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The Impact of Color on Visual Retention and Preference in Logo Design

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**THE IMPACT OF COLOR ON VISUAL RETENTION AND PREFERENCE
IN LOGO DESIGN**

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Graphic Communications

by
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May 2019

Accepted by:
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Michelle Fox

ABSTRACT

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Color is often the first thing a person will be drawn to in an object. It fills the world and activates people's imagination. The purpose of this research is to analyze the impact that color has on a person's ability to recall visual information.

Company logos are used as a focus for this due to the importance a logo has in the way companies market themselves. Therefore, a logo should be memorable at a second's glance.

This thesis attempts to solve the problem of understanding what makes a logo more memorable to a customer in order to assure maximum visual retention of a brand's visual style. In order to accomplish this, over four hundred human subjects were surveyed. Their task was to visually match a sample logo shown to them with a list of options each varying slightly in color and occasionally shape and typography. This allowed for a comparison to be made between the impact of color on retention to other elements of design.

Results collected from the survey provided data proving that color was the most significant factor in a person's ability to remember logo design. A majority of all of

the survey responses showed that participants remembered a logo based on its color over other variations in elements such as shape and text. This illustrates how important color is for a graphic designer to use to optimize the visual retention of a brand. The goal of graphic design is to communicate a message to a customer. Optimizing the visual retention of this information across media such as motion graphics, infographics, UX graphics, and more is the ultimate goal. The results of this research can be applied to future studies in these areas and more in order to maintain a consistent understanding of color trends and perceptions in the ever-changing worlds of design, communications, business, and marketing.

KEY WORDS: Color, Design, Color Theory, Logo Design, Graphic Design, Visual Retention, Knowledge Retention, Color Perception, Customer Perception, Brand

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TABLE OF CONTENTS

	Page
TITLE PAGE.....	i
ABSTRACT.....	ii
ACKNOWLEDGMENTS.....	iv
INTRODUCTION.....	vii
LITERATURE REVIEW.....	x
METHODOLOGY.....	xix
I. Limitations of Study.....	xxv
CHAPTER	
I. Impact of Color Theory on Study.....	1
II. Impact of Color on Perception.....	3
a. Visual Retention.....	3
b. Visual Preference.....	5
III. Results of Visual Retention.....	8
a. Bee & Bind Logo Results.....	8
b. Tequila Mockingbird Results.....	10
c. Leap Community Market Results.....	13
d. Travelist Results.....	15
e. Tidy Bowl Results.....	17

f. Vinesette Family Restaurant Results.....	19
g. Chamberlain Exterminators Results.....	21
h. Scessence Results.....	23
IV. Results of Visual Preference.....	25
a. Tanner Dentistry Results.....	25
b. Refuge & Sons Wood Co. Results.....	26
c. Cassi’s Cupcakes Results.....	27
d. Hale Nutrition + Exercise Coaching Results.....	28
V. Conclusions of Study.....	29
a. Discussion of Visual Retention Results.....	29
b. Discussion of Visual Preference Results.....	31
c. Comprehensive Conclusion and Future Studies.....	33
APPENDIX A - Terminology.....	40
APPENDIX B – Visual Retention Figures.....	41
APPENDIX C – Visual Preference Figures.....	49
APPENDIX D – Charts and Tables.....	51
REFERENCES.....	59

INTRODUCTION

“To design means to plan. The process of design is used to bring order from chaos and randomness. Order is good for readers, who can more easily make sense of an organized message.” (White, 2011) Order and purpose are essential for good design. Graphic design is an art, but this paper intends to show why it is also a science and should be considered as such. To design without order and purpose is to lose what makes the most effective designs work. Creating an effective design is not merely about displaying the information in a visually appealing way, but also enhancing the information being provided. Amongst the most essential products in design to apply this philosophy to are logos.

A logo is defined as a symbol, wordmark or monogram (see appendix A) adopted by an organization to identify its products, uniforms, vehicles and more. The primary responsibilities of a logo are to identify the company, invite new customers, distinguish the company from competition and develop brand loyalty. A logo is a visual representation of a brand (see appendix A), which helps to communicate the overall message and style that a company portrays across all of the printed materials that it creates. The logo is the first thing a customer sees, it communicates ownership and is how the company is identified, which is why it

is so important to understand what makes a logo attractive, memorable and preferred by the customer.

A logo gives the first impression to a customer of what a company stands for and brands everything the company makes. A logo is the very identity of a company itself, and for that reason, it is important to create one that is memorable at a second's glance. For example, if a customer is driving down the road and sees a logo on a billboard, they have only moments to look before they have passed it. Can they remember what they just saw? What about the logo made it memorable to them?

There are many elements and principles of graphic design that go into the conception of a memorable logo, such as line, shape, texture, color, value, size, alignment, repetition, proximity, contrast and space. While all of the elements and principles of design are important, color will be the focus of this paper. Color is important because it incites complex feelings, emotions and responses from a person. "Colors are associated with emotional states, symbolism, cultural meanings, and aesthetic preferences – all of which are deeply personal and experientially specific to the viewer." (Stone, 2006) Because color is such an intimate and important element of an individual's daily life, it is naturally chief

among the elements of design that has a heavy impact on the perception, preference, and memorability of a logo.

The success of a company's marketing is heavily dependent upon the brand that it identifies with. Due to this, it is important to continually experiment with public opinion and study what consumers respond to. Such information would be invaluable in the ongoing practice of product branding and advertising. Analyzing public response to color in controlled studies to provide data regarding this is an effective way to understand what helps customers retain the visual information presented to them. Such data should be continuously researched and updated as cultures and trends change with time. The research in this thesis aims to do precisely that.

In this paper, the impact of color on visual retention (see Appendix A) and preference in logo design will be discussed in detail. Data collected from a survey distributed to over four hundred participants from a wide range of demographics and cultures will be analyzed and discussed, and ultimately the question of how important color is on the perception and retention of visual information will be answered.

LITERATURE REVIEW

The goal of this thesis is to prove that color is the most crucial factor in a person's ability to visually retain the design of a logo. Therefore, it is important to review previous literature dealing with logo design, knowledge retention color theory, color memory, color science, and color in relation to marketing and business. A comprehensive understanding of the overall impact of color in the realm of graphic design practice is paramount in understanding how to proceed with such a topic. Beyond color, the study of the other elements and principles of design is also critical. Without any other elements of design to compare and contrast to, it would be challenging to discover just how much of a factor color is. Because of this, it is essential to also have a deep understanding of the overall elements and principles of design, and not just color. Finally, the literature on logo design and field studies of public response to logo design is important to the study due to their use as a focus. It is vital to have an intimate working knowledge of how important logos are in the field of business and marketing.

When discussing logo design, and its effects on the individual, it is necessary to first familiarize oneself with graphic design theory. In *Graphic Design Theory: Readings from the Field* the author "explores the aesthetic and social purposes of design practice." The author states that graphic design theory is all about the

question “why?” The process of becoming a designer, however “is focused largely on ‘how’: how to use software, how to solve problems, how to organize information, how to get clients, how to work with printers, and so on.” (Armstrong, 2009)

In order to better understand what makes a design attractive to an individual, however, it is important to revisit the “why” of design theory. Using logos as a focus, this can be studied. Why do customers find specific logos appealing when compared to others? What makes a design objectively attractive? These questions have been answered, and the results have given birth to the elements and principles of design that are applied to this day in graphic design education.

Of the elements and principles of design, there is one that is noted for its particular importance to individuals, and that is color. In *Color Design Workbook: A Real World Guide to Using Color in Graphic Design* the writer discusses the difficulty that designers have in articulating the rationale behind the choices that they make in their color systems for designs. “Choices made intuitively are hard to verbalize.” (Stone, 2006) The question of what color is then comes to light.

“The color authority R.M. Evans (1905-1974) pointed out that the word color as it is used in ordinary speech ... has many different meanings. Even in the scientific

domains of chemistry, physics, and psychology, it has different specialized meanings.” (Agoston, 1987) His words are expounded upon in *Color Theory and its Application in Art and Design*, where the author considers the everyday usage of the word color. He claims that in general, it is “a usage that implies the concept that color is a property of materials. Thus, a ripe tomato has the property of being red; snow, of being white; Mary’s scarf, of being blue; etc.” (Agoston, 1987) In reality this is not true; color is the result of light perception by part of the viewer. In short, a tomato is not inherently red, but rather the viewer perceives it as such due to light waves. “With the eyes open, under the usual conditions of seeing colors, light enters each eye and becomes absorbed in its interior; a succession of events follows that leads to the production of a signal or sensation in the brain.” (Agoston, 1987) It is this signal that makes us aware of the color of an object.

While these concepts of color are rooted in science, the general perception of color by the individual is that the object carries the property of the color. The average human will think of color from a more intuitive and psychological perspective versus a hard-scientific perspective. Because of this, a rich history of color theory has developed throughout time. Colors incite multiple feelings and emotions within an individual. While there are no quantitative ways to measure

what color means due to its subjective nature, there are ways to measure what color means to the individuals perceiving them.

This is an important consideration to make when designing for a brand. However, “despite leading industry trends, little academic research has investigated the ways in which color can shape consumer perceptions such as brand personality, familiarity, likability, and purchase intent.” (Labrecque, 2011) Society, culture and generational behaviors change regularly, so the continuing study of customer perception overtime is key in maintaining empirical evidence of changing trends in color’s relationship to business and marketing.

Customer perception of a brand is believed to be, on the surface, subconscious. The average customer may not be able to articulate why certain brands are more successful than others based on their design. However, it is something intuitively known by individuals whether they are conscious of it or not. Color plays a significant role in this. “Like a carefully chosen brand name, color carries intrinsic meaning that becomes central to the brand’s identity, contributes to brand recognition (Abril, 2009), and communicates the desired image. (Bottomley and Doyle, 2006) Brand loyalists thus become attached to a brand’s visual identity and may complain in response to changes in a brand’s color scheme (Kahney, 2003). (Labrecque, 2011)

In the paper *“Exciting Red and Competent Blue: The Importance of Color in Marketing,”* consumer perceptions of popular brands are examined through a series of four studies. “The authors provide a framework and empirical evidence that draws on research in aesthetics, color psychology, and associative learning to map hues onto brand personality dimensions (Study 1), as well as examine the roles of saturation and value for amplifying brand personality traits (Study 2). The authors also demonstrate how marketers can strategically use color to alter brand personality and purchase intent (Study 3), and how color influences the likability and familiarity of a brand (Study 4). The results underscore the importance of recognizing the impact of color in forming consumer brand perceptions.” (Labrecque, 2011) Using this study, the researchers determine what ultimately makes a brand logo exciting to the customer with a particular focus on the influence of color in this process. This empirically identifies the subjective preference of an audience with color as the primary focus.

Beyond preference, another element to be considered of careful color selection in logo design for a brand is visual retention. Countless studies have been conducted on the subject of knowledge and information retention in subjects. In the study *Short-Term Retention of Visual and Kinesthetic Information*, the researchers state that “research in short-term memory has primarily involved verbal materials. It is not surprising, therefore, that theories have tended to place

nearly exclusive reliance upon verbal process both during perception (Sperling, 1963) and subsequent rehearsal (Waugh and Norman, 1964) of the information. This study, while important, illustrates how far the study of retention has come in the last fifty-three years. Rather than focusing purely on the retention of audible and written information, recent studies have become much more interested in the impact of visual information, such as infographics or motion graphics on information retention.

Visual retention has been an interesting topic of research most notably due to the introduction of infographics and their effects on enhancing communication. For this study, however, we focus purely on logo design. In *Color Preference and Familiarity in Performance on Brand Logo Recall* the author assembles from other writings that “logo creation is a basic element of branding and has the potential to express organizational characteristics.” (Van Riel, Van den Ban, & Heijmans, 2001) It can be an important company asset which companies spend enormous amounts of time and money promoting (Rubel, 1994), and provides plenty of scope for differentiating the company from competitors (Argenti & Drickenmiller, 2003) First, consumers must remember seeing the logo. Second, logos must remind consumers of the brand or company name (Henderson & Cote, 1998).” (Huang, 2008) Enhancing the recognition and memorability of a logo starts with making an easily recognized design.

Consumers will primarily examine sensory features of a logo, including but not limited to color, shape, and size. (Pieters & Warlop, 1999) Colors attract attention and influence moods, and they are most often what more people will notice first. A study of the impact of color on memorability conducted in *Color Preference and Familiarity in Performance on Brand Logo Recall* showed that the results collected “have implications for graphics-based interface design. First, findings can be applied to the design of memorable brand logos by clearly distinguishing the roles of color preference and brand logo familiarity. Second, brand logos can help observers recall their product during purchase or consumption and can enhance the formation of strong, favorable, and distinct brand associations.” (Huang, 2008)

Felix Wichmann of the Max Planck Institute for Biological Cybernetics led a study utilizing five experiments on subjects with normal color vision. “Participants initially viewed 48 images, half in color and half in black and white. After presenting these images, the team mixed in 48 new scenes, showed the entire set of 96 and then recorded whether the subjects remembered the originals. The color images, they found, made longer-lasting impressions than did the black-and-white ones. (Mone, 2002) All of these findings can also be applied to illustrating how significant the continued study of colors impact on visual retention

of logo design is. It clearly demonstrates that color provides more information for retention than the same images printed in monochromatic black.

Furthermore, the same source goes on to say that when presented with images of natural objects re-colored unnaturally such as grass that was colored red instead of green, most “people did not remember these scenes any better than they did the black-and-white versions. According to study co-author Karl Gegenfurtner, this indicates that the visual memory system is tuned to the color schemes of the natural world.” (Mone, 2002) This can be applied to logo design depicting an object seen in nature. If an object is familiar, this study proved that it is more easily remembered if colored naturalistically. Unnatural colors lower the retention rate amongst the public.

In conclusion, this thesis uses all of the ideas and results from these sources, as well as other sources expounding upon similar materials, and applies them to the methodology for the creation of a survey and analysis of data. Information gathered from these previous writings on topics include logo design, color theory, color memory, color preference, and graphic design theory. All of these areas cover the building blocks of what forms the foundation of this research.

Many of these studies included an element of the impact of color to the visual retention of design, but few have directly applied it to logo design, creating a gap

in research that this thesis aims to fill. Because a company's logo is the identifying mark that brands all of its products and services, understanding how to increase visual retention is very important and beneficial to the market. Such information would assist the growth of future research materials within this realm of study.

METHODOLOGY

In this paper, two studies are conducted, testing a general population with some diversity in gender, age, and area of specialty in order to obtain a wide variety of results from a general population. One study is on visual retention of logo design, and the other is on visual preference in logo design. The studies are in the form of a single digital survey assembled and distributed using a web link to Survey Monkey. Participants are asked for their gender, age range, country of birth, and were asked if they attended college. If answered yes to attending college, they were also asked about their college major category. Although the information gathered from the survey is the percentage of responses from the total participating body of respondents, these separations in demographics can be collected and used for future studies on visual retention. This information can be found below in table 1.1 (see Appendix D)

Table 1.1

Number of Participants by Demographic Category			
GENDER		COLLEGE EDUCATION	
Male	106	Attended	406
Female	34	Not Attended	49
COUNTRY OF BIRTH		AREA OF SPECIALTY	
United States	423	Business	79
United Kingdom	7	Communications/Marketing	62
India	10	Education	59
Other	15	English/Literature/History	19
AGE RANGE		Language	8
18 - 24	221	Math/Science/ Engineering/Technology	99
25 - 34	82	Religious Studies	6
35 - 44	77	CLEMSON STUDENT	
45 - 54	49	Yes	221
55 - 64	17	No	177
65 & Older	7		

Visual Retention Study

The first of the two studies were made to collect information on how well the subjects remember designed logos for fictitious companies. Each subject is presented with a colored logo to view (Figure 2.1), and then they must attempt to match that logo's appearance with one of the multiple options on the next page. (Figure 2.2)

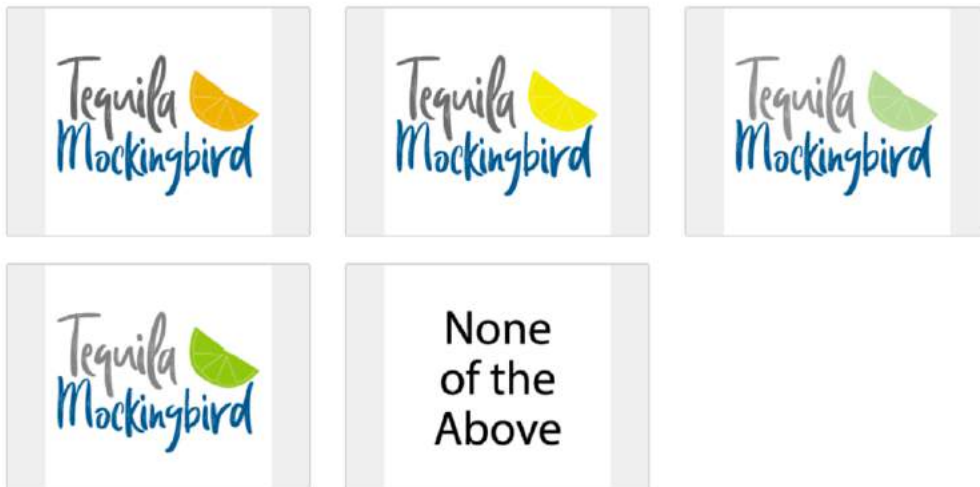
Figure 2.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 2.2

* 9. Which of the following visually matches the logo on the previous page?



Some logos are used as a control target, with clear differentiation in color and minimal text elements as illustrated above. (see Appendix B Figure 2.1, 2.2) The expectation is that these logos will be easily remembered and visually retained by respondents. Other examples included are logos with more typographic elements such as in the following figure. (Figure 3.1) While some of the choices on the following page of the survey for these logos carry noticeable changes in color, they also contain text misspellings or alterations. (Figure 3.2) The expectation is that when viewed, a logo will be perceived first by the effect of its color, resulting in an overlook of typographic elements.

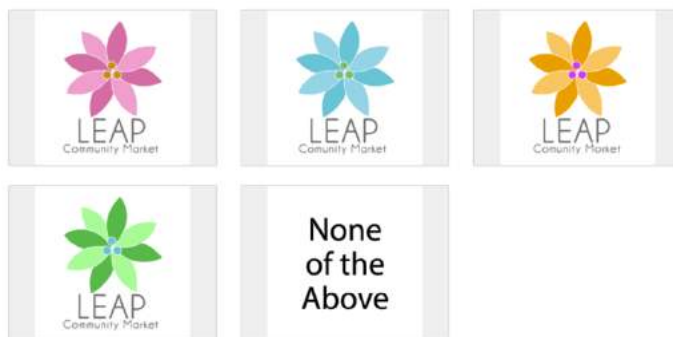
Figure 3.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 3.2

* 10. Which of the following visually matches the logo on the previous page?



Some of the examples in the survey present the viewer with changes in shape and form. While the color may match, certain visual elements change. Notice that the placement of the plane in the center of the camera in the logo changes in the figure below. (Figure 4.1, 4.2) The expectation is that a majority of participants will match the logo based on color before they will notice an element's placement, shape, or size changing. It is also expected, however, that a larger percentage of participants will notice the changes in the shape graphic elements (Figure 4.1, 4.2) than those that will notice changes in the misspelling of the typographic elements (see Appendix B Figure 3.1, 3.2).

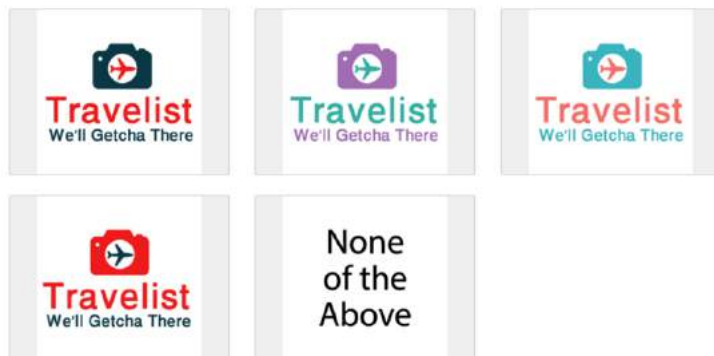
Figure 4.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 4.2

* 11. Which of the following visually matches the logo on the previous page?

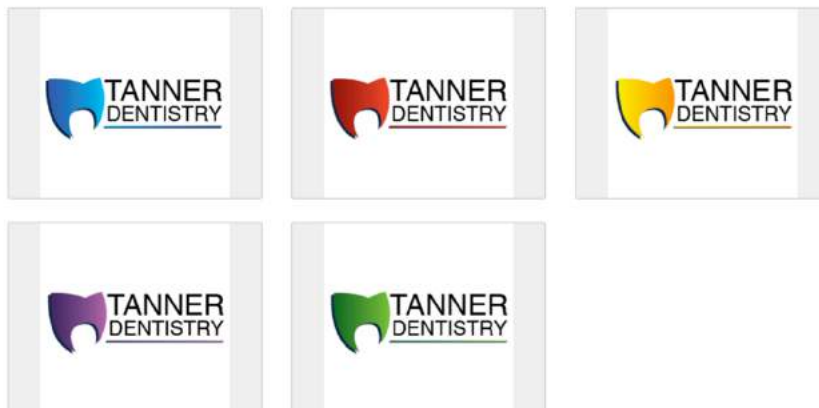


Visual Preference Study

There will also be a second series of questions that will prompt the subjects to choose their preferred logo for a given company out of a list of options such as in the figure below. (Figure 9.1) There are many sources listed in this paper showing that within the study of color theory, certain colors have become firmly associated with certain ideas, emotions or feelings. (Blue for cleanliness and health, green for recycling and eco-friendly materials, red for food, passion, and anger, etc.) These studies will be tested in this survey by providing the subjects four to five options, varying by color, for fictitious company logos. These companies include categories such as a dentist's office, woodshop, cupcake shop, and nutrition and wellness. The expectation is that most of the subjects will pick colors that historically have been associated with that company logo's profession as supported by previous research into consumer marketing.

Figure 9.1

* 16. Which colored logo do you prefer and/or find appropriate for this company?



Limitations of Study

Total amount of time that participants could view logos before moving on to matching could not be controlled via online survey in the visual retention portion of the questions. To circumnavigate this, a blanket statement was attached to the instructions before logos would appear that read as such:

“In the following questions, you will be shown a series of color logos for multiple companies. After viewing each logo, you will be prompted to match it visually on the next page out of a variety of options.

This survey is intended to study how well a person can remember a logo after glancing at it for a moment. A logo is the window to a company's soul. It forms the first impression to the customer of what a company stands for and brands everything the company makes. A logo is the very identity of a company itself, and for that reason, it is important to create one that is memorable at a second's glance. For example, if a customer is driving down the road and sees a logo on a billboard, they have only moments to look before they have passed it. What happens then? Can they remember it? What made it memorable?

Keeping all of this in mind, it is important as you move through this portion of the survey to only take a brief glance at each of the sample logos before moving on to the next page. This will help to keep the information collected pure, purposeful, and useful to future studies.”

Color calibration of survey taking devices was not monitored. The survey was distributed electronically and therefore was taken on a number of non-color managed devices. Participants were able to take the survey on desktop, laptop, tablet, or phone. All of these devices can differ in brightness, color display, and size. Because survey taking devices were not used in a controlled environment, this could have affected the results to some degree.

CHAPTER I

IMPACT OF COLOR THEORY ON STUDY

Color is only one piece of the elements and principles of graphic design that dictate what separates effective design from ineffective design. It is subjective to individuals, cultures, and heritage. “If one says ‘red’ (the name of the color) and there are fifty people listening, it can be expected that there will be fifty reds in their minds. Moreover, one can be sure that all these reds will be very different.” (Stone, 2006) This subjective nature on the subject of color over history has led practitioners to a very intuitive approach to graphic design, with many programs in higher education instructing it as a fine art practice.

It is, however, important to remember that while design theory has historically based itself upon intuition and creativity, it is equally as important to approach the study of graphic design from an empirical perspective as well. Individuals, groups and cultures can be studied. Human response can be used as a calculation. While the human response to color is indeed subjective, it is clear over time that there is a commonality in groups of people separated by gender, age, culture, background, and lifestyle in how they perceive and retain color information. There is an observable pattern that is dependent on the intended market.

For example, most American medical institutions frequently use the color blue in their branding, collateral, and marketing. This is because, traditionally, blue is associated with trustworthiness and cleanliness in American culture. There are also cultural exceptions in which two separate cultures may respond to certain colors in different ways. White, for example, in American culture symbolizes purity, light and new beginnings. This is why it is a very popular and standard color for weddings, whereas in China, “white is used to express sorrow and grief. For the Chinese, white is the ominous color of funerals and death.” (Hang, 2019) These are two distinct contrasts in the perception of the same color. Both cultures associate a different meaning attached to the color white, which is why studying empirical evidence of human response to color across multiple cultures is so important. A designer’s intuition and experiences may lead them to the optimal color choice for communicating a logo’s message, but informed and empirically supported evidence on what colors are preferred and retained by the public can explain with numbers why these choices are correct.

CHAPTER II

IMPACT OF COLOR ON PERCEPTION

Visual Retention

“Studies show that having a defined color for your brand can increase brand recognition by 80 percent.” (Newcomb, 2019) Color is the first thing that the human eye is trained to see. This has been observed in the fine art world for years. More pieces of art that are painted in color are sold than those that are drawn in black and white. Color brings life to a subject and evokes an emotional response from within a viewer. It is, therefore, no surprise that defining a purposeful color palette improves recognition and retention.

“Psychologists have found that colors enhance an individual’s visual memory. From a series of experiments, researchers learned that subjects were more likely to recall the color version of an image than the same scene in black and white.” (Mone, 2002) Studies done using this technique have shown an overwhelming tendency for colored images to make a longer-lasting impression than their black and white counterparts. (Mone, 2002) It is also important to note that natural color has an impact on this as well. A photo of a blue tomato, for example, will not be as distinctly remembered by a viewer as one that contains the same scene with a naturally colored tomato. This further supports the assertion that

using familiar colors that communicate the appropriate emotion for the company a designer is creating a logo for is the most effective way to improve retention of a company's designed materials.

Children are taught colors early in school because of how important it is in promoting their future education. Color becomes a system that children use to define and categorize the world. It gives them new opportunities to describe, sort, organize and take heed of their environment. Children must learn their colors because it opens their minds to a wealth of exciting new verbal and visual communication strategies. People assign a color to objects in their mind and can remember them in this way. This is why the study of color for the purpose of optimizing communication through graphic design is an important one.

The visual retention portion of this survey was created by gathering original designs for fictitious companies. These logos are presented to survey participants. After viewing the logo, the participants must try to match what they just saw with one of the multiple choices on the next page. (See Appendix B for Visual Retention Questions/Answers) Color is an important asset to a person's ability to recall visual information. It is therefore expected that subjects will make their decisions on which logo matches based on the color of it rather than the shapes or typography.

For example, figures 3.1 and 4.1 (see Appendix B) were designed to test how many subjects would match the color of the logo before noticing that there are other non-color related errors on figures 3.2 and 4.2 (see Appendix B). In figures 3.1 and 3.2 the color of the flower is easy to match; the text, however, contains spelling errors. In figures 4.1 and 4.2, the color of the logo is easy to match, but the graphic of the airplane in the center of the camera lens shifts position. Both of these questions present the subjects with a graphic element change unrelated to color. The expectation is that despite this, most participants will not notice these changes over the power that the color has on their ability to retain the visual information. The other questions in this category were constructed similarly. The results and further discussion of this study can be found in Chapter III.

Visual Preference

“Based on tradition and how we’ve been told over the years to react, each major color gives us meaning, and the best logo colors use this meaning to impact perception.” (Newcomb, 2019) Color is perceived differently across the world for many reasons. Ultimately, however, it comes down to a series of psychological constructs. Red, for example, a color often associated with energy and excitement, does not literally heighten excitement levels in the body. (Newcomb, 2019) Beneath the surface, our minds have been conditioned to respond to color in this way; it is purely psychological. The best graphic designers in the industry

study this fact and capitalize on it. Effective graphic design can communicate and evoke these responses in viewers.

Generally, people prefer colors on graphics that are appropriate based on this psychology. Designing with color at the forefront of consideration helps to solve problems in real-world application. Drivers, for example, have been trained throughout their lives to stop when they see a red stop sign or light and to take special care when approaching a yellow sign. Color can provide valuable information about the safety of chemicals and food products. (Jeppson) It can also assist people in the organization of the workplace. These are all examples of colors applied to industry, but color has been used as a key factor in identifying natural elements as well. “When someone is hurt, colors help to figure out what might be wrong.” (Jeppson) Doctors may ask what color an abrasion is, and the answers to these questions can provide essential information in determining what is wrong. Color can also assist in caring for plant life, determining poisonous animals, and much more.

The visual preference portion of this survey was created by carefully choosing companies with a specific discipline, and a variety of colors that both compliment and distract from that company’s mission. It was made so that careful analysis of

participant responses could be logged and compared to the expected choices based upon the psychological perceptions in culture discussed above.

(See Appendix C for Visual Preference Questions/Answers)

For example, figure 9.1 (see Appendix C) was designed to test how much the color blue has influenced the public's view of the color in relation to the medical field. Blue is a popular choice for medical institutions in America. The expectation is that the blue option for the logo will have the largest percentage of participant choice response, while the color red, for example, will have a very low percentage because of its association with passion, energy, and food. The other questions in this category were constructed similarly. The results and further discussion of this study can be found in Chapter IV.

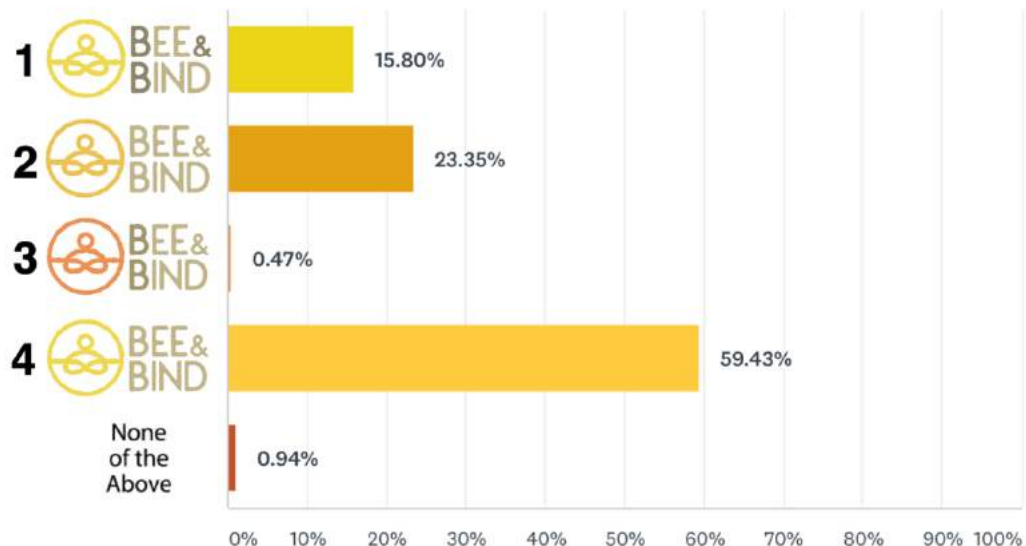
CHAPTER III

RESULTS OF VISUAL RETENTION

Bee & Bind Results



Chart 1.1



In this question, participants were shown a sample logo for a fictitious honey company and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 1.1, 1.2) Four logo options are presented to choose from with an option for “none of the above.” The chart above (Chart 1.1) shows that 59.43% of participants chose the fourth logo. This is the logo that correctly matched the sample shown to them. 23.35% chose the second logo,

which contained a darker shade of orange. 15.80% chose the first logo, which contained the same value of yellow but had different values in the typography.

The expectation in this question was that the majority of the participants would correctly select the fourth logo. It was also expected, however, that this question would be more difficult for participants to match due to little variety in hue between the four choices. All four logo choices present the viewer with yellow and orange colors that are relatively close to one another in hue and value, as opposed to later questions which present more obvious differences in color. This is especially apparent when comparing the results shown in chart 1.1 (see Appendix D) above with any of the following charts in the other questions within the survey. At 59.43%, this question provides the lowest percentage of correct responses than any of the other questions where the answer is not “none of the above.”

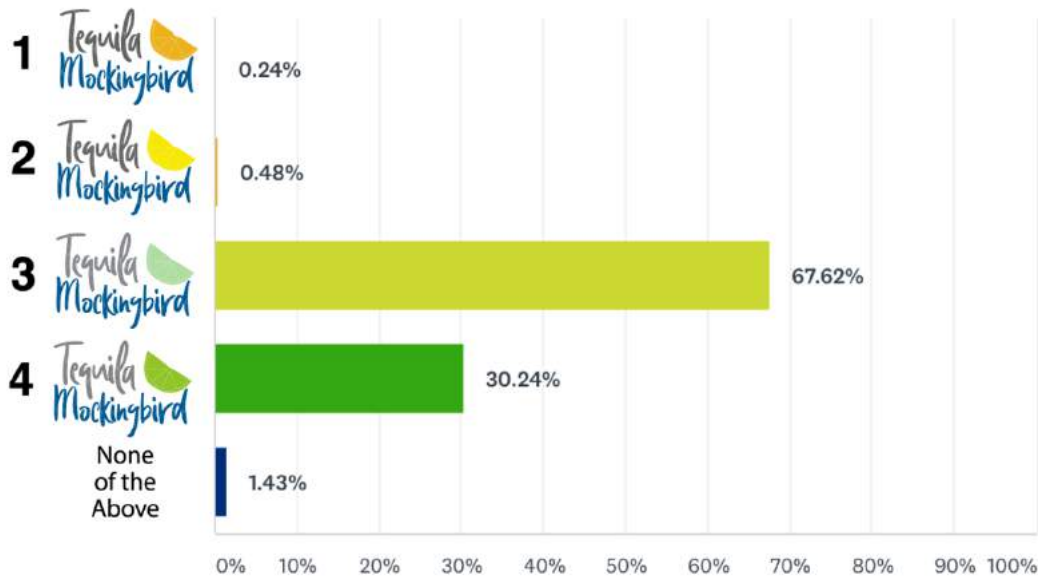
The third logo choice in chart 1.1 (see Appendix D) above was the least selected of all of the logos at 0.47%. The numbers clearly show that it provided enough of a change in hue from the sample logo and the other three choices for 99.53% of total participants to eliminate it as a possible match. This illustrates how sensitive humans are to the influence of color on visual retention. In the following series of

questions, it becomes clear that the more of a difference there is in hue and contrast, the higher the percentage of correct matching responses.

Tequila Mockingbird Results



Chart 2.1



In this question, participants were shown a sample logo for a fictitious beverage company and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 2.1, 2.2) Four logo options are presented to

choose from with an option for “none of the above.” The chart above (Chart 2.1) shows that 67.62% of participants chose the third logo. This is the logo that correctly matched the sample shown to them. 30.24% chose the fourth logo, which contained a higher saturation green than the correct match. Less than one percent chose the first and second logo options combined.

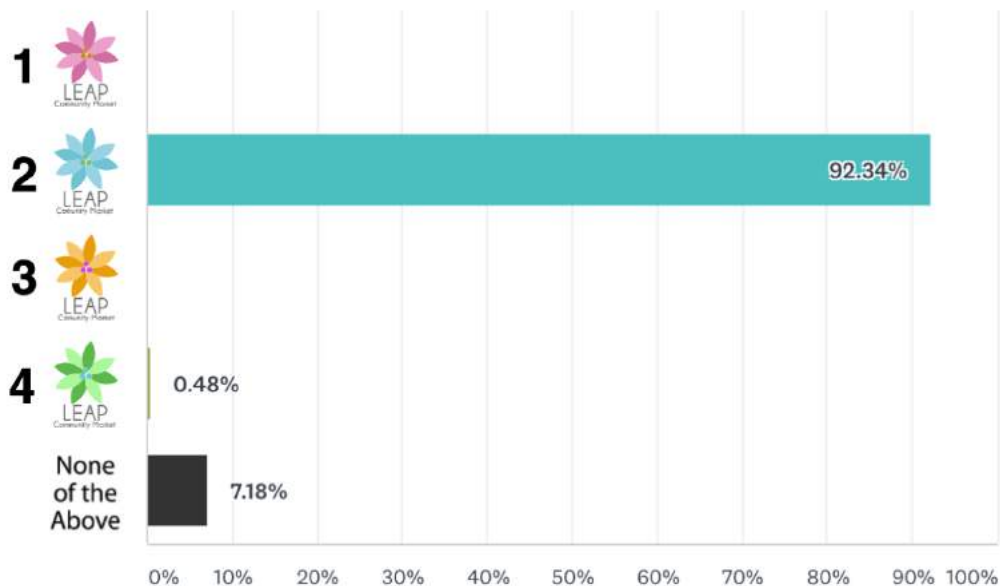
The expectation in this question was that a majority of participants would correctly select the third logo. It was also expected that the second most selected would be the fourth logo. In chart 2.1 (see Appendix D) above, a vast majority of participants recognized that the lime in the sample logo was green and that the logo with the lighter value lime was the correct one. Nearly one-third of the participants chose the logo with a higher saturation green. The yellow and orange options were selected by less than 1% because most participants would associate them with oranges or lemons. Humans are conditioned to perceive the color of an object based on the naturalistic quality of its color. “A photo landscape with a green sky, for example, will not lodge as effectively in the brain as the same scene with a blue sky.” (Mone, 2002) Therefore, it can be concluded that after associating the green of the sample logo with a lime, it became very unlikely that anything above a low minority of participants would mistake the orange and yellow options as the correct match to the sample logo.

It can be assumed by referring to the results of the Bee & Bind logo in chart 1.1 (see Appendix D) that if the logo answer options shown in chart 2.1 (see Appendix D) above had all been varying shades of green, the percentage of correct responses would have gone down due to the lack of different hues. This is supported further when considering that this would also eliminate the yellow and orange options, which give the viewer a naturalistic color association with the fruit orange and lemon. History has shown that natural colors make a difference in the ability to recall color information.

Leap Community Market Results



Chart 3.1



In this question, participants were shown a sample logo for a fictitious community market company and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 3.1, 3.2) Four logo options are presented to choose from with an option for “none of the above.” The chart above (Chart 3.1) shows that 92.34% of participants chose the second logo. This is not correct despite the color matching exactly. There are misspellings in the typography of

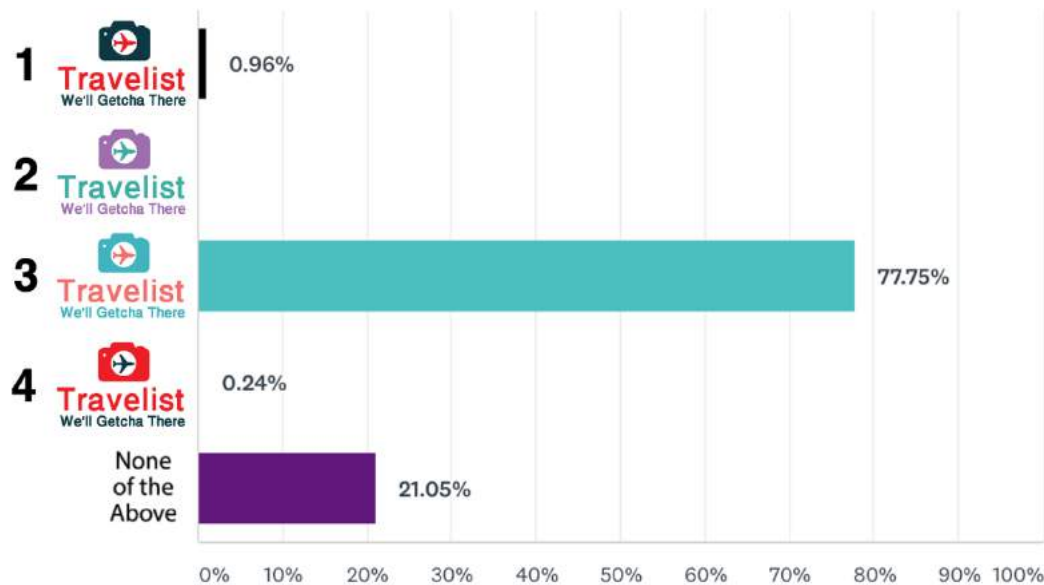
the third logo. The correct answer is “none of the above” which was selected by only 7.18% of participants.

It was expected that a majority of participants would incorrectly choose the second option as the correct matching logo. The misspelling of typographic elements is apparent in figure 3.1. (see Appendix B) If the requirements were simply to match the color of the logo, then it would have been the highest percentage of correct responses. This is because of all of the questions; this one provided the most clearly different hues when looking at all four options. Because color plays such an essential role in the capacity for the human mind to recall and retain visual information, this question was designed to test with data just how critical it truly is. Before distributing the survey, it was hypothesized that participants would make decisions on logo matching based on the color before even reading the text associated with it. Especially if these logos provided a strong and emphasized symbol graphic. The results of this question support this hypothesis and are repeatable in chart 6.1 which shows similar results. (see Appendix D)

Travelist Results



Chart 4.1



In this question, participants were shown a sample logo for a fictitious travel planning company and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 4.1, 4.2) Four logo options are presented to choose from with an option for “none of the above.” The chart above (Chart 4.1) shows that 77.75% of participants chose the third logo. This is not correct despite the color matching exactly. The placement of the airplane graphic in the

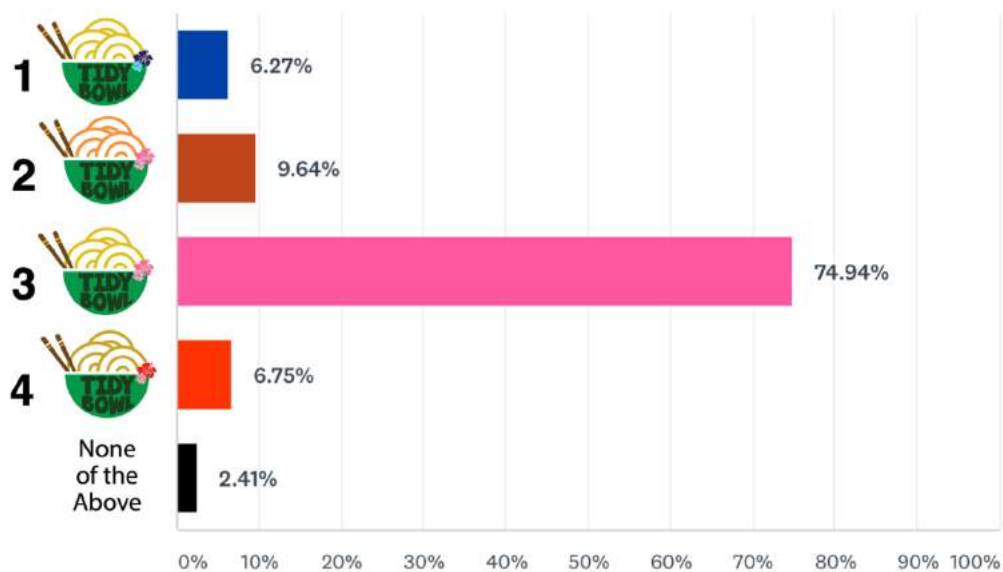
center of the camera lens is shifted in position from the sample. 21.05% of participants saw this and selected the “none of the above” option.

It was expected that a majority of people would incorrectly select the third logo as the matching option. Like chart 3.1 (see Appendix D) while most participants correctly matched the color of the sample logo, they did so without noticing a change in one of the other elements. In this case, the positioning of the airplane graphic. Unlike chart 3.1 (see Appendix D) however, the number of participants that correctly selected “none of the above” was 13.87% higher. Because the changing element in this example is a shift in shape, it is clear that participants more readily recognize a change in shape versus typography. This result is repeatable and supported in figure 8.1 (see Appendix B) and chart 8.1. (see Appendix D)

Tidy Bowl Results



Chart 5.1



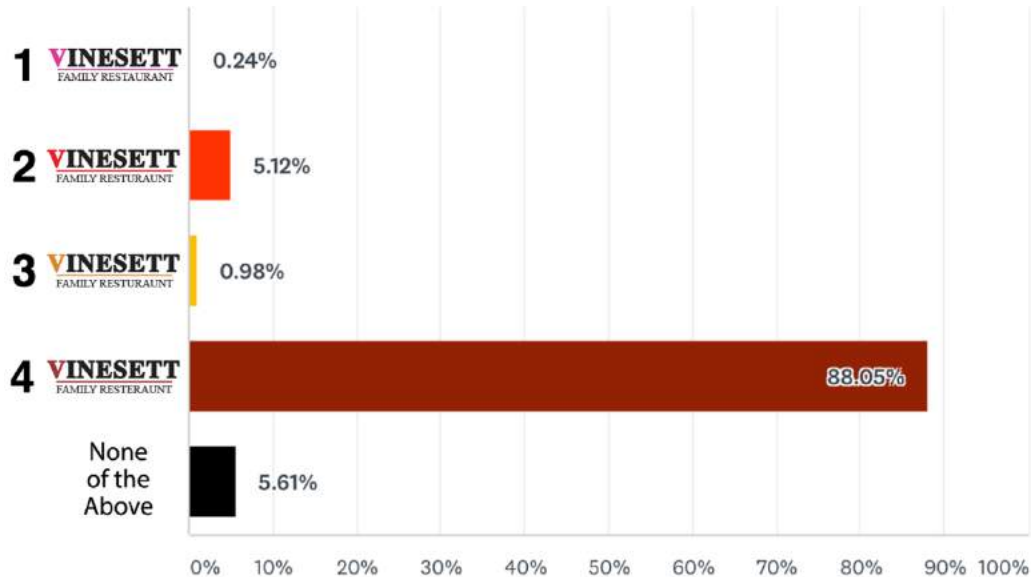
In this question, participants were shown a sample logo for a fictitious restaurant and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 5.1, 5.2) Four logo options are presented to choose from with an option for “none of the above.” The chart above (Chart 5.1) shows that 74.94% of participants chose the third logo. This is the logo that correctly matched the sample shown to them. 25.07% of participants chose any of the other four options. Of these, the second logo was the one chosen most at 9.64%.

It was expected that this logo would carry an even distribution of percentages across selection choices. The third logo was correctly chosen by a distinguished majority of participants. The logo depicts a bowl of noodles, chopsticks, and flowers on a bowl with the title of the restaurant it advertises. The noodles, similar to the Bee & Bind logo seen in figure 1.1 (see Appendix B) and chart 1.1, (see Appendix D) carry very similar hues of yellow and orange. The percentage of correct responses is 15.51% higher than the results of the Bee & Bind logo. The difference is that the Tidy Bowl logo comparatively provides much more color information. Referring to the Tidy Bowl chart 5.1 (see Appendix D) above, it is observable that the symbol for the flowers, bowl, and noodles each carry a distinctively different hue for each answer choice. This implies that a larger quantity of colors could have allowed the participants to recall information more accurately. The fact that the second and third logo were the most selected options and both contained the same value of pink in the flowers supports this theory.

Vinesett Family Restaurant Results



Chart 6.1



In this question, participants were shown a sample logo for a fictitious restaurant and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 6.1, 6.2) Four logo options are presented to choose from with an option for “none of the above.” The chart above (Chart 6.1) shows that 88.05% of participants chose the fourth logo. This is not correct. While the color matches exactly, the text is misspelled showing that the color was the first thing that participants noticed. 5.61% chose “none of the above” correctly.

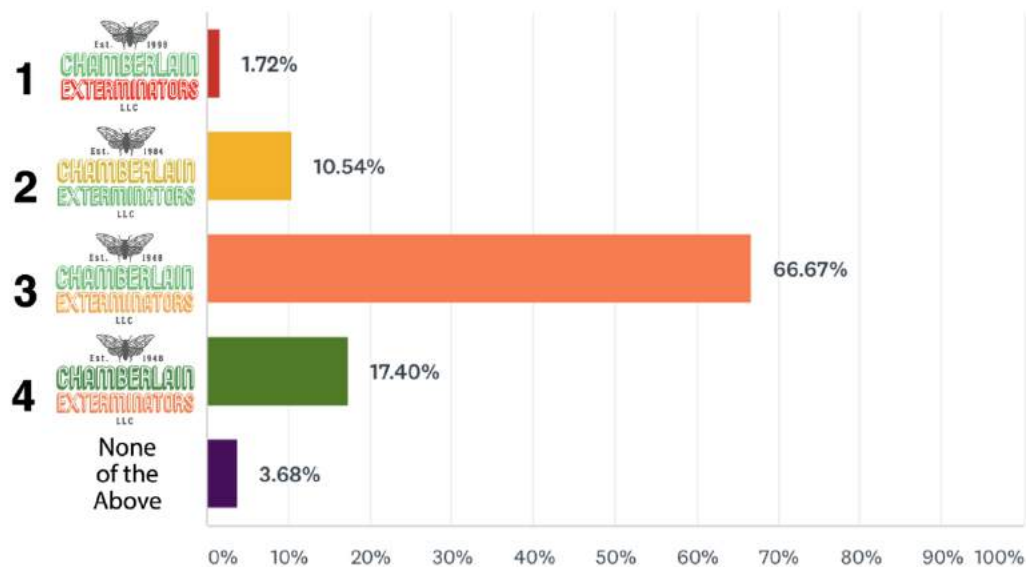
Like the Leap Community Market logo seen in figure 3.1 (see Appendix B) and its results shown in chart 3.1 (see Appendix D) this logo was incorrectly matched due to an oversight of misspelling errors. It was expected that this would happen. It was also expected that the percent of correct responses would be lower for this logo because, in addition to having misspelling errors, the four logo choices also contained colors that were closer in hue than those seen in the Leap Community Market chart 3.1. (see Appendix D) As expected, the percent of correct responses for this logo was lower. However, it was only 4.29% lower.

It was expected to be a more significant difference than 4.29% due to the lack of a symbol graphic in the Vinesett Family Restaurant. The symbol of the flower in the Leap Community Market logo in figure 3.1 (see Appendix B) was expected to make a more substantial impact on visual retention because of its prominence on the logo when compared to a wordmark logo like Vinesett. Ultimately, however, the results were not as far apart and anticipated, because a majority of participants were still able to match the color regardless of not having as varied of a color selection in the options as with the Leap Community Market logos. This further emphasizes how much more control color has on visual retention than the other elements and principles.

Chamberlain Exterminators Results



Chart 7.1



In this question, participants were shown a sample logo for a fictitious pest extermination company and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 7.1, 7.2) Four logo options are presented to choose from with an option for “none of the above.” The chart above (Chart 7.1) shows that 66.67% of people chose the third logo. This is the logo that correctly matched the sample shown to them. 17.40% of people chose the fourth logo, which has a darker shade of green and orange.

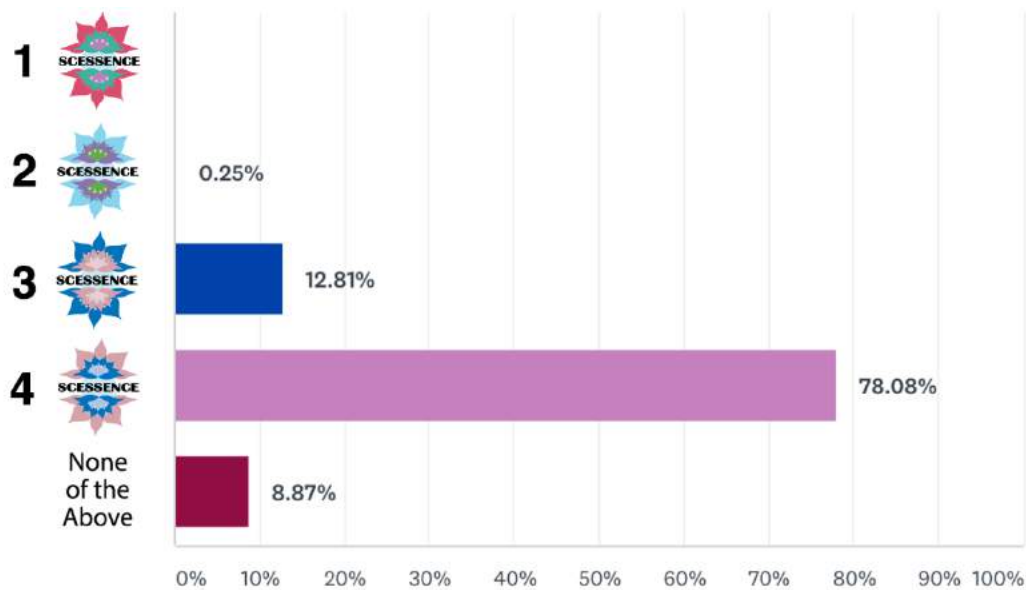
It was expected that a majority of participants would correctly choose the third logo with the matching hues of green and orange. The anticipated second most popular choice was the fourth logo. The results mirrored these expectations. Similar to the Tequila Mockingbird logo results seen in chart 2.1 (see Appendix D) the two most chosen logos share the same colors. However, the correct logo contains a lighter value of both green and orange.

Unlike the Tequila Mockingbird logo seen in figure 2.1 (see Appendix B) all of the color information in this logo is contained within the typography. On average, the choices made by participants were more evenly spread across all four logo options for Chamberlain Exterminators than for Tequila Mockingbird. (see Appendix B Chart 2.1) A potential cause of this could be because colors are even more easily retained when applied to shapes or graphics as opposed to text. The findings would support this conclusion.

Scesence Results



Chart 8.1



In this question, participants were shown a sample logo for a fictitious floral scent product company and were asked to visually match it with the identical logo on the next page. (see Appendix B, Figure 8.1, 8.2) Four logo options are presented to choose from with an option for “none of the above.” The following chart (Chart 8.1) shows that 78.07% of participants incorrectly chose the fourth logo. While the colors in the flower match exactly, the blue circle in the center is not present

in the sample logo. Only 8.87% of participants selected “none of the above” correctly. Unexpectedly, logo three was the second most selected option at 12.81%.

Like the Travelist logo options for matching seen in chart 4.1, (see Appendix D) The Scessence logo choices carried a slightly higher percentage of respondents who noticed that there was a shape change than the logos that contained misspellings in the text elements. The Travelist logo presented a shift in the positioning of the airplane graphic. The Scessence logo presented a blue circle in the center of the flower that is not present in the sample. 21.05% of participants chose “none of the above” for the Travelist question showing that despite the color matching, participants noticed the shape change. Only 8.87% of people noticed the appearance of the blue circle in the Scessence logo. This is a difference of 12.18%, showing that a complex shape element representative of a recognizable object changing positions is on average more likely to be noticed and remembered as opposed to a simpler shape such as a square, triangle, or circle.

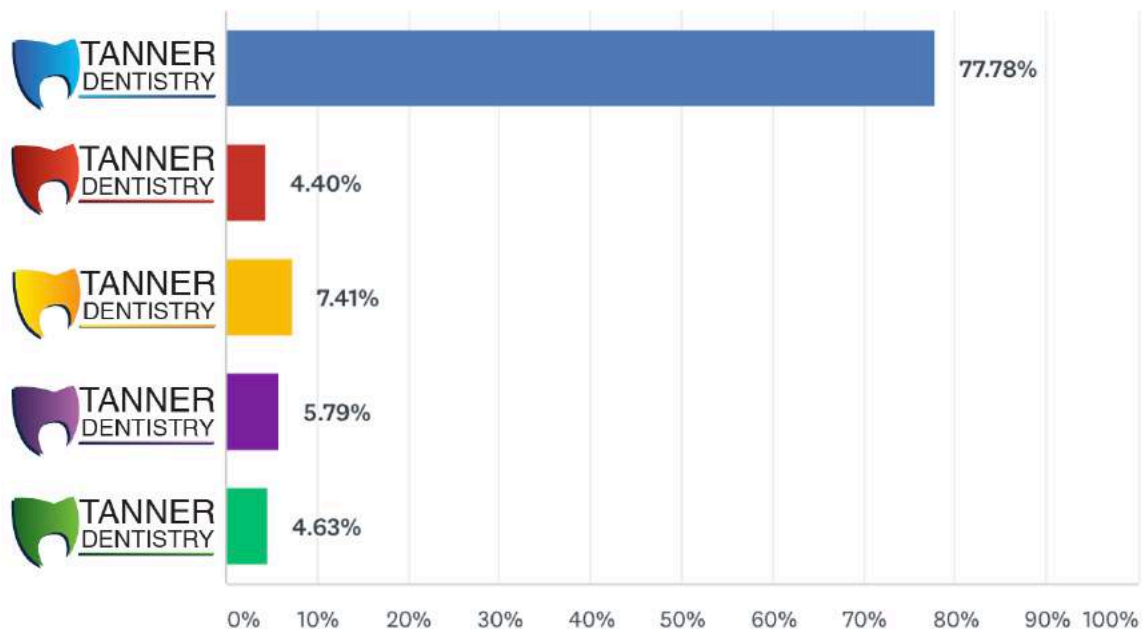
CHAPTER IV

RESULTS OF VISUAL PREFERENCE

Tanner Dentistry Results

In this question, subjects were given a choice of five logos for a dentist's office, each varying in color. (Appendix C Figure 9.1) It was expected that a majority of respondents would prefer the blue logo most because of the color blue's frequent association with the medical field. The following chart (Chart 9.1) shows that 77.69% of all participants chose the blue option for their preferred color logo. Only 22.31% of respondents chose any of the other four options. The least preferred option was the red logo with only 4.26% of the total responses.

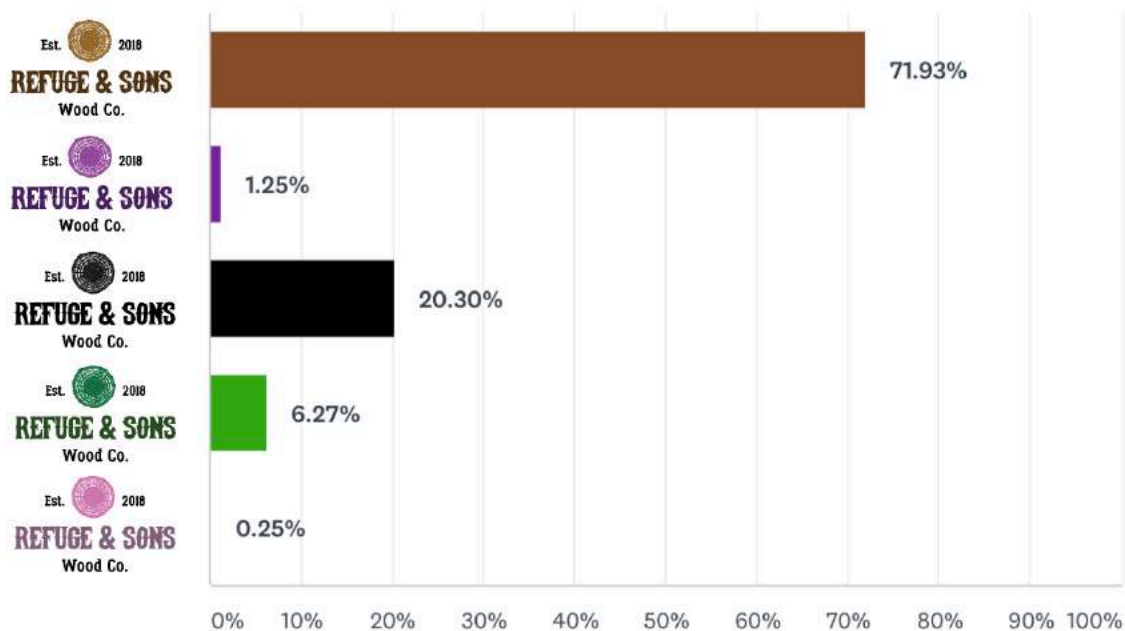
Chart 9.1



Refuge & Sons Wood Co. Results

In this question, subjects were given a choice of five logos for a woodcraft company, each varying in color. (Appendix C Figure 9.2) It was expected that a majority of respondents would prefer the brown logo most because of the color's association with wood and rustic atmosphere. The second most popular choice was expected to be the green logo because of the color green's association with nature, recycling and the earth. The following chart (Chart 10.1) shows that 71.93% of all participants chose the brown option for their preferred logo as expected. The second most popular choice was the black logo with 20.30% of the total responses. This was different from the expectation that green would be the next most popular color.

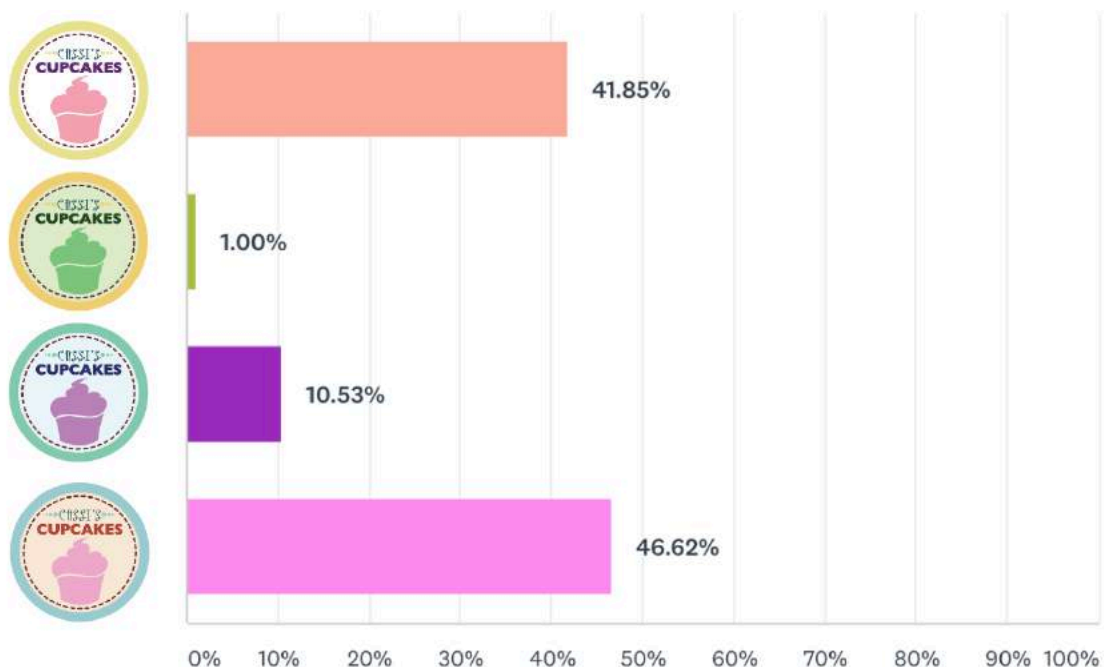
Chart 10.1



Cassi's Cupcakes Results

In this question, subjects were given a choice of four logos for a cupcake bakery company, each varying in color. (Appendix C Figure 9.3) It was expected that a majority of respondents would prefer one of the two pink cupcake graphic logos. Red is a popular choice for food products because of its ability to make consumers hungry. (Taylor, 2017) Because of this, most consumers are drawn to shades of red for food products. The following chart (Chart 11.1) shows that both options designed with a pink cupcake were the most popular choice with 41.85% and 46.62% respectively. Pink is a tint of red, so this supports the expectation. The least popular color was the green cupcake logo with only 1% of respondents choosing it.

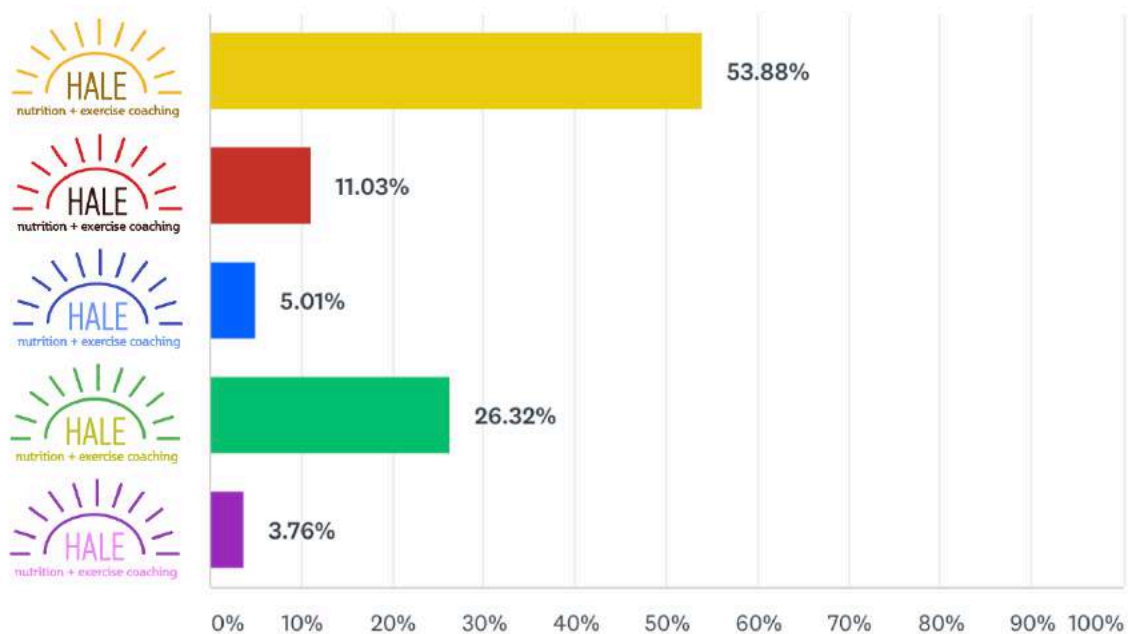
Chart 11.1



Hale Nutrition + Exercise Coaching

In this question, subjects were given a choice of five logos for a health, exercise, and nutrition company, each varying in color. (Appendix C Figure 9.4) It was expected that a majority of respondents would prefer the yellow or green logo because of those color's association with health, vibrancy, and nutrition. The logo's depiction of a sun promotes this expectation as well. The following chart (Chart 12.1) shows that 53.88% of the total respondents chose the yellow option as their preferred logo color. The least popular choices were the purple and blue logos at a 3.76% and 5.01% selection rate respectively. The second most popular choice was the green logo at 26.32%.

Chart 12.1



CHAPTER V

CONCLUSIONS OF STUDY

Discussion on Visual Retention Results

While color was the ultimate focus of the research, shape, and text were analyzed in the visual retention portion of this thesis as well. Text, while certainly an identifying factor, has taken third place in the hierarchy of importance to visual retention. According to the results, the most crucial element in creating a memorable design is color. The data collected provides clear proof of that. Shape is the second most important factor in retention. Of the logos presented, participants were much more likely to recognize a shift in shape elements than they were text elements.

There were two logos presented in the survey for matching that did not contain a corresponding correct choice of the options listed due to text misspellings. One of these logos contained a symbol with clear variation in color. (see Appendix B, Figure 3.1, 3.2) This logo was matched primarily by color by the largest majority of participants out of all of the questions on the survey. The other contained only colored text with no symbol. (see Appendix B, Figure 6.1, 6.2) This logo was also matched primarily through color. Only a small minority of participants noticed the

text misspellings in either of these logos. This confirms that to maximize visual retention, color is more influential than the text.

The logos with matching options that contained shifts in shape elements painted a different picture. On average, more participants noticed changes in shape than those that noticed misspellings in the text. Of the two logos that contained shape changes, the logo that contained a more representative shape (see Appendix B, Figure 4.1, 4.2) was noticed by more participants than the logo that utilized a simple shape. This shows that the more representative of a recognizable object a shape is, the more likely a subject will notice changes in it and retain the information it provides.

Additionally, it can be observed by the results of the survey that color is more easily retained when applied to shapes than text. Participants were much more successful at retaining the visual information from the logos with colored symbols than they were from the logos containing colored typography. From this, it can be concluded that while text communicates important information, colored graphics are what is observed and remembered first by the viewer.

In instances where the participants were given the choice of a higher saturation variant of the same color used in the sample logo, no less than 17% chose that

option. In the case of the Tequila Mockingbird logo (see Appendix B, Figure 2.1, 2.2) 30.24% chose the higher saturation color. There are multiple reasons people would choose a higher saturation color despite the color not matching the original logo. Chief among these is the fact that higher saturation colors are bolder and more eye-catching.

Despite a certain percentage of participants noticing shape, text, or contrast changes in the logos, the vast majority of all respondents matched the color exactly regardless of whether it was correct or not based on non-color related variations. According to the results, color is the most important factor when recalling a logo from memory, and therefore is the most important factor in visual retention of logo design.

Discussion on Visual Preference Results

The data collected reflects the expectations of the study accurately. Color psychology is not new. It is a field that has been studied for years. Those who utilize this knowledge and continue to study it will benefit themselves and future researchers. Color should be chosen carefully by companies based on how they want to be perceived. Research such as this can help the industry stay on top of the trends of modern color perception.

What becomes clear in the results is that the use of blue was particularly crucial to responders when choosing their preferred logo for a company in the medical field (see Appendix C, Figure 9.1). The history of the use of blue in this area is a rich one. Blue makes people feel like they can trust the brand and that the brand is clean and professional. The results are also clear that participants preferred red the least when it came to a medical company. Red and blue are very much opposites in the way that they are perceived. The results of this research support the claim that for institutions that want to promote feelings of trust and care to customers, color selection is of particular importance.

One of the logos presented was for a cupcake company (see Appendix c, Figure 10.1). A majority of participants preferred the two-pink logos for this company than the green or purple options. Pink is a tint of red. Quite contrary to the results of the medical example, red was the most popular choice for a food logo. This is the case in the industry as well. Historically red has always had heavy use in food packaging and graphics. One would be hard-pressed to walk into a grocery store and miss a wealth of food packaging designed in red.

There are many instances in the study where the importance of representative color becomes a key point in the research. The results show that if the logo is representative of an object that can be seen in life, participants will

overwhelmingly prefer the color that is naturally associated with that object. Two of the logos used in the visual preference section of the survey depicted a wooden stump (see Appendix C, Figure 11.1) and a sun (see Appendix C, Figure 12.1). It is no surprise that the most popular choice for the wooden stump was the brown logo, while for the sun it was the yellow logo due to the colors being representative of color associations in real life application. Through a review of past research and analysis of the data collected here, it becomes clear that representative natural colors are more easily retained and preferred by people than those that are not.

Comprehensive Conclusion and Future Studies

Overall, the results show overwhelmingly that color plays the most important role in the visual retention and preference of logo design. Every logo showed that a majority of respondents visually retained the color over the other varying elements of shape and typography. It was also proven that some of the most popular color associations for what colors are appropriate for certain types of companies according to color psychology remain true in the results of the survey. Ultimately, what can be gathered from the results is that in order to create a logo with the highest possible visual retention rate, color is the most crucial element to optimize.

All of the elements and principles of design are important in the conception of a logo; however, as seen in the results, color is observably the most influential for people. Considerations to make include if elements of the logo represent something that exists in life. Replicating the color of this real-life object in the logo enhances retention, as does use of bolder and higher saturation colors. Further studies on the impact of naturalistic colors in visual retention pertaining to logos would expand the understanding of this conclusion.

The study of color in marketing, design, and print is an ongoing and multifaceted pursuit. From color psychology to color replication, it is evident in this study as well as previous studies that color enhances the quality and attractiveness of any physical or digital marketing material that it is attached to. So, while this research uses logos as a focus, the impact of color in the graphic communications world spans much further than just a logo. A logo is a doorway to a brand, but the fundamentals discussed here can be utilized to enhance communication and visual retention when applied to other mediums as well.

Infographics (see Appendix A) are an ever-developing branch of communication in graphic design and marketing. Their goal, much like a logo, is to “look appealing and encourage viewers to engage in the content. People have long accepted the notion that a picture can replace a thousand words, and similarly,

that a simple graph can replace a table full of numbers. Basic visualization allows us to immediately comprehend a message” and absorb the information presented more readily than other forms of communication that can fall short. (Lankow, 2012) This is a seamless transition from the results gathered within the survey presented in this paper.

The feature concern in the study of infographics delves into the realm of information design. The big question in studies related to infographics is how to take text-based information and relate it in a visual way utilizing the basic elements and principles of design. Exploring more thoroughly the impact of color in infographic design should, therefore, be encouraged. Edward Tufte, a professor of statistics at Yale University, is a well-known voice in the study of infographics. He has contributed to much of its current terminology “by coining terms such as chartjunk (unnecessary graphic elements that do not communicate information) and developing the data-ink ratio – a measurement of the amount of information communicated in a graphic as it relates to the total number of visual elements in it.” (Lankow, 2012) He argued that graphic elements that were not used for the purpose of communicating specific information are “superfluous and should be omitted. He believed that chartjunk such as unnecessary lines, labels, or decorative elements only distract the viewer and distort the data.” (Lankow, 2012)

The same could be said of color; if one does not have a purpose behind the colors chosen for any given message, then they could be considered distractions or detractors. In infographics, color can be used optimally to draw an audience in, provided that the colors are appropriate based on certain criteria. Just as the logo is a gateway to a brand, an infographic is the gateway to a message, and color is an invaluable ally in communicating that according to the results gathered here. For this reason, further study on the use of color in infographics and how human subjects respond to them and retain the visual information presented would provide further observable evidence on what works and what does not.

It is also worth noting that studying the specific effect of color on visual retention in logo design across multiple cultures would be helpful information as well.

There was not enough variety in international respondents within the demographic data collected to justify observing the data in this survey. It would be beneficial to study the impact the same questions have on a more international audience. Previous literature researched in color psychology across different country's cultures shows that the meaning of a color is varied depending on the culture it is used in. While many studies have been conducted on this, few have been done regarding logo design and the visual retention of logos. This would take the data compiled from this study and apply it on a much more international scale.

This paper dealt specifically with the impact of color on visual retention in logo design. The statistics of the impact of color were compared to that of changes in shape and text within the study as well. There are, however, many more elements and principles of graphic design that are utilized in the creation of graphics such as line, texture, value, size, alignment, repetition, proximity, contrast, and space. Expanding further into any of these areas would be equally as important as color in understanding how to design and develop logos or graphics efficiently for optimal visual retention.









A majority of people in the world have normal color vision. There are a minority of people in the world however who are color deficient or color blind. This study did not address any issues with color blindness. A future study comparing and contrasting the responses between those with normal color vision and those with various types of color blindness would be very illuminating. One would assume that while issues with logos such as misspellings and changes in forms and shapes were not noticed as readily by subjects with full-color vision, they would be much more recognized by those that cannot see the same differentiation in color.

One of the most noteworthy findings in the results of the survey was the difference in retention of wordmark logos and symbol logos. Wordmark logos,

being more centralized on the contents of the text had a lower retention rate than their counterparts which utilized symbols in their design. A future study comparing these two styles of logos more in-depth and comparing the results across many genres of companies would surely present interesting results.

Lastly, there was quite a lot of additional demographic data collected with the survey. While the contents of this thesis were concerned with the response of the overall population of participants, there were a sizeable amount of responses from smaller subgroups separated by various categories such as gender and college major. Some of these smaller demographics provided contrasting statistics in their selection of the correct logo matches within the study as listed in table 1.2 below. (see Appendix D) Taking these numbers and using them as a starting point for future research would take the general population data collected here and help to separate it out into demographics. From here the data can be compared and contrasted.

Table 1.2

	Percent of Correct Responses				
	Gender		College Major		
	Male	Female	Math, Science, & Technology	Communications & Marketing	Fine Art & Graphic Design
	67.02%	57.98%	57.78%	56.45%	64.06%
	63.44%	68.73%	62.92%	78.69%	71.88%
	5.43%	7.76%	6.74%	3.28%	11.29%
	25.00%	19.88%	17.98%	21.31%	27.42%
	79.12%	73.44%	78.41%	83.61%	79.03%
	2.20%	6.67%	3.49%	0.00%	4.84%
	64.84%	67.09%	63.95%	77.05%	73.33%
	9.89%	8.68%	8.14%	8.20%	12.07%

APPENDIX A - Terminology

Brand

- A brand is a compilation of logos, graphics, typefaces, and content for a business that creates an overall experience for the customer. It creates a “look” that distinguishes the company from the competition.

Infographic

- An infographic is a collection of imagery, charts, and minimal text that gives an easy-to-understand overview of a topic. Infographics use engaging imagery to communicate information visually.

Logos:

Monogram Logo

- A monogram is made by combining two or more individual letters (initials of a company for example) into one logo used for the purpose of identifying or branding.

Symbol Logo

- A symbol is a type of logo that portrays a visual element with a distinct absence of any typography or text elements to identify the company.

Wordmark Logo

- A wordmark, or logotype, is a distinct text-only typographic treatment of the name of the company, institution or product used for the purpose of identification and branding.

Visual Retention

- Visual retention refers to a person’s ability to remember things that they have seen. Elements that contribute to visual retention are colors, shapes, words, patterns, movement, etc.

APPENDIX B – Visual Retention Figures

Figure 1.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 1.2

* 8. Which of the following visually matches the logo on the previous page?

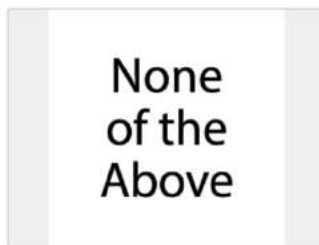


Figure 2.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 2.2

* 9. Which of the following visually matches the logo on the previous page?



Figure 3.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 3.2

* 10. Which of the following visually matches the logo on the previous page?

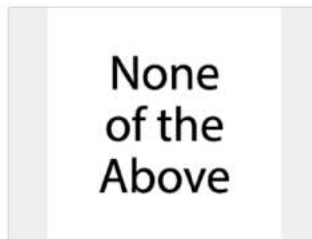


Figure 4.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 4.2

* 11. Which of the following visually matches the logo on the previous page?

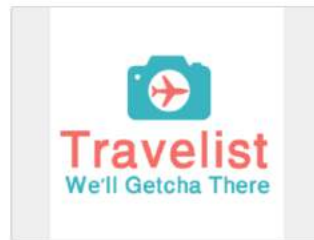
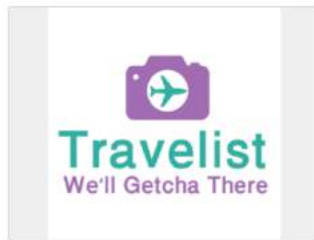


Figure 5.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 5.2

* 12. Which of the following visually matches the logo on the previous page?



Figure 6.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 6.2

* 13. Which of the following visually matches the logo on the previous page?

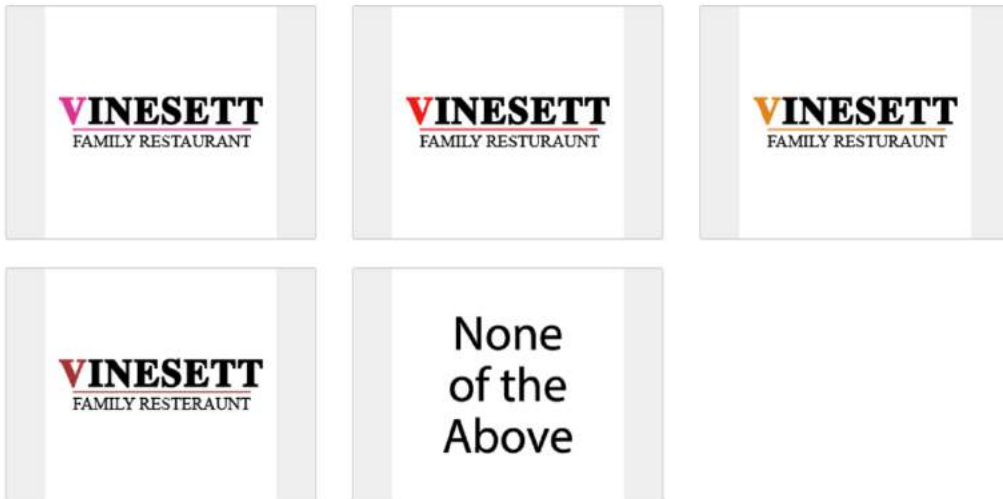


Figure 7.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 7.2

* 14. Which of the following visually matches the logo on the previous page?



Figure 8.1

Please take a few seconds to very briefly look at the following logo. Then try to visually match it with the correct logo on the next page.



Figure 8.2

* 15. Which of the following visually matches the logo on the previous page?



APPENDIX C – Visual Preference Figures

Figure 9.1

* 16. Which colored logo do you prefer and/or find appropriate for this company?

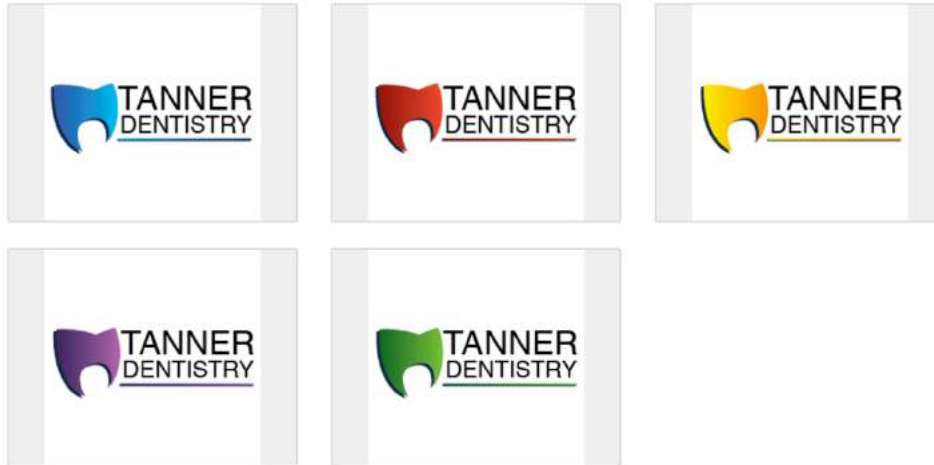


Figure 9.2

* 17. Which colored logo do you prefer and/or find appropriate for this company?

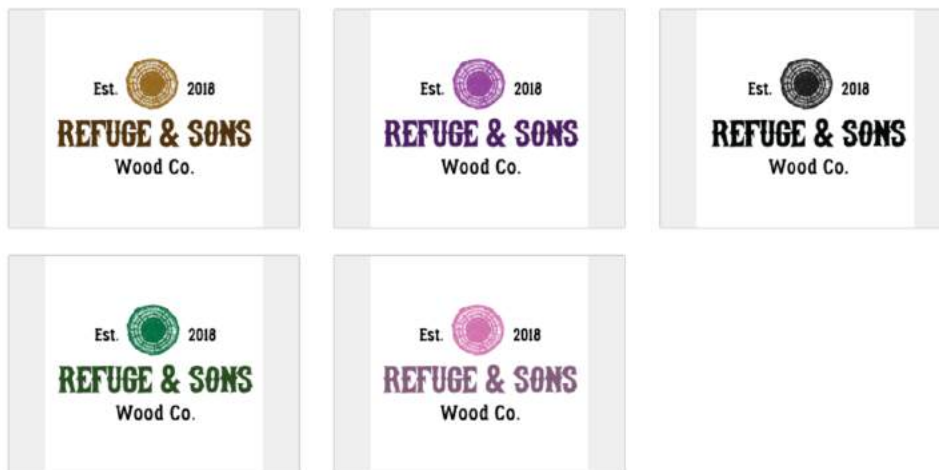


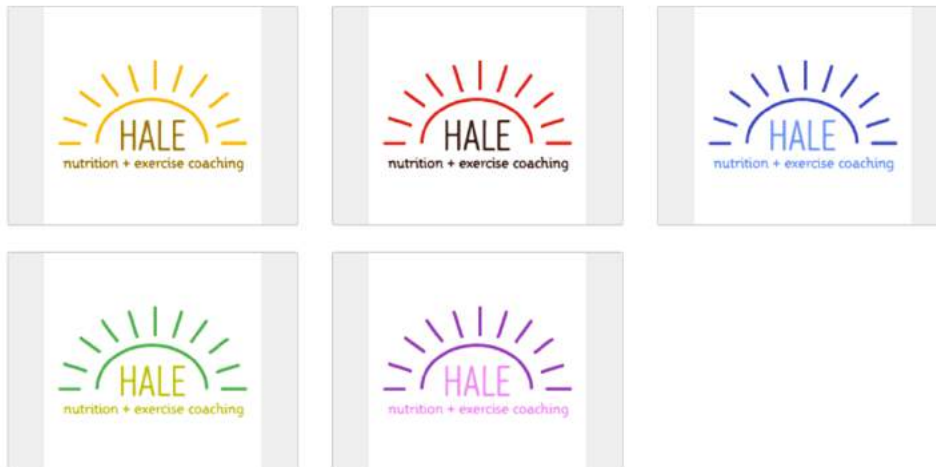
Figure 9.3

* 18. Which colored logo do you prefer and/or find appropriate for this company?



Figure 9.4

* 19. Which colored logo do you prefer and/or find appropriate for this company?



APPENDIX D – Charts & Tables

Chart 1.1

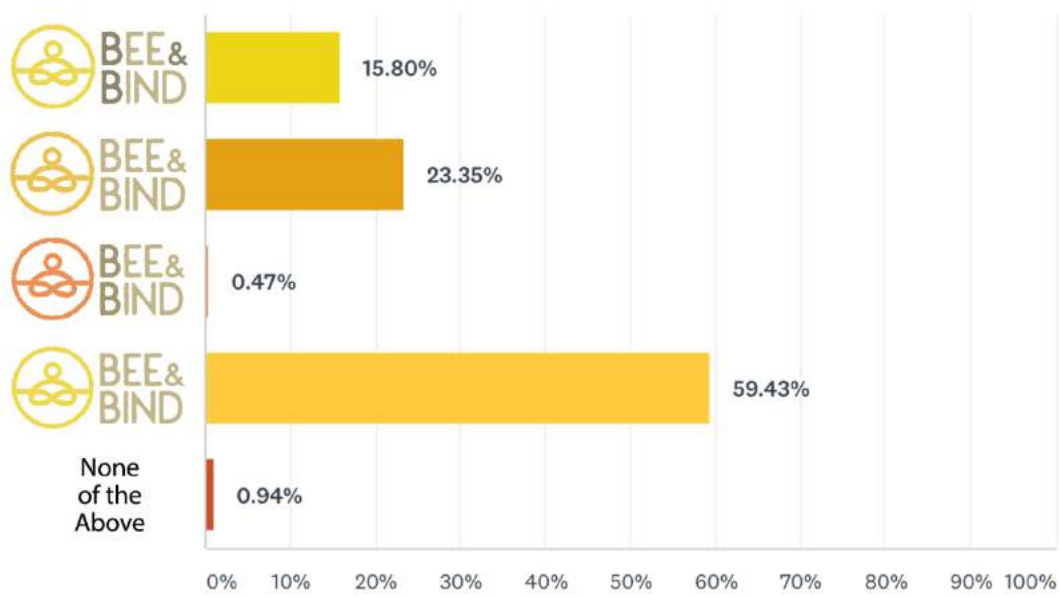


Chart 2.1

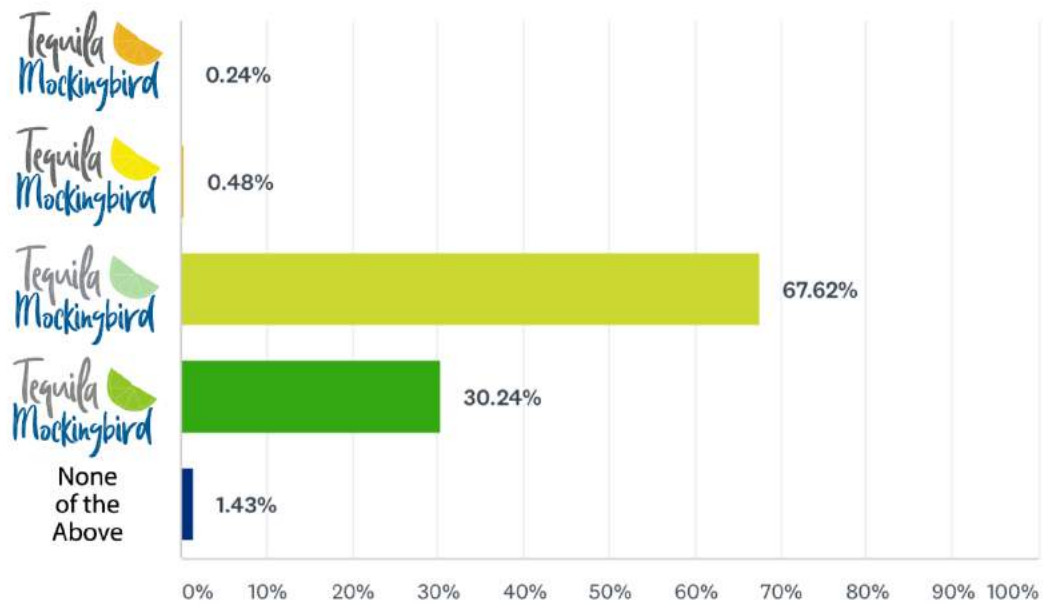


Chart 3.1

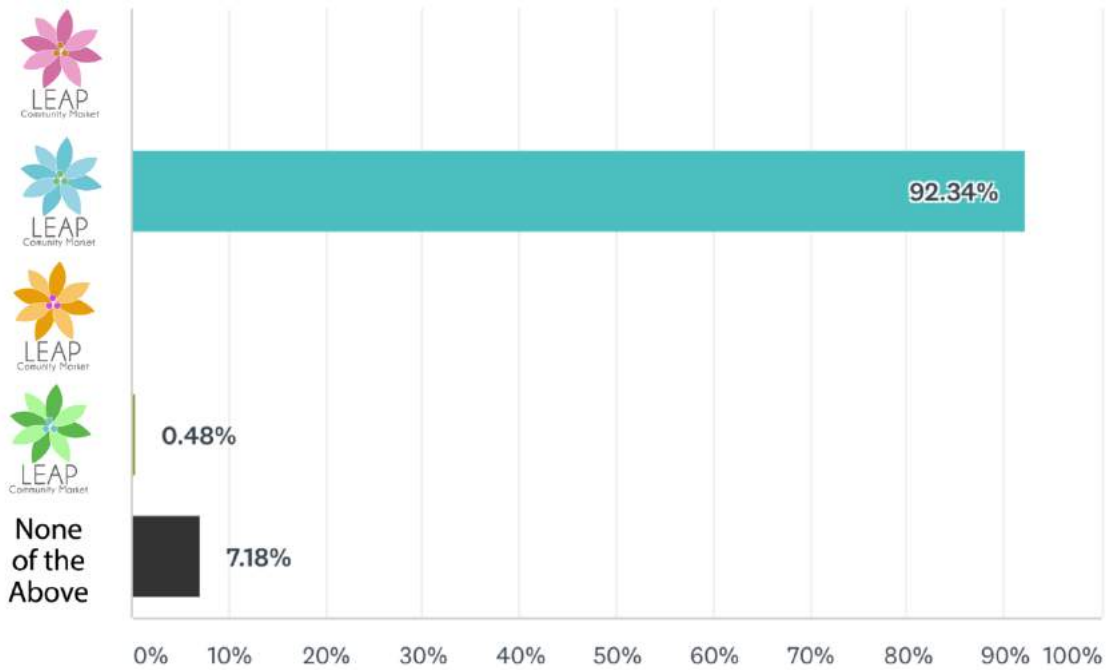


Chart 4.1

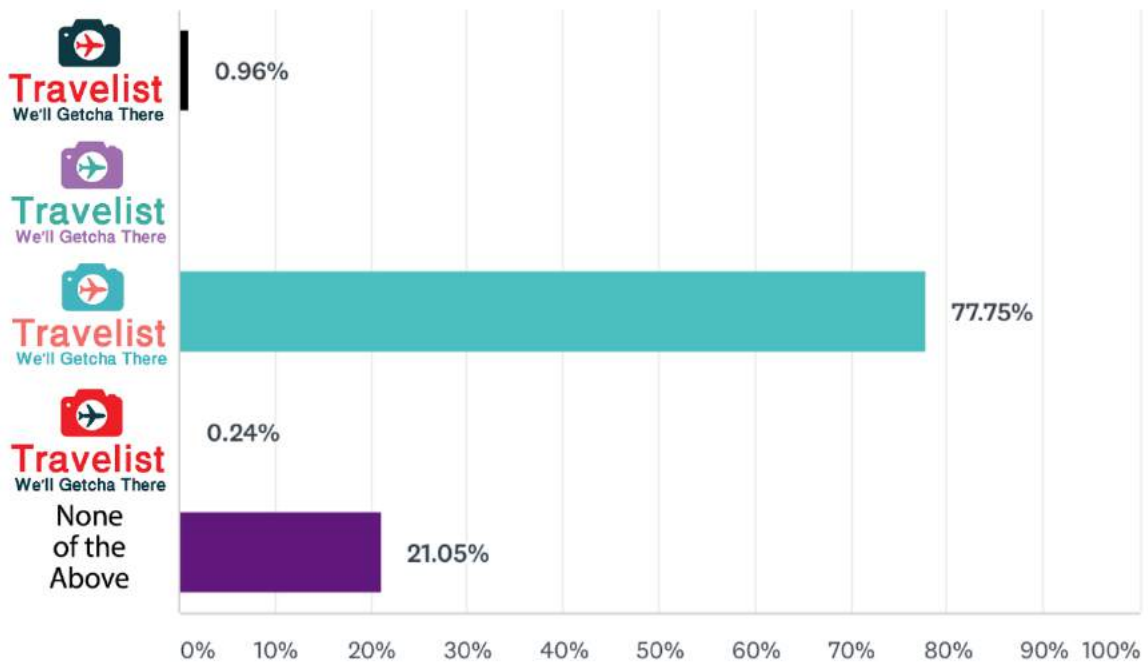


Chart 5.1

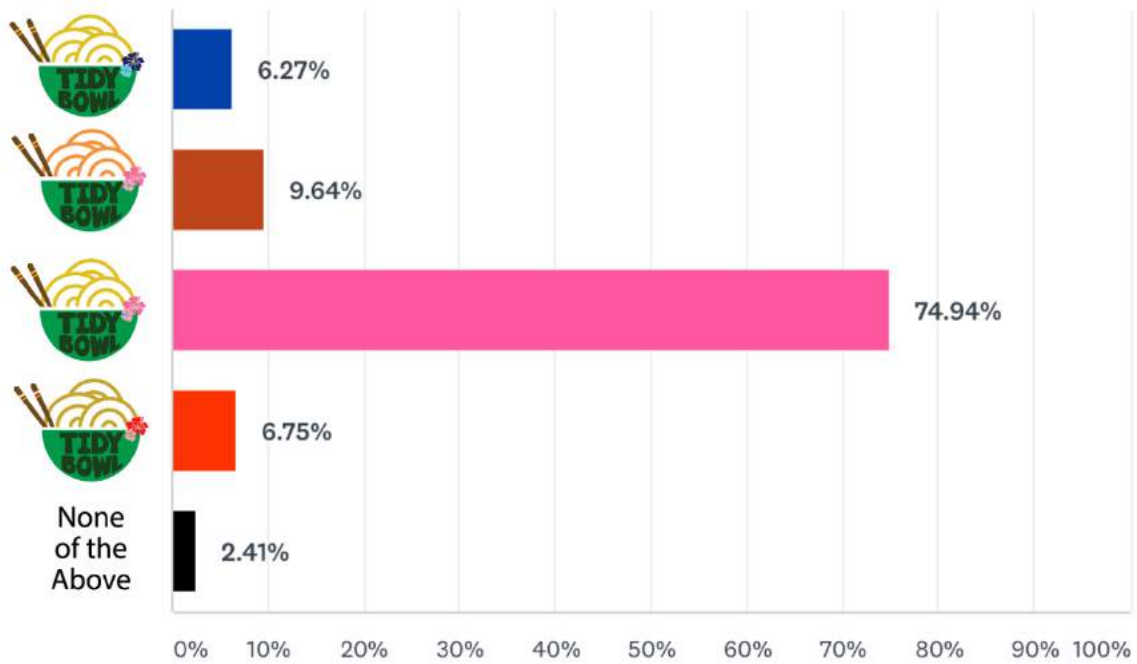


Chart 6.1

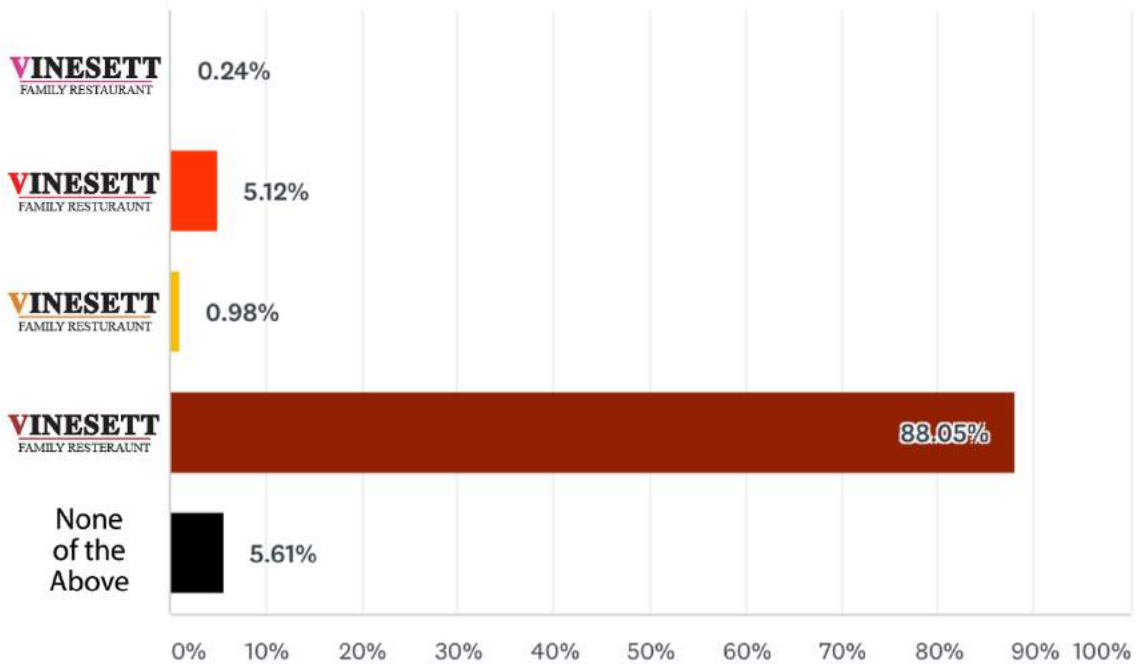


Chart 7.1

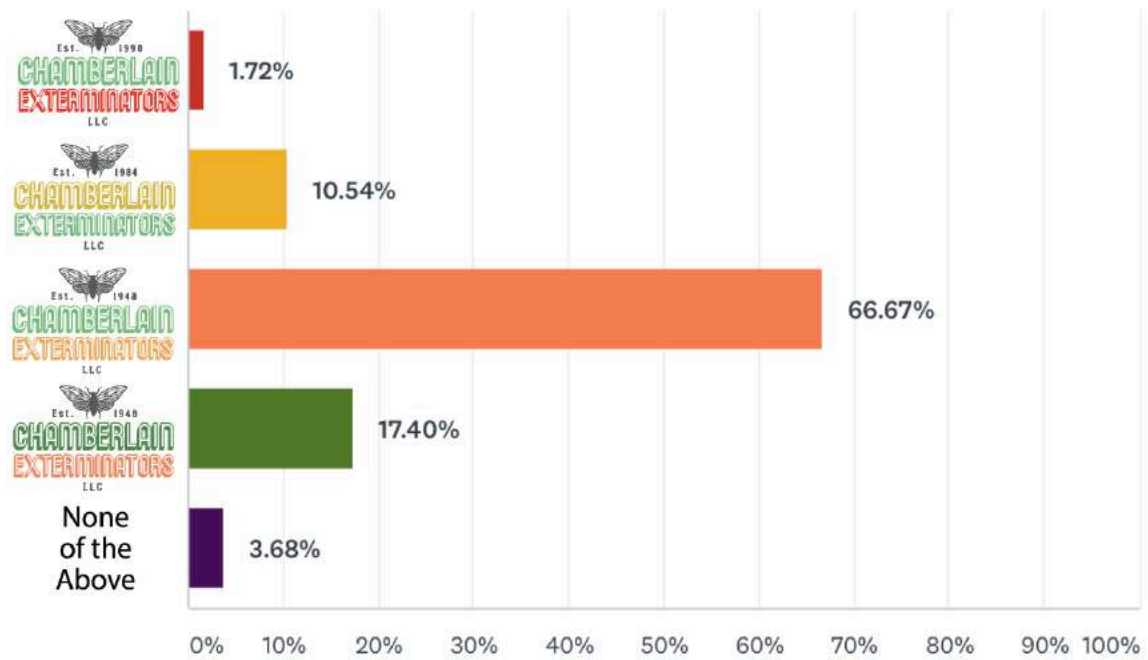


Chart 8.1

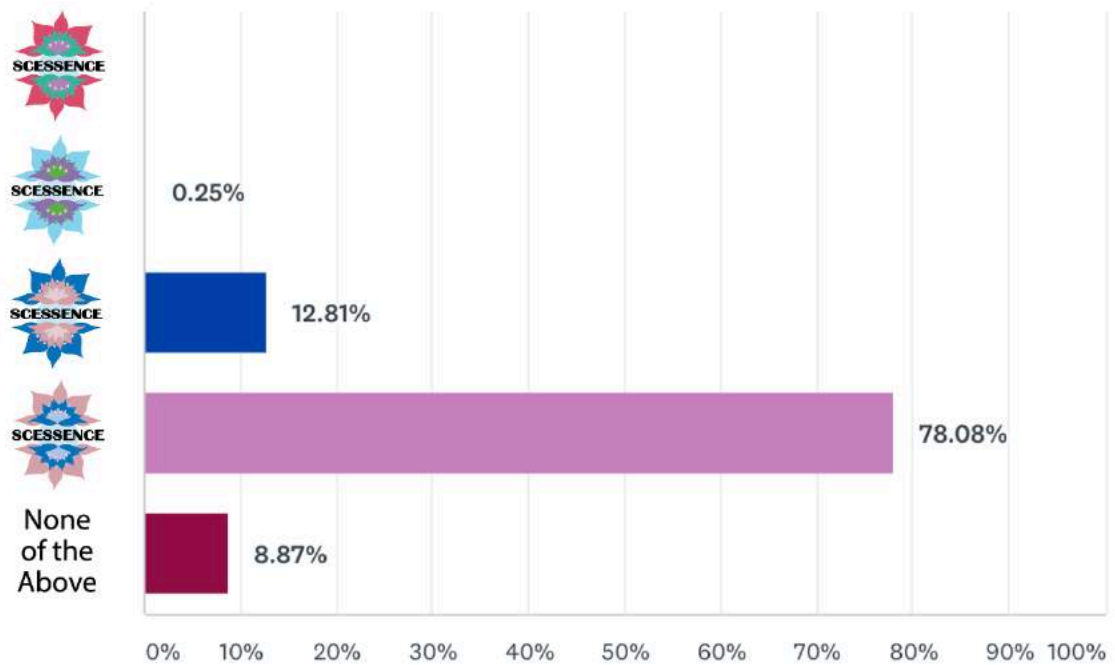


Chart 9.1

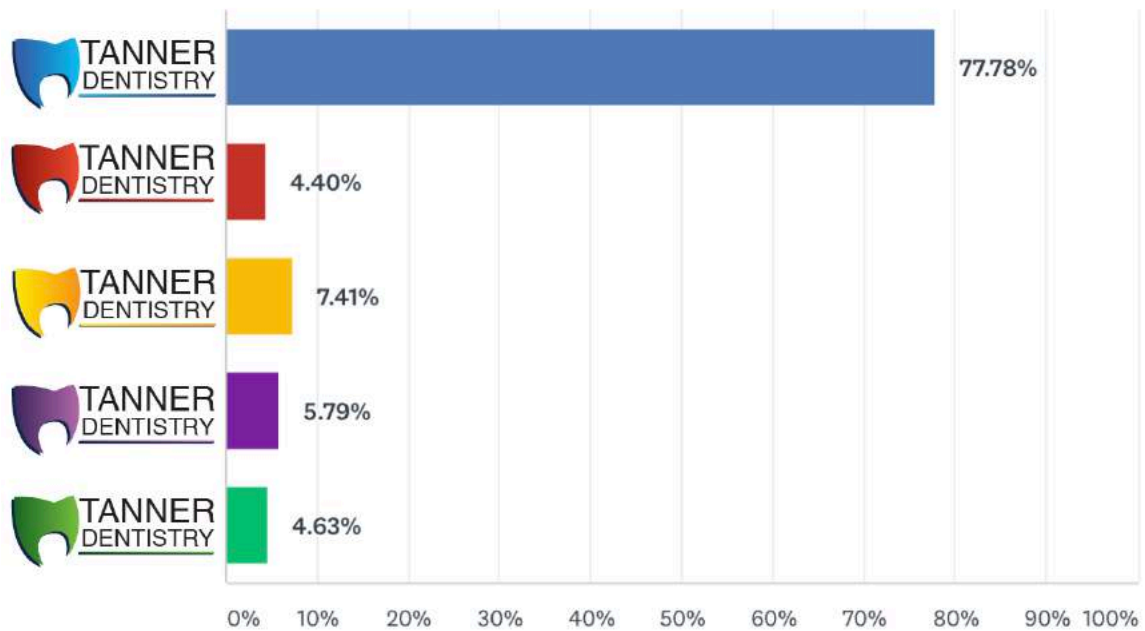


Chart 10.1

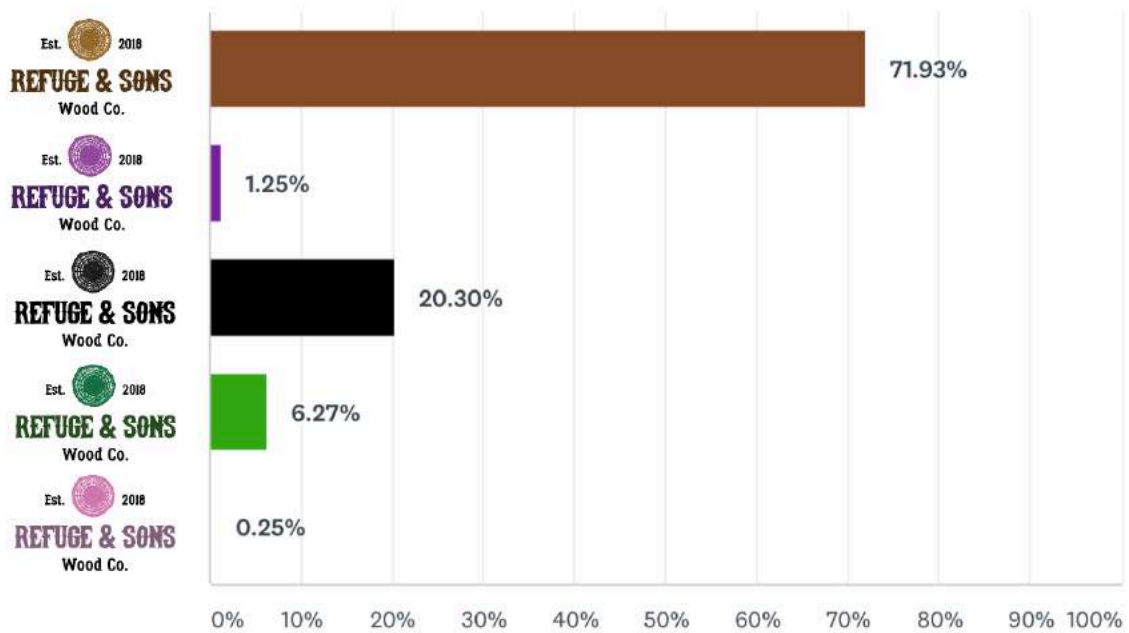


Chart 11.1

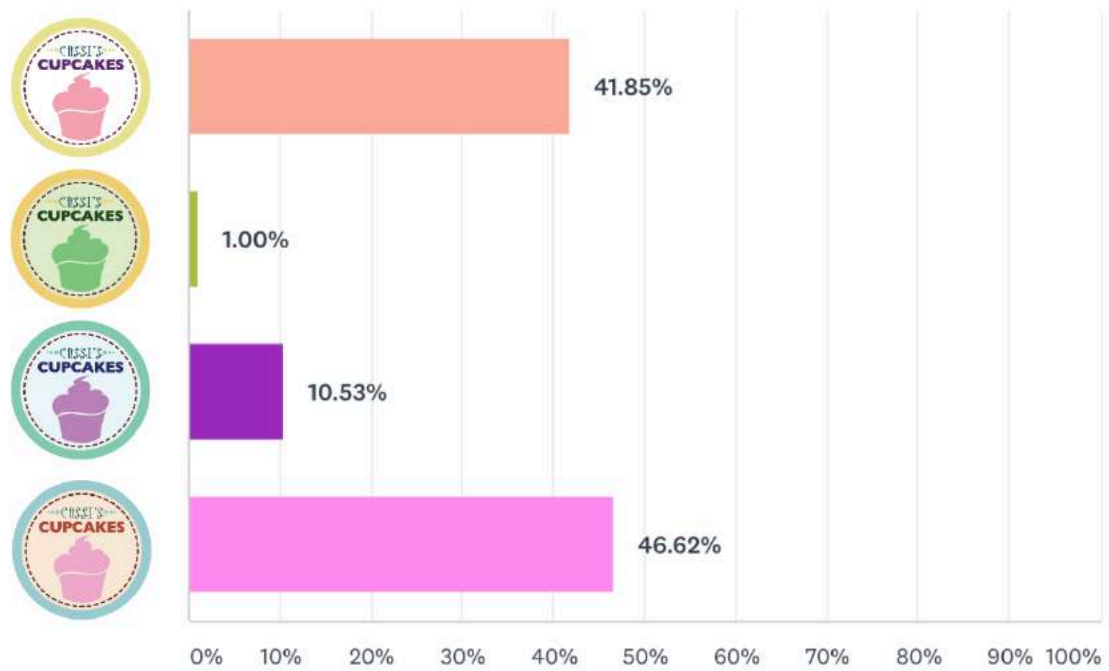


Chart 12.1

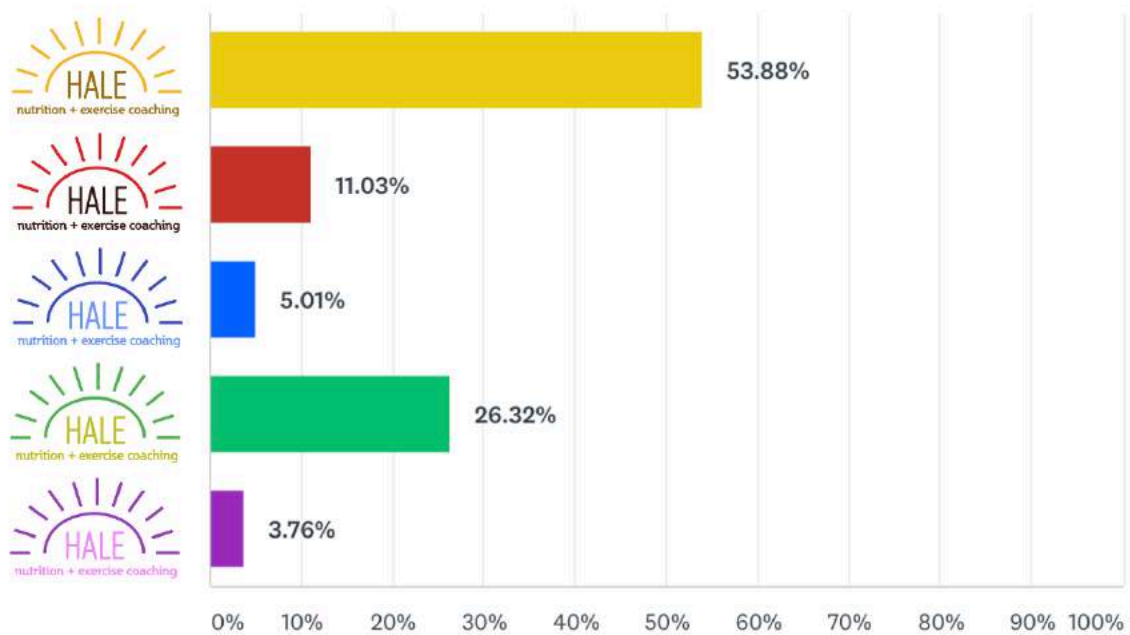










Table 1.1

Number of Participants by Demographic Category			
GENDER		COLLEGE EDUCATION	
Male	106	Attended	406
Female	34	Not Attended	49
COUNTRY OF BIRTH		AREA OF SPECIALTY	
United States	423	Business	79
United Kingdom	7	Communications/Marketing	62
India	10	Education	59
Other	15	English/Literature/History	19
AGE RANGE		Language	8
18 - 24	221	Math/Science/ Engineering/Technology	99
25 - 34	82	Religious Studies	6
35 - 44	77	CLEMSON STUDENT	
45 - 54	49	Yes	221
55 - 64	17	No	177
65 & Older	7		

Table 1.2

	Percent of Correct Responses				
	Gender		College Major		
	Male	Female	Math, Science, & Technology	Communications & Marketing	Fine Art & Graphic Design
	67.02%	57.98%	57.78%	56.45%	64.06%
	63.44%	68.73%	62.92%	78.69%	71.88%
	5.43%	7.76%	6.74%	3.28%	11.29%
	25.00%	19.88%	17.98%	21.31%	27.42%
	79.12%	73.44%	78.41%	83.61%	79.03%
	2.20%	6.67%	3.49%	0.00%	4.84%
	64.84%	67.09%	63.95%	77.05%	73.33%
	9.89%	8.68%	8.14%	8.20%	12.07%

REFERENCES

- Abril, P. S., Olazábal, A. M., & Cava, A. (2009). Marketing and the law. *Journal of the Academy of Marketing Science*, 37(3), 375–377.
- Agoston, G. A. (1987). *Color theory and its application in art and design* (2nd ed.). Berlin: Springer.
- Argenti, P. A., & Druckenmiller, B. (2003) Reputation and the corporate brand. *Corporate Reputation Review*, 6, 368-374.
- Armstrong, H. (2009). *Graphic design theory: Readings from the field* (1st ed.). New York, NY: Princeton Architectural Press.
- Block, L., & Kramer, T. (2009). The effect of superstitious beliefs on performance expectations. *Journal of the Academy of Marketing Science*, 37(2), 161–169.
- Hang, T. C. (n.d.). Chinese Color Theory - The Symbolism of Color in Traditional Chinese Culture. Retrieved January 31, 2019, from <http://www.people.vcu.edu/~djbrumle/color-theory/color01/Chinese-Color-Theory-The-Symbolism-of-Color-in-Traditional-Chinese-Culture.html>
- Henderson, P. W., & Cote, J. A. (1998) Guidelines for selecting or modifying logos. *Journal of Marketing*, 62, 14-30.
- Huiling Li. (2018). Coding and Anti-jamming Strategy for Color Recognition in Mind in Graphic Design. *NeuroQuantology*, 16(5), 713–718. <https://doi-org.libproxy.clemson.edu/10.14704/nq.2018.16.5.1268>
- Jeppson, J., & Myers-Walls, J. A., PhD. (n.d.). Children and Colors Authors: Jandy Jeppson with Judith A. Myers-Walls, PhD, CFLE. Retrieved March 25, 2019, from [https://www.extension.purdue.edu/providerparent/Child Growth-Development/Children and Colors.htm](https://www.extension.purdue.edu/providerparent/Child-Growth-Development/Children-and-Colors.htm)
- Kahney, L. (2003). *Apple doin' the logo-motion*. Retrieved March 3, 2009 from www.wired.com/gadgets/mac/news/2003/09/60597
- Lankow, J., Ritchie, J., & Crooks, R. (2012). *Infographics: The power of visual storytelling*. Hoboken, NJ: John Wiley & Sons.

Labrecque, L. I., Milne, G. R., (28 January, 2011). *Exciting Red and Competent Blue: The Importance of Color in Marketing*. Academy of Marketing Science 2011.

Mone, G. (2002, May 06). Color Images More Memorable Than Black and White. Retrieved March 25, 2019, from <https://www.scientificamerican.com/article/color-images-more-memorab/>

Newcomb, T. (2019, February 19). The Best Logo Colors Are All About Perception. Retrieved March 18, 2019, from https://www.howdesign.com/design-business/design-thinking/best-logo-colors-perception/?utm_source=newsletter&utm_medium=email&utm_campaign=hw-cja-nl-190318fw_source&fw_medium=email&fw_campaign=hw-cja-nl-190318

Pieters, R., Warlop, L., & Wedel, M. (2002) Breaking through the clutter: benefits of advertisement originality and familiarity for brand attention and memory. *Management Science*, 48, 765-781.

Pieters, R., & Warlop, L. (1999) Visual attention during brand choice: the impact of time pressure and task motivation. *International Journal of Research in Marketing*, 16, 1-16.

Posner, I. M., Konick, F. A. (1966). Short-Term Retention of Visual and Kinesthetic Information. *Organizational Behavior and Human Performance*, 1, 71-86.

Rubel, E. A. (1994) Trademarks and the press: a year in review. *Editor & Publisher*, 127, 6-26.

Sperling, G. A. (1963). A Model for Visual Memory Tasks. *Human Factors*. 5, 19-31

Stone, T. L., Adams, S., & Morioka, N. (2006). *Color design workbook: New, revised edition - a real world guide to using c*. Beverly, MA: Rockport.

Taylor, D. (2017, July 21). The Psychology of Colors [Infographic]. Retrieved March 27, 2019, from <https://www.dailyinfographic.com/the-psychology-of-colors-infographic>

Van Riel, C. B. M., Van Den Ban, A., & Heijmans, E-J. (2001) The added value of corporate logos: an empirical study. *European Journal of Marketing*, 35, 428-440.

Waugh, N. C., and Norman. (1965)D. A. Primary Memory. *Psychological Review*. 4, 53-61

Welhausen, C. A. (2018). Toward a Topos of Visual Rhetoric: Teaching Aesthetics Through Color and Typography. *Journal of Technical Writing & Communication*, 48(2), 132–150. <https://doi-org.libproxy.clemson.edu/10.1177/0047281616646752>

White, A. W. (2011). *The elements of graphic design: Space, unity, page architecture, and type* (2nd ed.). New York, NY: Allworth Press.

YUWEI JIANG, GORN, G. J., GALLI, M., & CHATTOPADHYAY, A. (2016). Does Your Company Have the Right Logo? How and Why Circular- and Angular-Logo Shapes Influence Brand Attribute Judgments. *Journal of Consumer Research*, 42(5), 709–726. <https://doi-org.libproxy.clemson.edu/10.1093/jcr/ucv049>