 4) Adjust everything so that it fits inside of the shape and that the word “pa” can also fit comfortably inside.
- 5) Repeat step 3 in C1.

See figure I for the end result

Section 2: The Symbol Logo Variables

A1. Color Variable #1

- 1) Color in the globe using green and blue. Green being on the land and blue being on the ocean.
This will stay consistent throughout the entire experiment.
- 2) Color the shirts and skin of the people around the globe by using colors that are next to each other in the color wheel

3) Go to File > Save As. The first color variable is now completed

See figure J for the end result

A2. Color Variable #2

1) Repeat step 1 in A1.

2) Color the shirts and skin of the people by using randomized colors.

3) Repeat step 3 in A1.

See figure K for the end result

B1. Shape Variable #1

1) Delete the rectangle shape.

2) Use the ellipse tool to create a stretched out oval that the words “Global Graphics PA” can fit inside of.

3) Go to File > Save As. The first shape variable is completed

See figure L for the end result

C1. Style Variable #1

1) Delete the rectangle and text titled “Global Graphics PA.”

2) Create a text box with size 383 font and type “GG.”

3) Move the text box so that it is in the center of the globe.

4) Go to File > Save As. The first style variable is completed.

See figure M for the end result

D1. Text Variable #1

Note: This only applies to Style Variable #1

- 1) Change the “GG” created in C1 step 2 to “gg”
- 2) Scale and move the text so that it fits accordingly and is centered in the globe.
- 3) Go to File > Save As. The first text variable is completed.

See figure N for the end result

Section 3: The Combination Logo Variables

A1. Globe Color Variable #1

- 1) Open up the combination file made previously.
- 2) Delete the picture of the globe.
- 3) Replace the deleted picture with the globe made in A2 for the Symbol Logo variables.
- 4) Go to File > Save As. The first globe color variable is now complete.

See figure O for the end result

A2. Globe Color Variable #2

- 1) Repeat steps 1 and 2 in A1.
- 2) Replace the deleted picture with the globe made in A1 for the Symbol Logo variables.
- 3) Use the quick selection tool while holding shift to select all of the people’s shirts.
- 4) Use the paint bucket tool to fill in all of the shirts with the color “eb0646.”
- 5) Go to File > Save As. The second globe color variable is now complete.

See figure P for the end result

B1. Color Variable #1

- 1) Open up the combination file made before.
- 2) Right click the rectangle, and select rasterize layer.
- 3) Use the paint bucket tool and fill in the rectangle with a green color used in the text variables.
- 4) Change the stroke to a darker green used in the text variable.
- 5) Go to File > Save As. The first color variable is now complete.

See figure Q for the end result

B2. Color Variable #2

- 1) Repeat steps 1 and 2 in A1.
- 2) Use the paint bucket tool and fill in the rectangle with a light blue color used in the text variable.
- 3) Change the stroke to a darker blue color used in the text variable.
- 4) Repeat step 5 in A1.

See figure R for the end result

C1. Shape Variable #1

- 1) Delete the rectangle shape.
- 2) Use the ellipse tool to make a stretched out circle that goes across the entire screen so that you cannot see the end of the circle.
- 3) Set the circle's color to transparent.

- 4) Set the stroke color to black and to a weight of 10
- 5) Go to File > Save As. The first shape variable is now complete.

See figure S for the end result

Note: Before testing, make sure to combine them so that there are multiple combinations.

For example make a text logo with Color Variable #1, Style Variable #2, and Shape variable #2.

Part 3: Testing

A. Preparing the Experiment

- 1) Read The Eye Tribe eye tracker handbook and follow the instructions to put it together.
- 2) Go onto The Eye Tribe website and download the necessary applications.
- 3) Go to the Eye Proof website and log into the beta access.
- 4) Upload each logo and categorize them so participants will be able to look at them.
- 5) Set the time so that participants will look at the logos for 10 seconds each.
- 6) After uploading the images, select areas of interest for each logos. For the text logo, select the entire shape of the logo, the first G, the second G, the word “Global,” the word “Graphics,” and the word “pa.” See figure T for the end result. For the symbol logo, select the people (Top half, bottom half, or all of them depending on the logo), the globe, and the text. See figure U for the end result. For the combination logo, select the globe, the heading, the subheading, and the total area. See figure V for the end result.

7) Create a survey that participants will fill out after they are done looking at the logos. The survey used will be displayed at the bottom of the experimental design.

Now that preparations are complete, the conducting of the experiment can begin

B. Conducting the Experiment

- 1) Have the participant sign a consent form.
- 2) Explain to the participant that they will be looking at a logo and will be picking out their favorite of the two or three shown.
- 3) Open the Eye Tribe Server and plug in the eye tracker into a 3.0 USB port.
- 4) Open the Eye Proof application and log into the Eye Proof account.
- 5) Select the according set of logos.
- 6) Have the participant sit in the line of sight of the eye tracker.
- 7) Calibrate the eye tracker to make sure that it is properly functioning.
- 8) After the set is complete, have the participant fill out the first section of the survey.
- 9) Complete steps 5-8 four times. Make sure to show the participant the correct set of logos based on what they picked.
- 10) Complete steps 5-9, 20 times with each participant.

Note: The data can then be analyzed using the eye proof website

Survey

Name:

Date:

Which logo was your favorite? (1st, 2nd, etc.) _____

Please rate the logo you chose above

Style: 1 2 3 4 5

Shape: 1 2 3 4 5

Color: 1 2 3 4 5

Additional Notes (If applicable):

Which logo was your favorite? (1st, 2nd, etc.) _____

Please rate the logo you chose above

Style: 1 2 3 4 5

Shape: 1 2 3 4 5

Color: 1 2 3 4 5

Additional Notes (If applicable):



Figure A

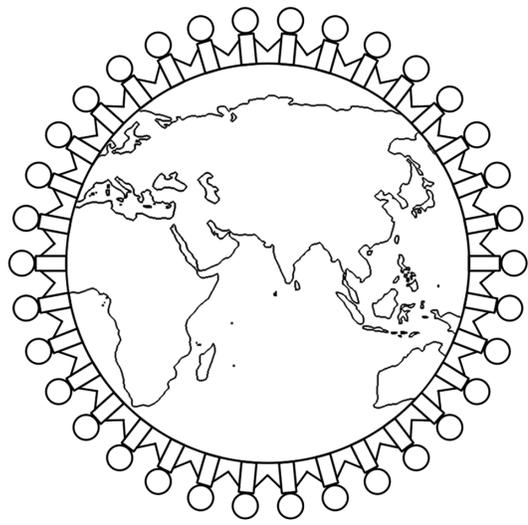


Figure B

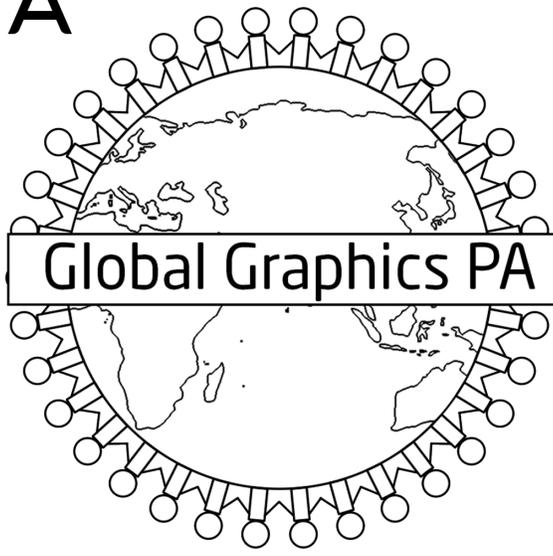


Figure C



Global Graphics PA
Designed For Success

Figure D



Figure E



Figure F



Figure G



Figure H



Figure I

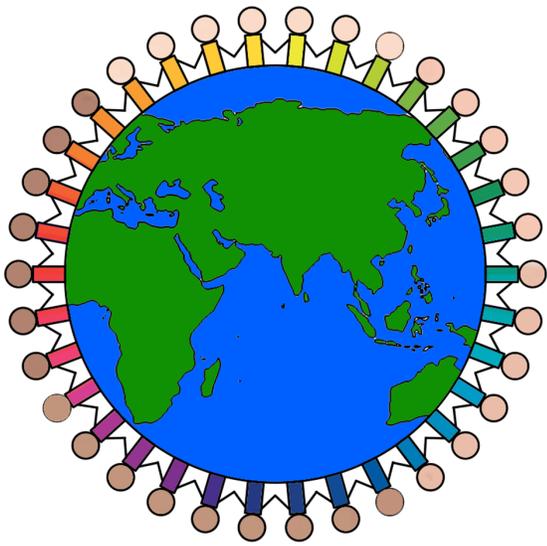


Figure J

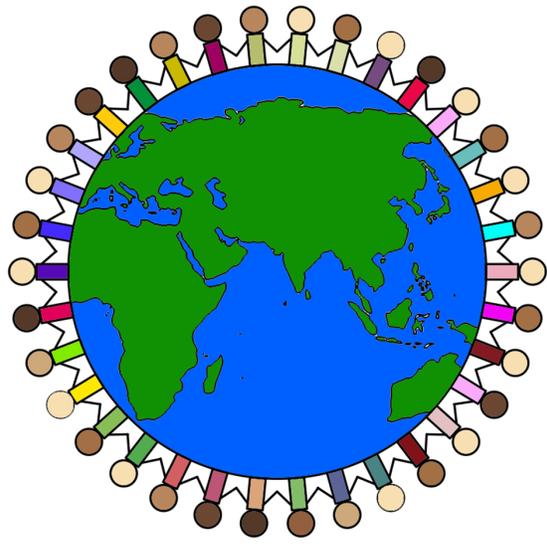


Figure K

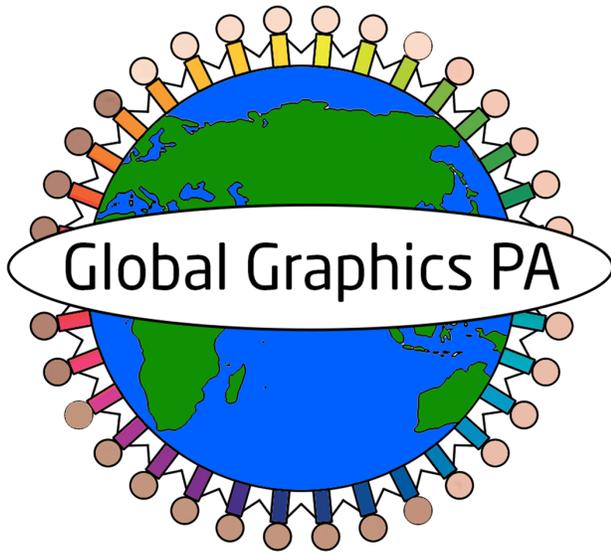


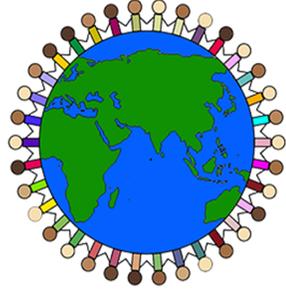
Figure L



Figure M

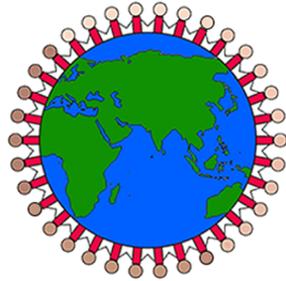


Figure N



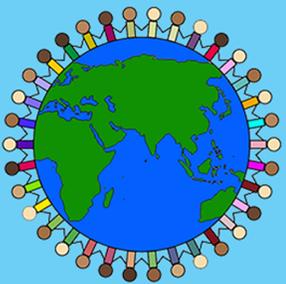
Global Graphics PA
Designed For Success

Figure O



Global Graphics PA
Designed For Success

Figure P



Global Graphics PA
Designed For Success

Figure Q

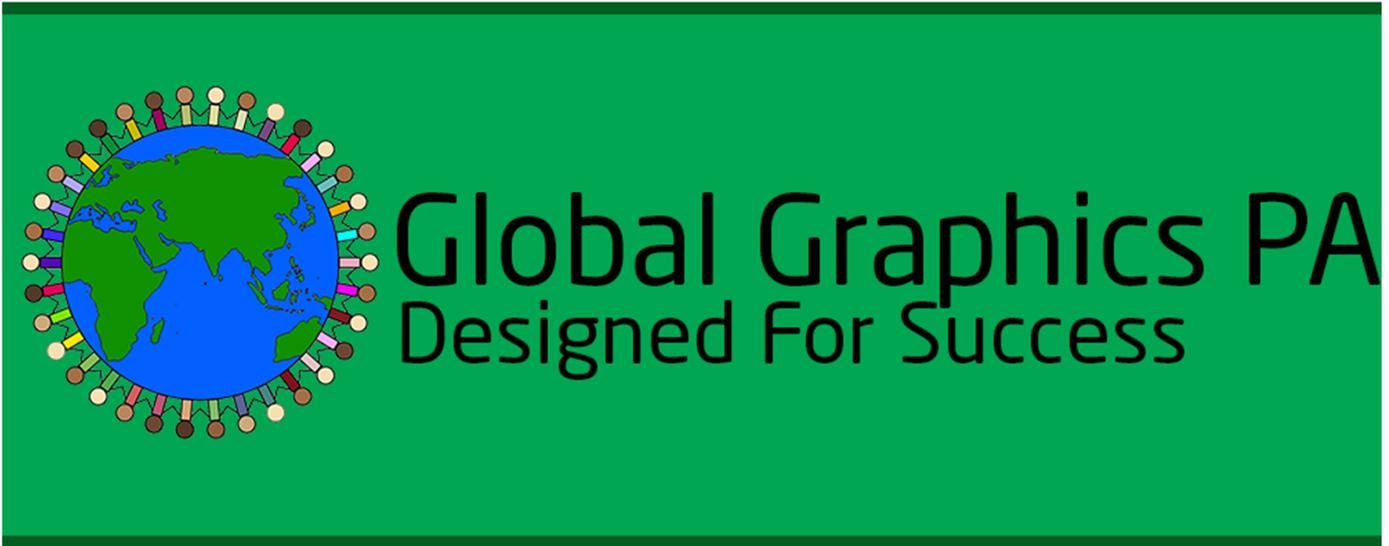


Figure R



Figure S

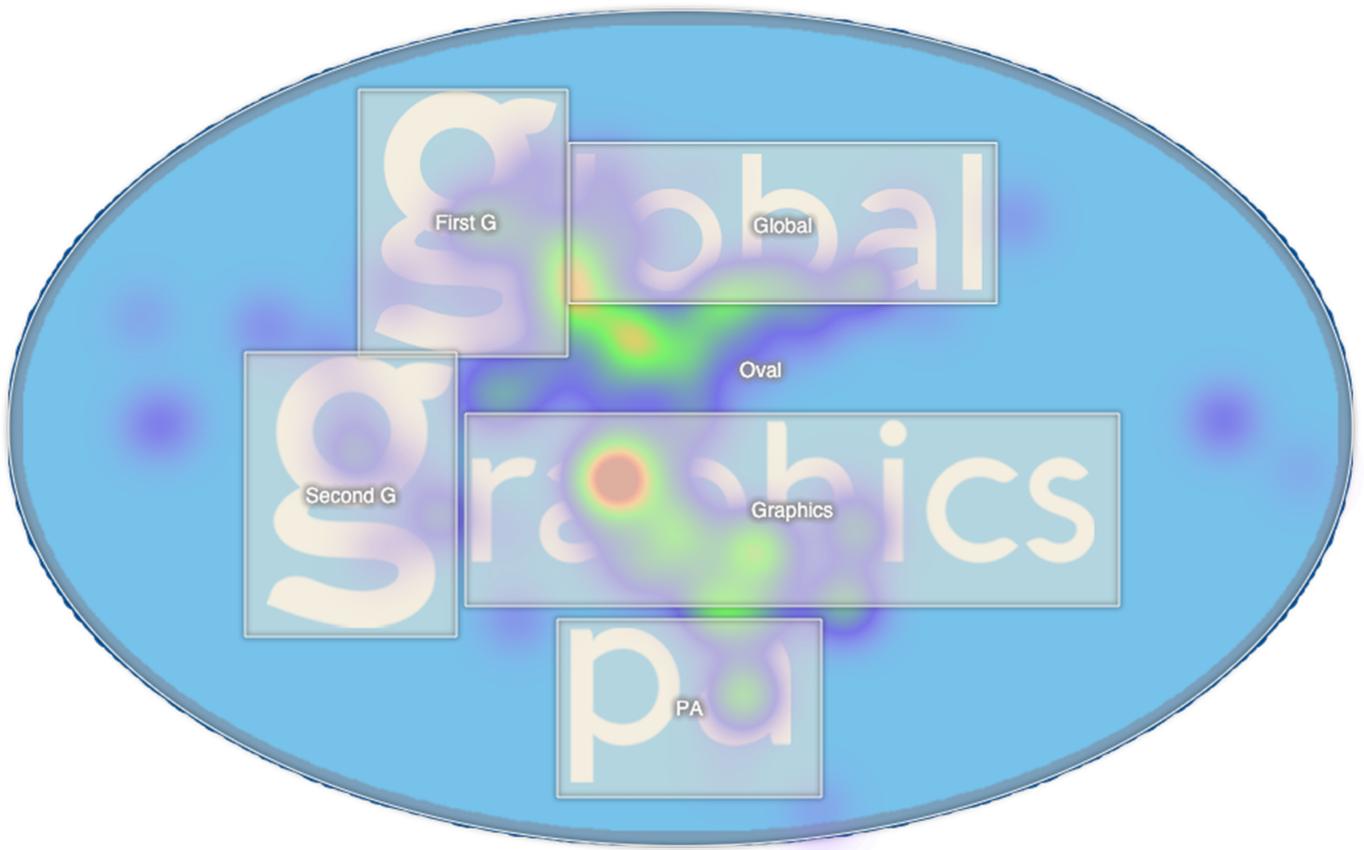


Figure T

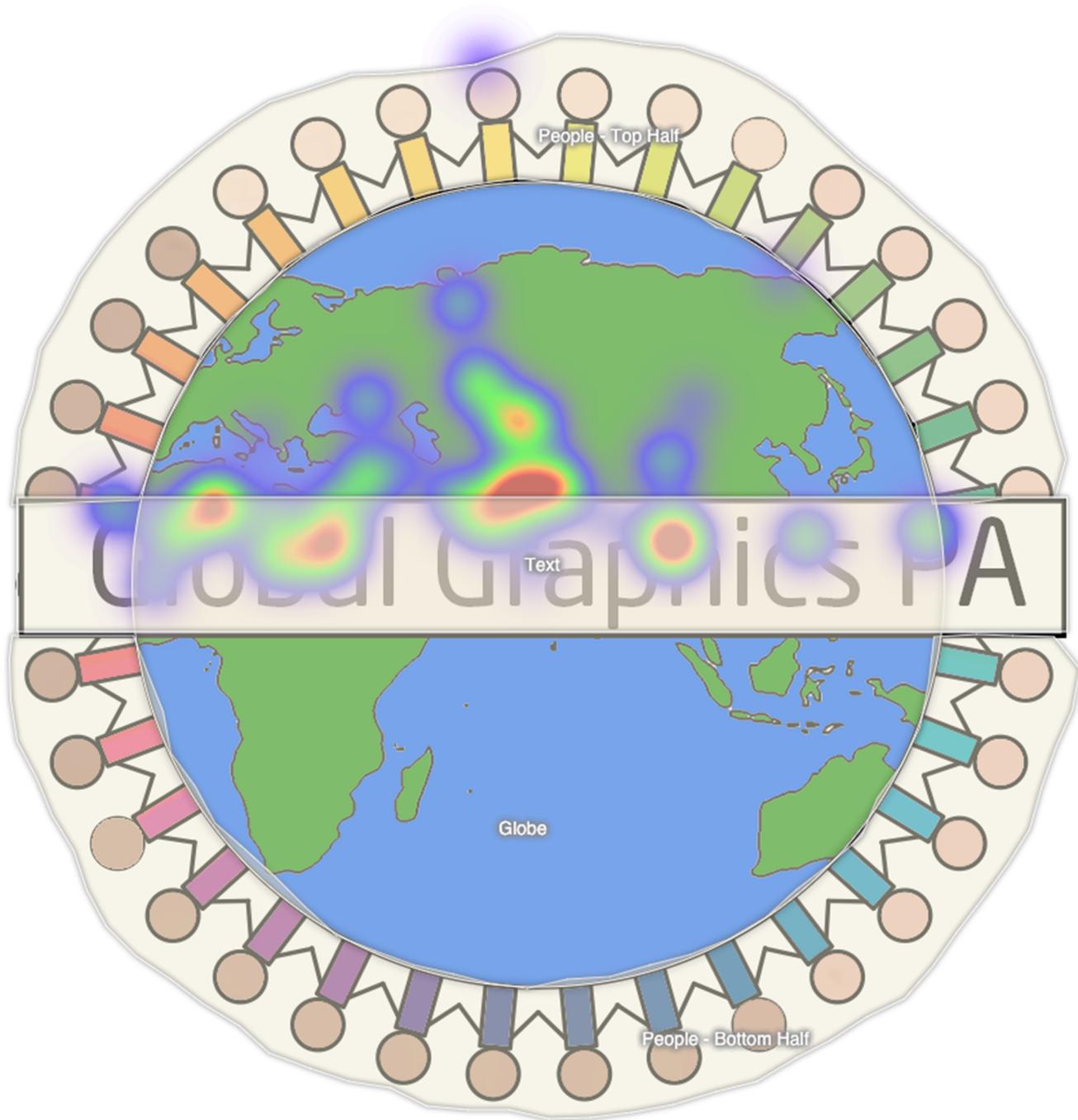


Figure U



Figure V

Results

The data in this experiment was collected using an eye tracker which recorded the total fixation duration of each area of interest in milliseconds and displayed the data on a heat map along with surveys. From this data, areas of interest were selected which allowed the program to generate more data. Data was recorded for each combination of logo, including its type, color, style, and shape. The data was analyzed by calculating the average fixation duration for each participant's favorite logo. The data was also analyzed through human response, and the feedback given in the surveys. The increase and decrease between the means was used to compare the data.

Data Table 1 shows which type of logo each participant chose (text, symbol, or combination logo) along with the total number of participants who chose each logo. Three participants chose the text logo, eight participants chose the symbol logo, and nine participants chose the combination logo.

Data Table 2 shows which color, style, and shape variables participants chose for the text logo. No one picked color variable one or two, and all three participants picked color variable three. Two participants picked style variable one and one picked style variable one. Two participants picked shape variable one and one person picked shape variable two.

Data Table 3 shows each color, style, text/shape variable each participant chose for the symbol logo. Five participants picked color variable one and three participants picked color variable two. Two participants selected style variable one and six participants selected style variable two. The two participants that selected style variable one both picked text variable one, meaning that no one picked text variable two. Everyone who picked style variable two picked shape variable two.

Data Table 4 shows the combination logo variables participants chose. These variables were the globe variables, color variables, and shape variables. Six participants picked globe variable one and three picked globe variable two. Seven participants chose color variable one and two chose color variable two. Five participants selected shape variable one and four selected shape variable two.

Data Table 5 represents the total fixation duration for the areas of interest for the text logo. Along with this, it shows the averages for each area of interest. The First “G” in the word “Graphics” has an average was 730.01 ms while the Second “G” in the word “Global” had an average of 426.94 ms. The combined average of the first and second G/the Single G is 1249.96 ms. The word “Global” had an average of 1827.82 ms, the word “Graphics” had an average of 2017.81 ms, and the word “pa” had an average of 368.50 ms. The average for the total area of the text logo is 7298.01 ms.

Data Table 6 shows the total fixation duration for the areas of interest for the symbol logo. It also shows the average fixation duration for each area of interest. The top half of people around the globe in the symbol logo has a mean of 731.74 ms and the bottom half of people around the globe has an average of 380.44 ms. The combined total for the top half and bottom half of people has an average of 1630.68 ms. The globe has an average fixation duration of 5094.72 ms while the text has a mean of 3848.40 ms. The average of the total area of the symbol logo is 6750.40 ms.

Data Table 7 displays the total fixation duration for the areas of interest for the combination logo. The mean for each area of interest is also shown. The average fixation duration for the globe is 2464.20 ms. The heading has an average of 2301.08 ms while the subheading has an average of 1412.77 ms. 7710.39 is the average for the total area of the combination logo.

Using these data tables, visual representations were made. Using Data Table 1, Graph A was made which shows the number of participants that chose each logo. Graph B was made using Data Table 2 and represents the number of participants that chose each color, style, and shape variable for the text logo. The number of participants that chose each symbol logo variable, color, style, and shape/text is shown in Graph C. Graph C was made from Data Table 3. Data Table 4 was used to create Graph D. Graph D displays the number of participants that chose

the different globe, color, and shape variables. Data Table 5 was used to create two graphs, Graph E and Graph F. Graph E shows the fixation duration for each area of interest for the text logos. Graph F is similar but the average fixation duration for each area of interest. Graph G and Graph H are similar to Graph E and Graph F, but were made with Data Table 6. Graph G shows the total fixation duration for each area of interest for every symbol logo made. Graph H shows the average fixation duration for each area of interest for the symbol logos. Graphs I and J were created using Data Table 7. Graph I shows the total fixation duration for each area of interest for the combination logos. Graph J shows the same thing, but the average for each area of interest. Graph K displays the comparison between the three types of logos: text, symbol, and combination. All of these graphs are critical for comparing data.

Data Table 1: Types of Logos Participants Chose

Participant Number	Text Logo	Symbol Logo	Combination Logo
1		X	
2			X
3			X
4			X
5		X	
6			X
7		X	
8			X
9		X	
10			X
11		X	
12		X	
13			X
14	X		
15			X
16	X		
17		X	
18			X
19	X		
20		X	
Total	3	8	9

Data Table 2: Text Logo Variables Participants Chose

Participant Number	Color 1	Color 2	Color 3	Style 1	Style 2	Shape 1	Shape 2
14			X		X	X	
16			X	X			X
19			X	X		X	
Total	0	0	3	2	1	2	1

Data Table 3: Symbol Logo Variables Participants Chose

Participant Number	Color 1	Color 2	Style 1	Style 2	Text 1	Text 2	Shape 1	Shape 2
1		X	X		X			
5	X			X				X
7		X		X				X
9	X			X				X
11	X			X				X
12	X			X				X
17		X	X		X			
20	X			X				X
Total	5	3	2	6	2	0	0	6

Data Table 4: Combination Logo Variables Participants Chose

Participant Number	Globe 1	Globe 2	Color 1	Color 2	Shape 1	Shape 2
2		X	X		X	
3		X	X			X
4	X		X			X
6	X		X		X	
8	X			X		X
10	X		X		X	
13	X		X		X	
15	X			X	X	
18		X	X			X
Total	6	3	7	2	5	4

Data Table 5: Fixation Duration for the Areas of Interest for the Text Logo in Milliseconds (ms)

<u>Areas of Interest</u>	First G	Second G	First and Second G Total	Global	Graphics	PA	Total Area
Template	1603.74	556.56	2160.30	1534.15	1969.58	538.00	6514.25
Color 1	889.33	651.00	1540.33	1063.67	2481.00	397.00	7260.67
Color 2	859.50	334.67	1194.17	705.00	3057.33	826.50	7712.67
Color 3	633.00	341.33	974.33	2142.33	2489.00	434.50	8521.67
Color 1, Style 1	NA	NA	NA	NA	NA	NA	NA
Color 1, Style 2	NA	NA	NA	NA	NA	NA	NA
Color 2, Style 1	NA	NA	NA	NA	NA	NA	NA
Color 2, Style 2	NA	NA	NA	NA	NA	NA	NA
Color 3, Style 1	317.50	507.00	824.50	1500.00	1206.67	153.00	5731.33
Color 3, Style 2	NA	NA	2625.00	1917.50	1254.00	110.00	5791.00
Color 3, Style 1, Shape 1	625.00	616.00	1241.00	1819.50	2258.00	456.00	8134.50
Color 3, Style 1, Shape 2	182.00	52.00	234.00	1692.00	3362.50	424.00	7994.00
Color 3, Style 2, Shape 1	NA	NA	142.00	2908.00	1551.00	346.00	7596.00
Color 3, Style 2, Shape 2	NA	NA	1564.00	2996.00	549.00	0.00	7724.00
Mean	730.01	436.94	1249.96	1827.82	2017.81	368.50	7298.01

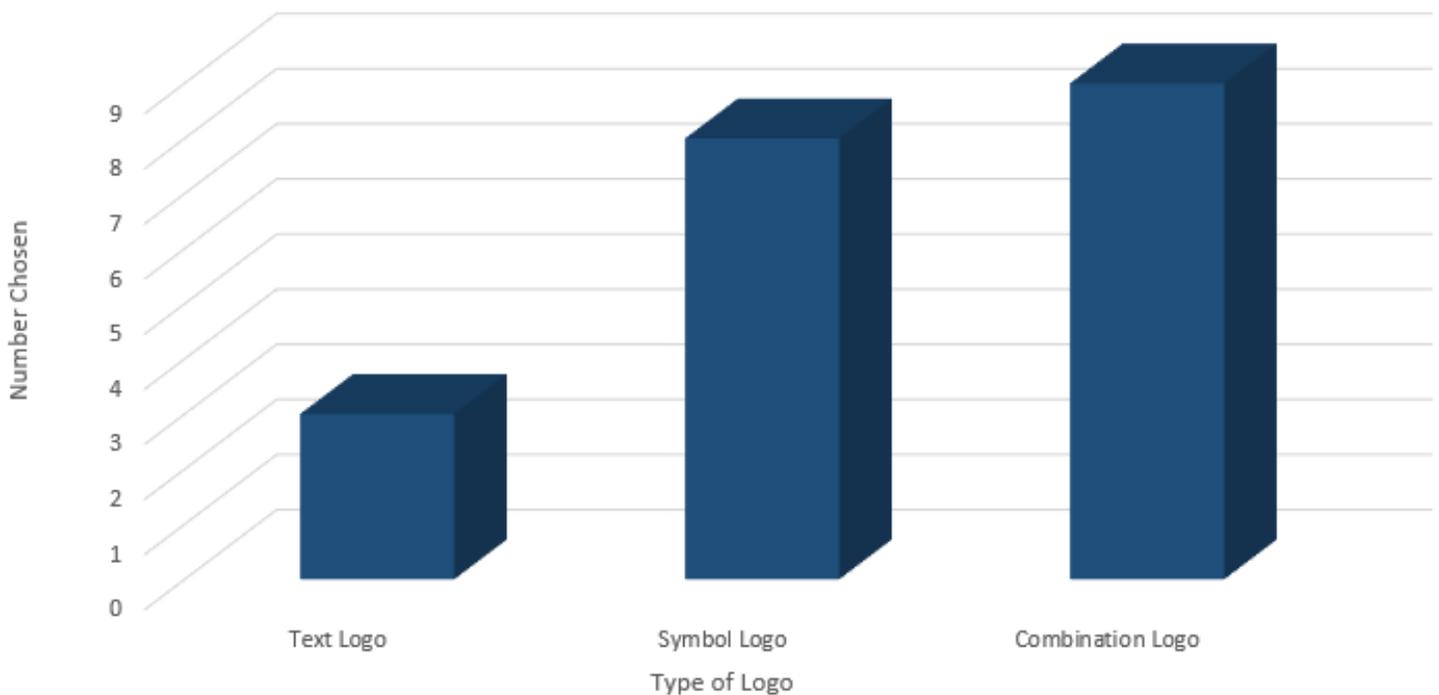
Data Table 6: Fixation Duration for the Areas of Interest for the Symbol Logo in Milliseconds (ms)

<u>Logo Variations</u>	People - Top	People - Bottom	People - Total	Globe	Text	Total
Default	1374.69	356.55	1731.24	5837.90	2871.79	7869.14
Color 1	NA	NA	2884.88	4255.00	NA	7139.88
Color 2	NA	NA	2960.50	3665.75	NA	6626.25
Color 1, Style 1	0.00	0.00	2174.50	5618.00	3852.00	7792.50
Color 1, Style 2	1760.25	535.00	2295.25	4769.25	2543.25	7064.50
Color 2, Style 1	NA	NA	715.25	5761.25	4541.75	6476.50
Color 2, Style 2	146.50	0.00	146.50	5891.50	3233.50	6038.00
Color 1, Style 1, Text 1	NA	NA	NA	NA	NA	NA
Color 1, Style 1, Text 2	NA	NA	1935.50	5557.00	3781.50	7492.50
Color 1, Style 2, Shape 1	1204.75	233.00	1437.75	4893.00	2437.25	6330.75
Color 1, Style 2, Shape 2	1308.75	1919.00	3227.75	5136.00	3044.00	8363.75
Color 2, Style 2, Shape 1	59.00	0.00	59.00	7097.00	4466.00	7156.00
Color 2, Style 2, Shape 2	0.00	0.00	0.00	2655.00	7713.00	2655.00
Mean	731.74	380.44	1630.68	5094.72	3848.40	6750.40

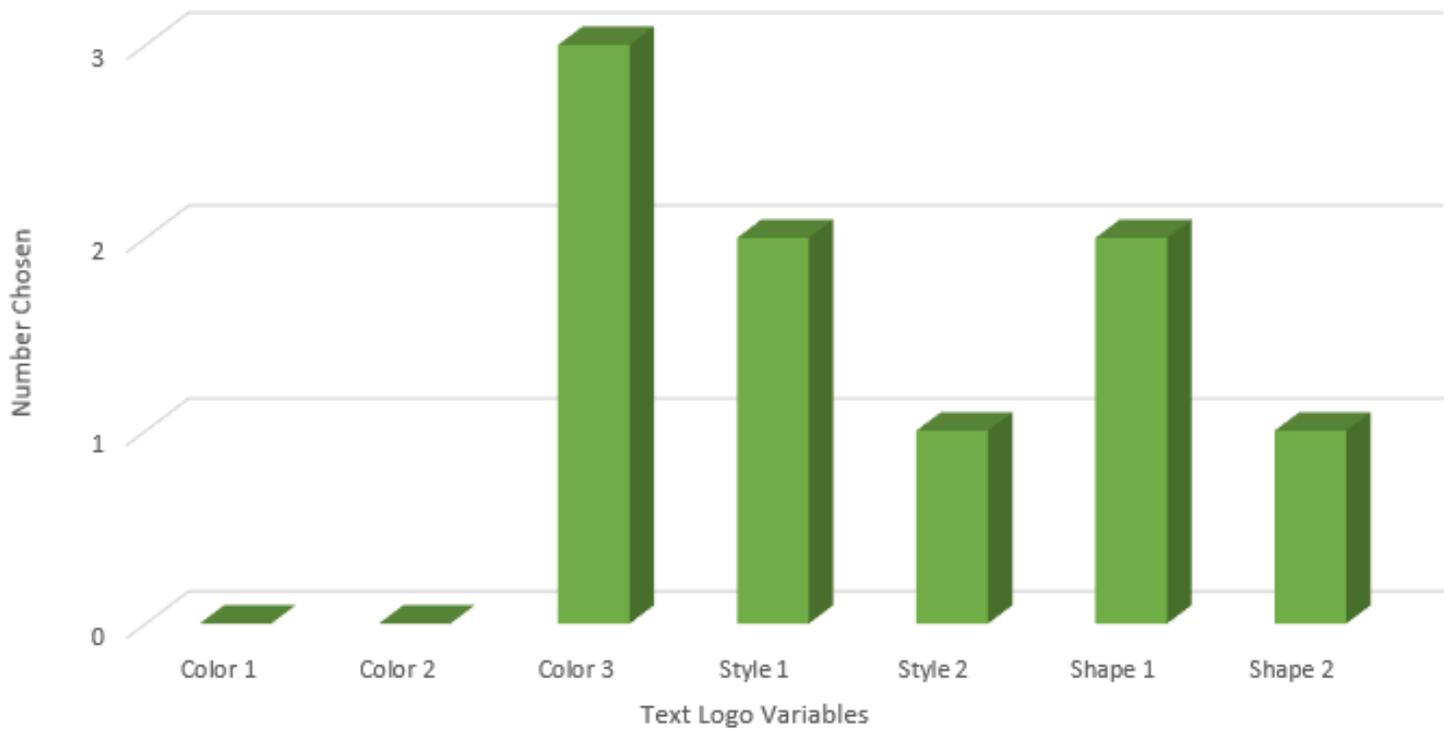
Data Table 7: Fixation Duration for the Areas of Interest for the Combination Logo in Milliseconds (ms)

Logo Variations	Globe	Heading	Subheading	Total
Default	2039.45	2803.84	1077.47	8694.65
Globe 1	2523.50	1004.33	2866.67	7969.11
Globe 2	2021.88	933.50	4033.00	8115.11
Globe 1, Color 1	2340.83	3554.50	907.75	7779.83
Globe 1, Color 2	2713.83	3392.33	1044.50	8257.67
Globe 2, Color 1	2914.33	2856.67	144.00	7383.00
Globe 2, Color 2	2163.00	1500.33	1446.00	6796.67
Globe 1, Color 1, Shape 1	3432.50	2853.50	1155.50	8206.00
Globe 1, Color 1, Shape 2	2339.25	3710.75	1159.25	8073.00
Globe 1, Color 2, Shape 1	2563.00	2300.50	101.00	7677.00
Globe 1, Color 2, Shape 2	1087.00	2088.50	1150.50	5685.00
Globe 2, Color 1, Shape 1	4067.67	1917.00	1619.00	8287.67
Globe 2, Color 1, Shape 2	1828.33	998.33	1661.33	7310.33
Globe 2, Color 2, Shape 1	NA	NA	NA	NA
Globe 2, Color 2, Shape 2	NA	NA	NA	NA
Mean	2464.20	2301.08	1412.77	7710.39

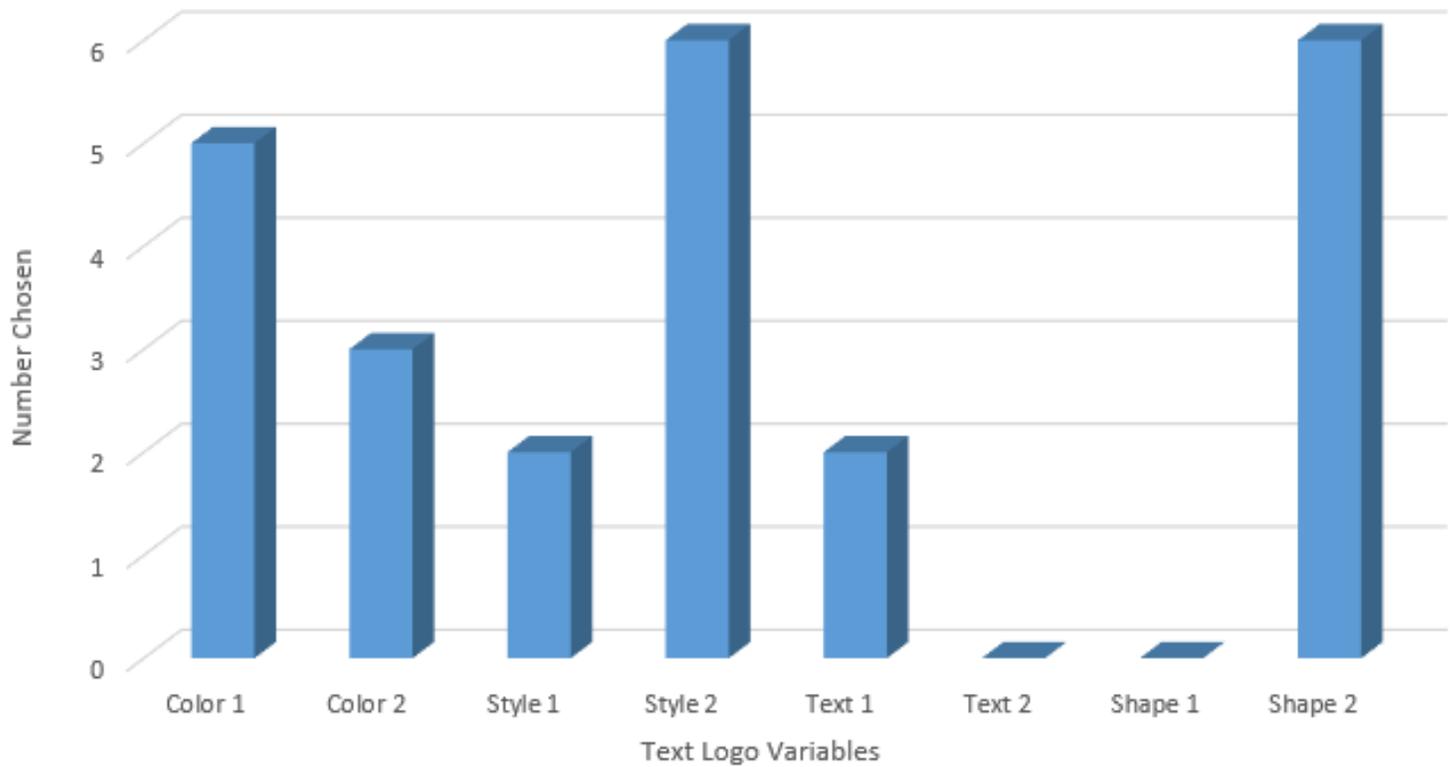
Graph A: Types of Logos Participants Chose



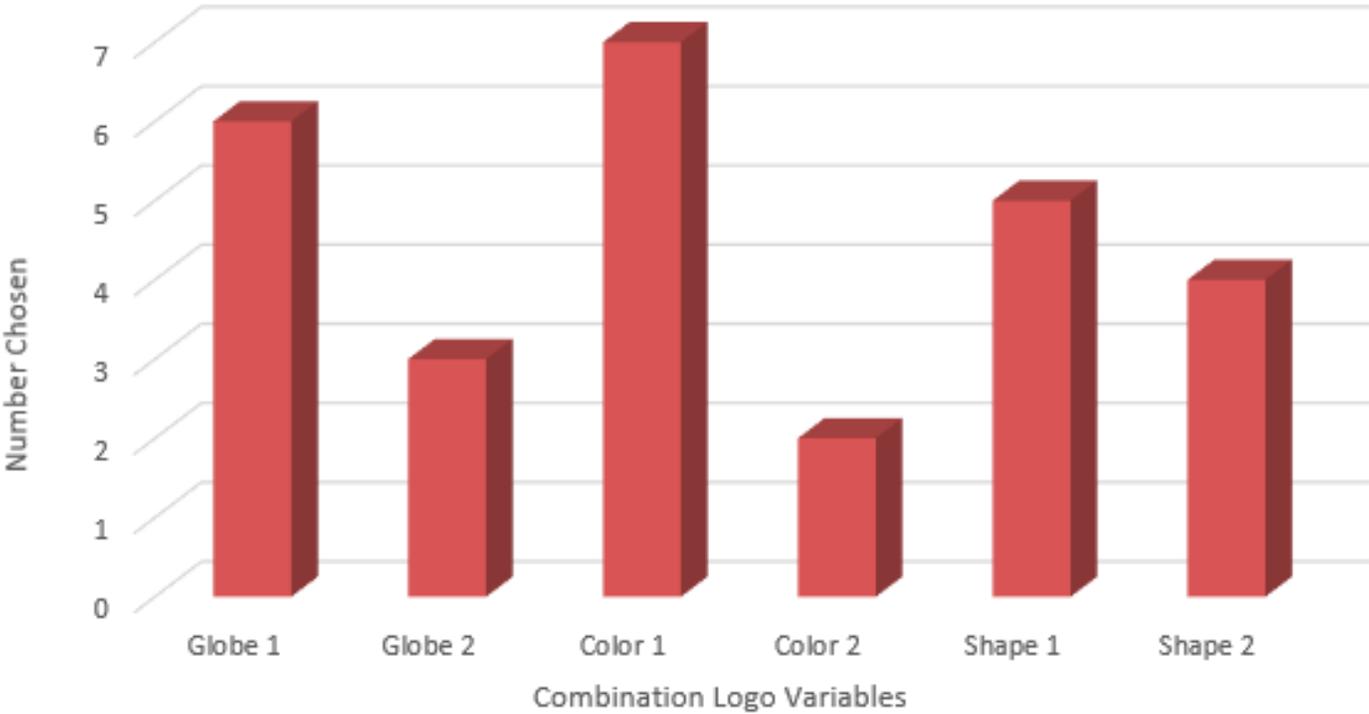
Graph B: Text Logo Variables Participants Chose



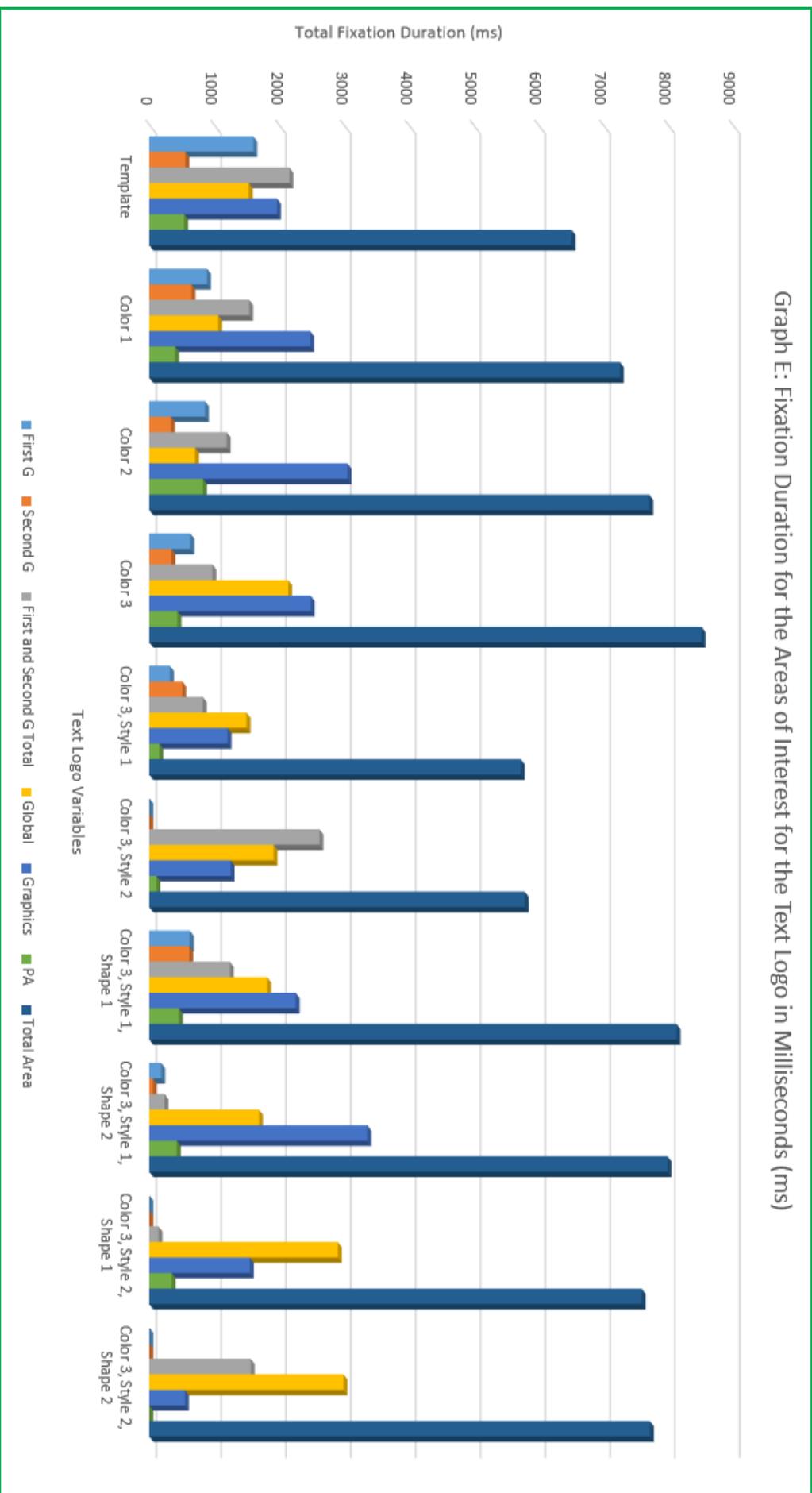
Graph C: Symbol Logo Variables Participants Chose



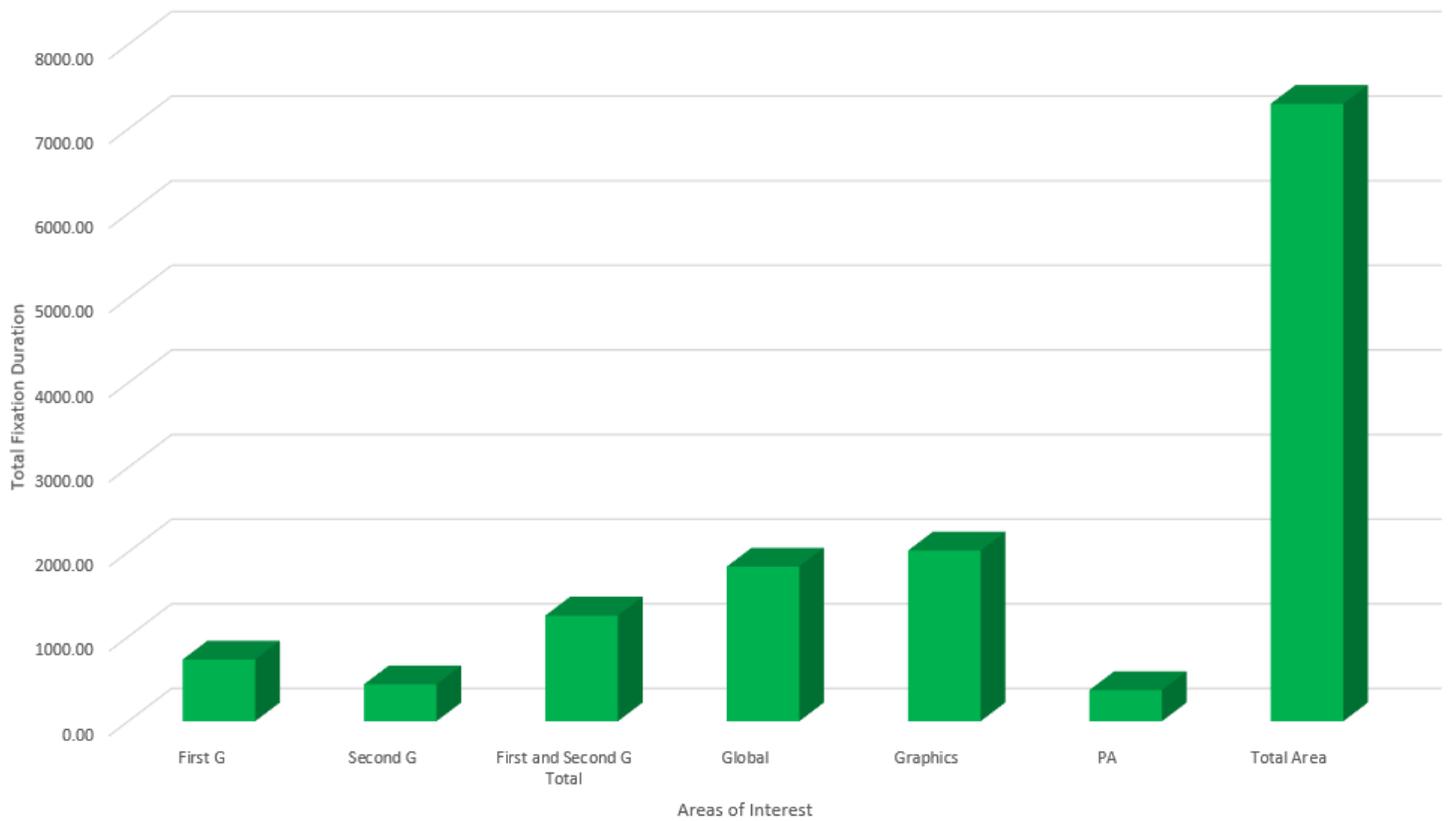
Graph D: Combination Logo Variables Participants Chose



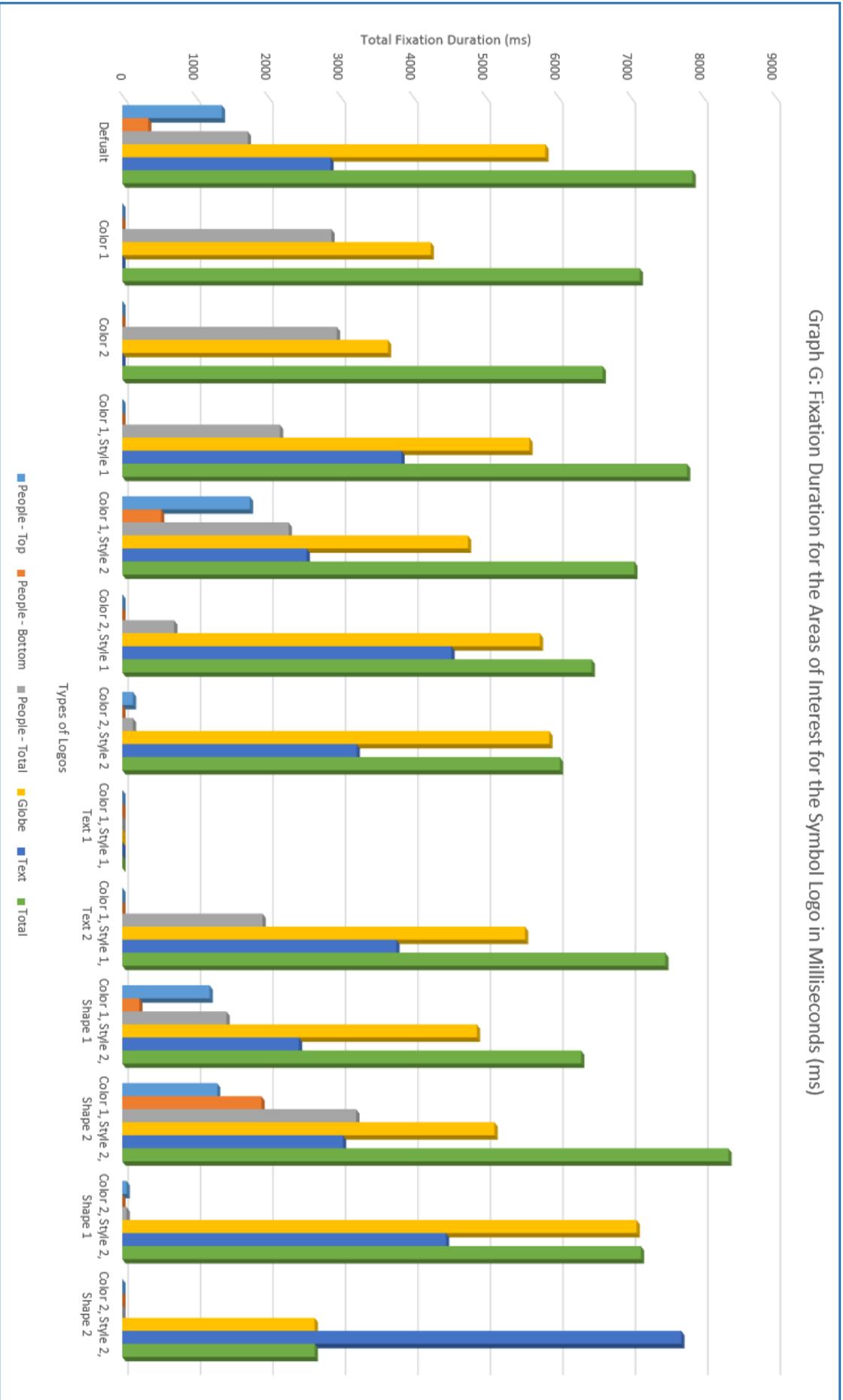
Graph E: Fixation Duration for the Areas of Interest for the Text Logo in Milliseconds (ms)



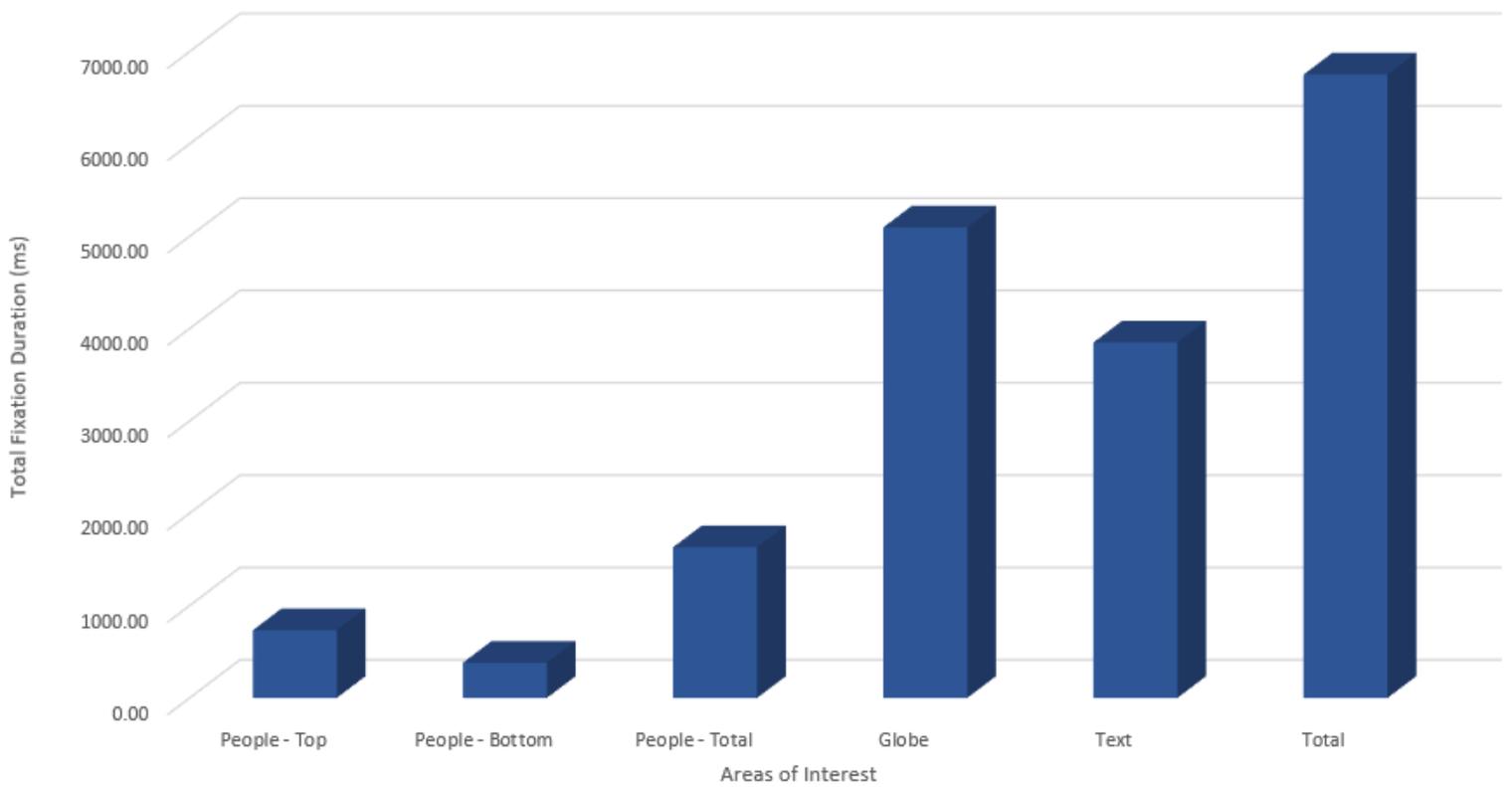
Graph F: Average Fixation Duration for the Areas of Interest for the Text Logo in Milliseconds (ms)



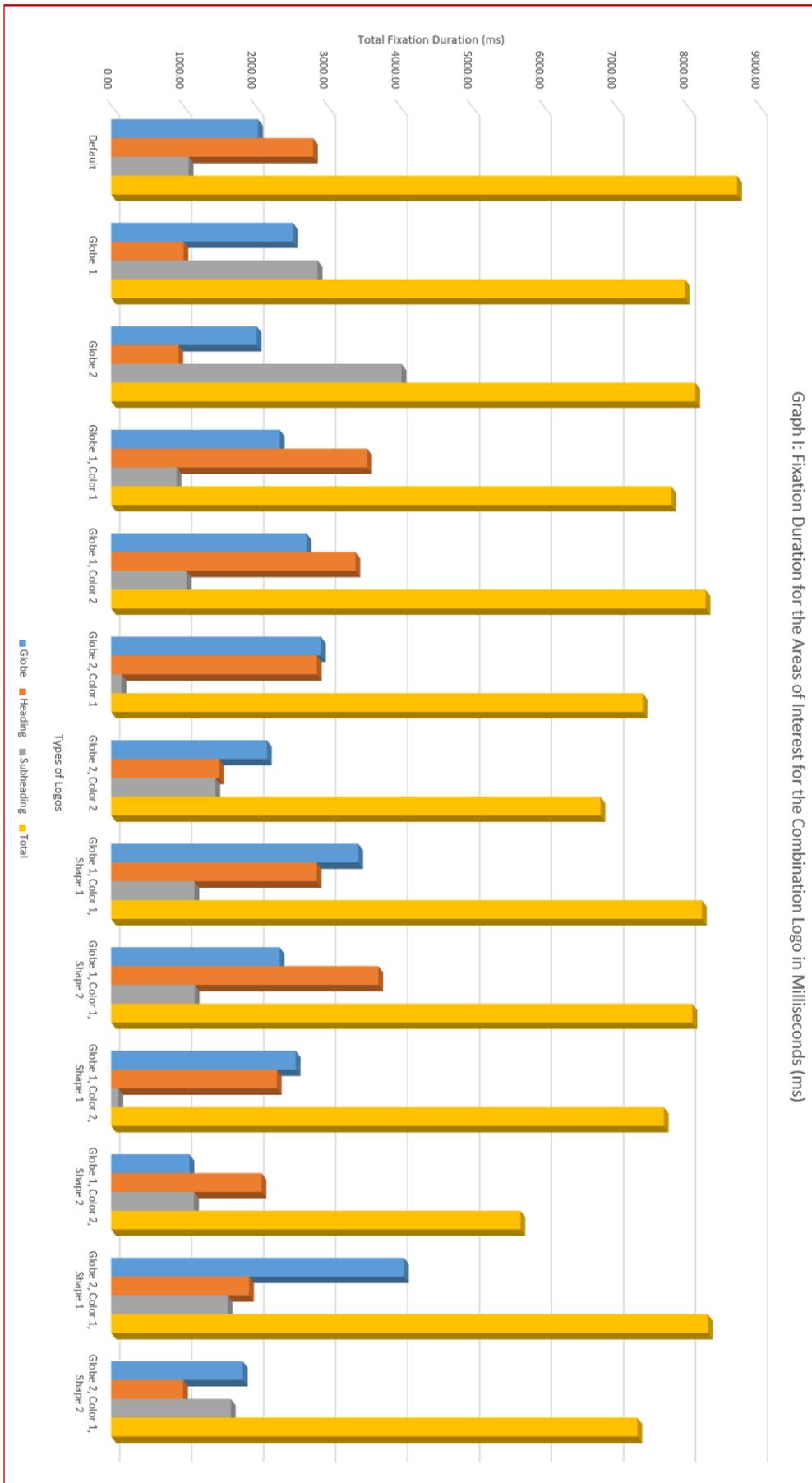
Graph G: Fixation Duration for the Areas of Interest for the Symbol Logo in Milliseconds (ms)



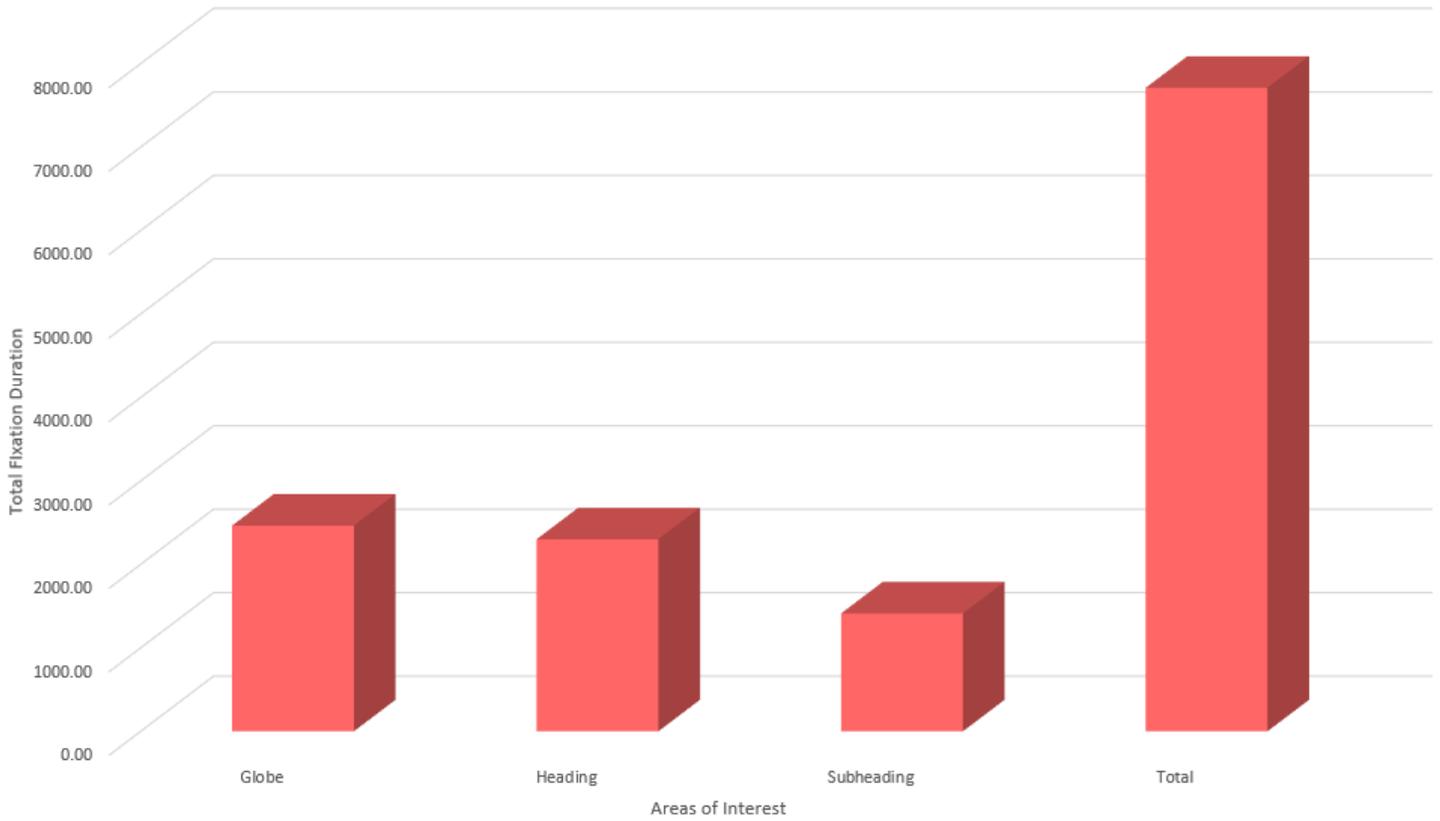
Graph H: Average Fixation Duration for the Areas of Interests for the Symbol Logo in Milliseconds (ms)



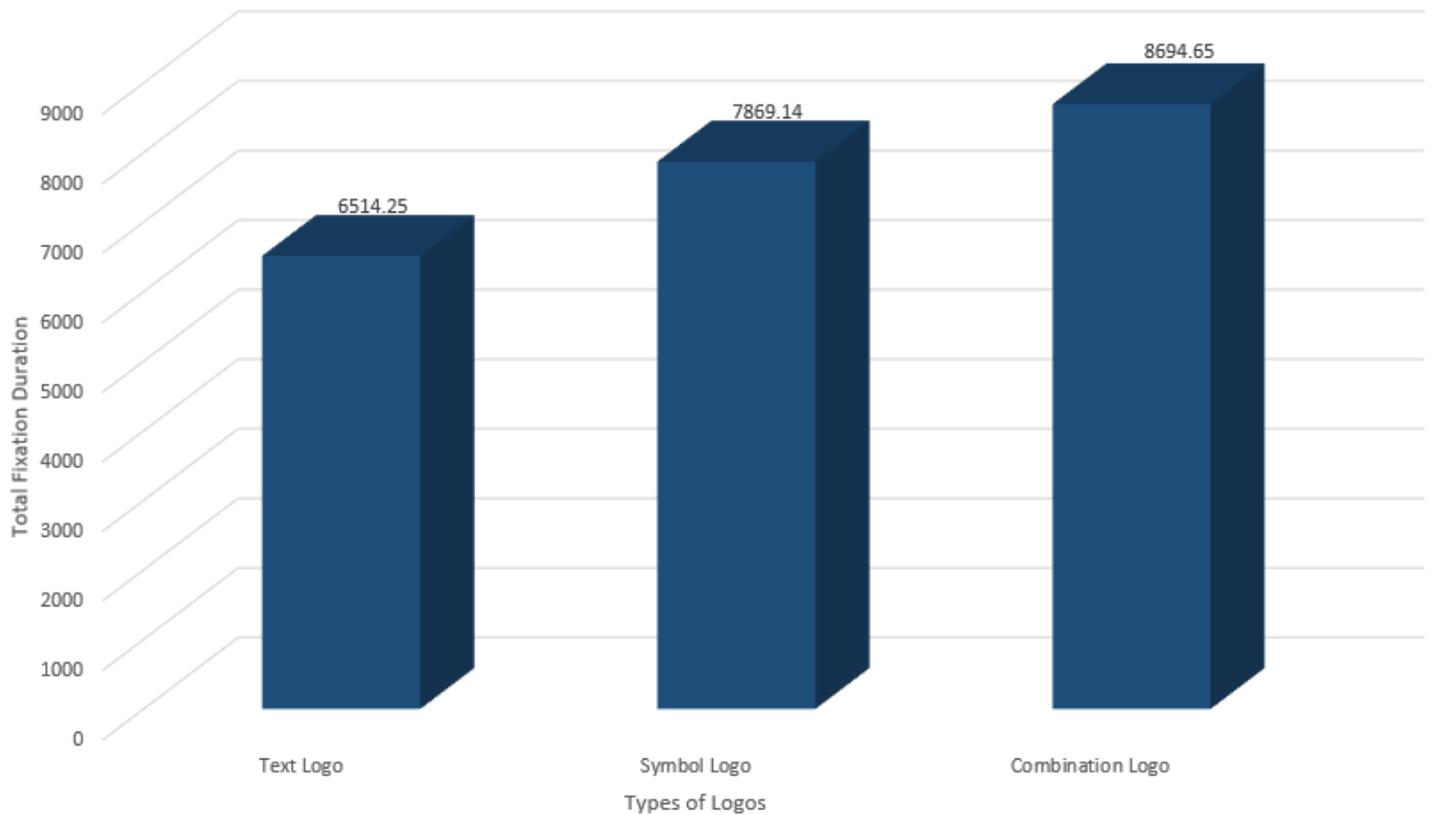
Graph 1: Fixation Duration for the Areas of Interest for the Combination Logo in Milliseconds (ms)



Graph J: Average Fixation Duration for the Areas of Interest for the Combination Logo in Milliseconds (ms)



Graph K: Comparison Between the Three Types of Logos



Analysis of Data

After examining all the graphs and data tables, one must next find the answer to the statement of problem, and check the hypothesis. To find the answer, a calculation of averages is needed for data tables five, six, and seven along with analyzation of all the data tables and graphs. To calculate the average, the summation of the total fixation duration in every trial must be divided by the number of logos. For example, to find the average fixation duration in milliseconds for the text logo and the area of interest being the first “G,” each logo’s fixation duration must be added up. The summation of milliseconds from every logo was 5110.07. Next, this added number must be divided by the number of logos. In this case, the number of logos was seven. After dividing by seven, the quotient was 730.01. This was done for every area of interest for each logo. For the text logo, the second “G” was 436.09, the first and second “G” total was 1249.96 the word “Global” was 1827.82, the word “Graphics” was 2017.81, the word “PA” was 368.50, and the total area was 7298.01. For the symbol logo, the top half of people was 731.74, the bottom half of the people was 380.44, the total amount of people was 1630.68, the globe was 5094.72, the text was 3848.40, and the total area was 6750.40. For the combination logo, the globe was 2464.20, the heading was 2301.08, the subheading was 1412.77, and the total area was 7710.39. Graph A shows the number of participants that picked each logo, and Graph K shows the total fixation duration of the total area for each type of default logo. The default logos were used because they were the only ones that every participant looked at. After comparing the averages and survey responses, the combination logo suggests that it is the most effective. Graph C also shows that color 1, style 2, and shape 2 were the most liked. In conclusion, the graphs

mentioned previously suggests that the combination logo with color variable 1, style variable 2, and shape variable 2 is the most effective.

Conclusion

The hypothesis of this experiment stated that if three different types of logos were altered in terms of their color, style, and shape, then the combination logo with globe variable 1, color variable 1, and shape variable 1 would be the most popular. This hypothesis was accepted, because the evidence in the data tables and graphs supported it. Graphs A, D, and K, shown above, displays which logos the participants chose and which variables they liked the most. Here, it is evident that the combination logo was the most liked. Graph K shows that the text logo had a total fixation duration of 6514.25 milliseconds, the symbol logo had a total fixation duration of 7869.14 milliseconds, and the combination logo had a total fixation duration of 8649.65 milliseconds. The combination logo was the most liked, since it had the longest amount of fixation duration. Next was the symbol logo, and then the text logo. Graph A supports the data mentioned above.

The data in this experiment was valid because many of the variables that acted upon the logos, participants, and testing were minimized during the procedure. Although many variables were minimized, the graphs were not a straight line, which means that the experiment did not give a perfect result. This occurred due to many small variables that had little impact on the experiment. For instance, the age group of the participants were not exactly the same. This could have affected the experiment because the participants could have looked at different things

based on their age. On the other hand, many variables were minimized during the experiment.

For example, only one variable such as color, style, and shape, was changed at a time.

During the execution of the experiment, a few problems occurred, but were eventually resolved. One that occurred was what survey was going to be used for the experiment. Before, the survey was to have two parts: a rating along with memorization. The memorization survey contained one question which asked the participant to write down five things they remembered about the logo. It was quickly realized that this would not be effective since the logos only had one variable that was different. A solution was found, which was to incorporate memorization when the participant had to rate the logo. The participant would now have to use their memory to rate the logo.

The experiment may have been more accurate if people of the same exact age and gender were tested. However, there were not enough people of the same age and gender that could be used in the experiment. If people of the same age and gender were tested, it would accurately depict where people looked first.

During this experiment, much knowledge was gained. For example: how to use an eye tracker, how to read heat maps and determined where people looked, what different colors, shapes, and styles mean, and how to create effective logos.

These results will be helpful to anyone starting a business who would be interested in how to attract customers to his or her business. Without an effective logo, these small businesses would not be able to get the amount of customers they need to be successful. This experiment suggested that the combination logo is the most effective and makes for a better logo in businesses.

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