ERASMUS UNIVERSITEIT ROTTERDAM

Bachelor Marketing Thesis

International Bachelor Economics and Business Economics

Colors in Marketing: The Impact of Colors in Fashion Social Media Advertisements on Consumer Decision-Making Processes

Supervisor: Dr. Arie Barendregt RM MBA

Second assessor: Fleur Prins MBA

Student name: Miray Ayyıldız

Student ID number: 523723

Submission Date: 02.07.2022

Table of Contents

Executive Summary

Colors carry a big role in our lives. Past researchers, namely Johann Wolfgang von Goethe (1971) and Goldstein (1942), discovered colors' impact on emotions, motor behavior, and cognitive focus, and the color psychology research has begun, which brought many valuable insights regarding how to best utilize colors. One of the most common implications of colors can be observed within marketing materials, especially in the fashion industry. Just like many other external factors, the colors used in the advertisements are a big determinant of how the consumer feels about the product, and correlatively, whether they purchase it or not. Even though it is widely accepted that colors indeed have an influence, there are varying results regarding what these influences are. The topic has a subjective nature but can still be backed up by scientific research so that more concrete patterns can be established. Furthermore, as social media has immensely changed the communication and shopping habits of consumers, it was decided that focusing on social media advertisements in this research would be the socially relevant way to go. Thus, the central research question has been prepared as follows:

"How do colors in social media advertisements for the fashion industry impact the consumer decision-making processes of young adult consumers in the Netherlands?"

To answer this research question, the following theoretical and empirical sub-questions are tackled first.

Theoretical sub-questions:

1. What entails color?
2. What entails emotion?
3. What entails the consumer decision-making process?
4. What entail social media and social media advertisements?
5. What entail young adult consumers?

Empirical sub-questions:

1. How do colors impact the purchasing possibilities of young adult consumers in the Netherlands regarding fashion products?
2. How do colors impact the emotions of young adult consumers in the Netherlands?
3. How are emotions related to the purchasing possibilities of young adult consumers in the Netherlands regarding fashion products?
4. How often do young adult consumers in the Netherlands see personalized social media advertisements?

5. How often do young adult consumers in the Netherlands shop via social media?

The literature study shows that the most crucial properties of colors are their value, chroma, and hue. Plus, these characteristics influence people's psychological processes and emotional states. Moreover, past research demonstrates that emotions are a critical factor during the consumer decision-making process. Furthermore, social media advertisements are often strategically placed on social media platforms and operate with an algorithm that matches the users with the most appropriate products. Lastly, young adult consumers (i.e., between the ages 18-30) are proven to use social media as a shopping tool the most, compared to other age ranges. As a result, the following hypotheses are formed:

H1: Color is a property of an object that can only be perceived in the presence of light and color hue, chroma, and value impact cognitive processes of people.
H2: Emotions emerge as a reactional mental state and colors have an impact on emotions.
H3: Consumer decision-making process refers to the stages that consumers go through to reach a conclusion regarding buying behavior and emotions have a significant influence on consumer decision-making process.
H4: Social media advertisements entail online marketing materials that are targeted at specific users on social media platforms according to the users' compatibleness to the relevant product or service.
H5: Young adult consumers are individuals between the ages of 18 and 30 who are prone to use social media for shopping purposes.

The empirical research was conducted by gathering primary data through an online survey and analyzing it with the software R. The results ended up accepting all five hypotheses. Separate conclusions for each color characteristic (i.e., value, chroma, and hue) have been reached (see Chapter 4 for details). Overall, it was concluded that the impact of color value on the consumer decision-making process could not be explained with emotions. Furthermore, the color hue influences how *amazed* and *powerful* this sample feels, which also ends up influencing their decision-making process related to a purchase. Similarly, the color chroma influences how *amazed, powerful*, and *comfortable* this sample feels, and these three emotions impact their consumer decision-making process positively. It should be noted that all these conclusions are only valid for this specific sample, which reflects the young adult consumers in the Netherlands, and only in regard to fashion products. Marketeers in the Dutch fashion industry are recommended to prefer high chroma colors, as well as colors with longer wavelengths. Lastly, it is suggested to future researchers that the same research model can be used for other consumer profiles and different study designs can be explored as well.

Chapter 1. Introduction

Colors have been a majorly influential concept since the beginning of humanity. They have been linked to some of the most important aspects of our lives, from health to gender, from cultures to emotions. For instance, doctors from ancient Egypt used to bathe patients with different colors of light for specific issues; red for energizing the liver, purple for lowering blood pressure, orange for strengthening the lungs, etc. (Singh, 2006). Similar color therapy methods were later seen in countries like Greece and India as well. Even though they were not able to support their techniques with scientific explanations, their intuition-supported predictions seemed to have worked for a long time.

Later, the German poet and scientist Johann Wolfgang von Goethe wrote his book "Theory of Colours" with a similar intuitive attitude, categorizing the colors as "plus" and "minus" in accordance with the positive or negative feelings they trigger (Elliot & Maier, 2014). Inspired by Goethe's findings, Goldstein (1942) performed clinical observations that helped bring more empirical evidence to the theory, as he found out that the perception of colors can trigger physiological reactions that are further demonstrated through emotions, motor behavior, and cognitive focus (Elliot & Maier, 2014). These became the beginning point of the color psychology research.

In the modern world, one of the biggest implications of colors can be seen in advertising materials prepared by all kinds of brands. Colors are strategically placed and utilized in marketing messages to impact the subconscious thinking patterns of the viewers and trigger emotions that would align with the brand's sales motives. Especially in the fashion industry, where visual triggers are even more crucial, the design aspects of the promotions could be as impactful as the product itself. However, for a term that has such a technical definition [i.e. the brain's interpretation of the light wavelengths absorbed by eyes (Singh, 2006)], the concept of colors remains to carry a subjective label when it comes to analyzing its impact on human psychology and behavioral patterns.

As Rossotti (1983) stated, color is a sensation created by one's own brain, which is triggered by external sources. During the conversion process of wavelengths into colors, various factors such as psychological and physiological inclinations, age, personality, gender, income level, etc. might influence the perception of the results (Singh & Srivastava, 2011). While these findings support the subjectivity of the matter, it is still necessary to build a scientific basis that can guide future predictions regarding the implications of colors to be more accurate, especially in the marketing department. Gorn et al. (1997) mentioned the lack of well-developed frameworks that can lead the firms to make better marketing

decisions and supported Cheskin's (1951) argument that finding the right colors is a trial & error process, which can be eased by analyzing past experiences.

Nowadays, the determinants of consumer behavior are more related to the subjective values that the products represent rather than their functional qualities. As Domenico (2009) stated in his paper, a long-term and deep emotional relationship between the brand and consumers is needed for the company to survive in the long run. To achieve that, brands need to create a public image with their marketing materials that can connect them emotionally with their consumers. This is why using tools like color psychology is crucial to trigger the right emotions within the audience. As a result of an experiment he did with 94 students, Wexner (1954) found out that some colors are associated with specific emotions. For instance, red has been voted the most for "exciting", blue for "soothing", black for "melancholy", orange for "distressed", yellow for "cheerful", and purple for "dignified". With proper placements of these colors, marketers can guide the emotional states of their consumers according to their strategies.

As time goes on, the type of advertising that is considered most impactful changes. While billboard advertising was at its peak in early 20th century when people spent most of their time outside or commuting in their cars, nowadays online advertising has taken over the industry instead (Deskera, 2022). Digital advertising was expected to cover 64.4% of total advertising in 2021 (Graham, 2021), which can only increase as years go on. As Rehman et al. (2019) concluded in their research as well, online promotion has a significant influence on the purchasing behavior of college students and remarkable amounts of profits can be achieved by utilizing this opportunity. Therefore, this paper will focus on social advertisements to keep up with the current marketing trends, since social media has taken over most of the young adults' time. Moreover, this research will specifically be about the fashion industry, as it is one of the biggest sectors globally with a value of more than $1.5 trillion (Statista, 2022) and visual elements of fashion advertising tend to be more deliberately chosen and creative than other sectors.

1.1 Relevance of the Research

As mentioned before, the nature of color psychology has been considered more subjective than objective. Even though that is an accurate statement to some extent, the theory can still be backed up by empirical evidence so that a clearer pattern can be determined, and the reliability of the findings can be increased. This argument proves the scientific relevance of this paper, as it will capture a different perspective and gather data from a sample that may not have been integrated before, since the majority of the past research based on this topic focuses on consumers from the U.S. while this research will consider residents of the Netherlands instead. Furthermore, this research will focus on social media advertisements

as they have conquered the marketing world and changed the way consumers buy products. Social media has become the most common tool for communication with both people and brands. While this gives brands a chance to form authentic connections with their customers and convey their message in a more efficient way, the development of algorithms within social media platforms has also strengthened the convenience aspect of shopping and optimized the experience as a whole. Therefore, the power of social media advertisements over consumption behaviors, especially within the young adult consumer population, is only expected to increase in the future. These arguments strongly support the relevance of this research. Moreover, concentrating on fashion advertisements is also a socially relevant choice since fashion is one of the biggest consumption sectors and visual aspects such as colors are even more crucial in such an artistic industry.

1.2 Central Research Question and Sub-Questions

This paper will aim to determine the influence of colors in social media marketing messages regarding fashion products on the decision-making processes of consumers, more specifically those who are either in their late teens or early twenties. Hence, the central research question is as follows:

"How do colors in social media advertisements for the fashion industry impact the consumer decision-making processes of young adult consumers in the Netherlands?"

To answer this research question, the following theoretical and empirical sub-questions are tackled first.

Theoretical sub-questions:

1. What entails color?
2. What entails emotion?
3. What entails the consumer decision-making process?
4. What entail social media and social media advertisements?
5. What entail young adult consumers?

Empirical sub-questions:

1. How do colors impact the purchasing possibilities of young adult consumers in the Netherlands regarding fashion products?
2. How do colors impact the emotions of young adult consumers in the Netherlands?
3. How are emotions related to the purchasing possibilities of young adult consumers in the Netherlands regarding fashion products?

4. How often do young adult consumers in the Netherlands see personalized social media advertisements?
5. How often do young adult consumers in the Netherlands shop via social media?

1.3 Possible Ethical Research Issues

Even though color psychology used in marketing may influence the way people feel and think about the product, it should not be mixed up with subliminal marketing, which is defined as advertising that is "below the level of an individual's conscious awareness" (Broyles, 2006). This kind of promotions are meant to place messages into consumers' minds to impact their decisions without making them aware of it. This topic has been discussed and condemned ethically in various academic papers, and subliminal messaging has been banned in many countries as well. Color psychology, on the other hand, presents everything on the surface and does not hide any messages that the viewers are not cognizant of. Furthermore, it is possible for consumers to research and inform themselves about the theories regarding colors in marketing if they would want to reduce the involuntary impact of colors and train their brains to make uninfluenced decisions. In short, color psychology does not raise any crucial ethical issues as it does not disguise any messages and people could access public knowledge about the subject if they wanted to.

1.4 Possible Research Limitations

Firstly, the sample used in this research may not be perfectly representative of the whole young adult consumer population in the Netherlands as the survey gathered 212 relevant responses for this research, while Statista (2022) shows that even the population of the Netherlands residents between the ages 20-25 is 1,107,486. Secondly, this thesis has been prepared within the timeline of two months, which might have caused some time constraint issues for the research. Moreover, while similar studies in the past have used scientific methods such as measuring heart rate and galvanic skin response (GSR), this research will rely on self-reported data due to resource limitations. Lastly, the data analysis platform used in this research is R, and multiple regression models and two-sample t-tests have been conducted to reach to conclusions. If possibly more powerful software or tests were to be used, the results might have been impacted.

1.5 Structure of the Thesis

This thesis includes four sections other than Introduction: Literature Study, Research Methodology, Research Outcome, and Conclusions & Recommendations.

Chapter 2, Literature Study, dives into past research conducted on topics such as color psychology and consumer behavior, aims to investigate the answers to the theoretical sub-questions mentioned priorly, and presents hypotheses that are tested during the research. In total, 32 different academic papers have been examined and utilized for this research, which were picked diligently, taking into consideration their publishing dates, number of times they were cited, the journals they were on, and their relevance to the subject.

Chapter 3, Research Methodology, describes the reason behind the choice of this population, the details of the survey preparation process, the distribution methods of the survey to maximize the validity of the sample, as well as how the data will be filtered to ensure the most accurate results possible. On top of that, it also explains the techniques picked for this research, more specifically the software and statistical tests that are used to conduct analysis on the survey results.

Chapter 4, Research Outcome, shows the data gathered through the survey and the outcomes of the statistical tests. The relevant parts of these results are interpreted and translated into a more practical language. In addition, this chapter determines the correctness of the previously stated hypotheses after the literature study. While this section includes relevant tables and figures to support the explanations, the raw data and more detailed analysis results are included in the Appendix.

Chapter 5, Conclusions & Recommendations, presents and compares the key findings of the literature study and empirical research, as well as answers the central research question with all the combined conclusions. The thesis ends with research limitations and recommendations on how these conclusions can be used for marketing in the fashion industry and what kind of further research is needed in the academic world. There is also the personal reflection of the researcher at the end.

Chapter 2. Literature Study

2.1 What entails color?

The first theory regarding colors was put forward by Aristotle, which suggested that chromatic colors -i.e., yellow, red, purple, green, blue- are composed of diverse proportions of white and black (Shapiro, 1994). He created a linear scale, putting these colors in order according to their brightness, starting with white and ending with black. While this theory was accepted for over 2,000 years, it then got replaced by the modern science of color thanks to Isaac Newton's experiments. Newton observed how the sunlight passes through the prism and discovered that different hues were visible as a result of different degrees of refrangibility (Mollon, 2003). The least refrangible rays showed up as a red color while the most refrangible rays resulted in a deep violet color. He further concluded that between these two colors, there is a continuous scale of intermediate colors corresponding to different wave lengths and each color in this scale is "monochromatic", meaning it consists of only a single wavelength. In his book "Optiks", Newton defined the visible spectrum as a small portion of the electromagnetic spectrum that can be perceived by the human eye and classified the ROYGBIV colors -i.e., red, orange, yellow, green, blue, indigo, and violet- as a part of this portion (Stokley, 2018). These findings became the base of further research by other academics.

According to Fairchild (2005), the most crucial aspects of colors are their hue, chroma, and lightness (value). Chroma can be defined as the saturation aspect of the color, referring to its intensity, while value is related to how bright the color is on the white-to-black scale. These two characteristics, as well as hue, make up the perception of color by individuals and are demonstrated on the Munsell Color System (see Figure 1). On top of the prior research done on hue, chroma and value have been investigated in academic papers as well e.g., Lee et al. (2013) and Kareklas et al. (2014), respectively. It has been concluded that changing any of these properties could influence human cognitive processes and behavior (Kumar, 2017).

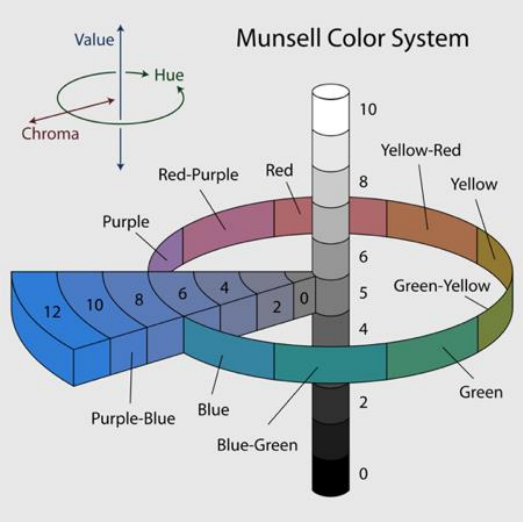


Figure 1. Munsell Color System showing hue, chroma, and value[1]

In summary, color can be defined as a physical characteristic of an object that is detected by the human eye due to light getting reflected. Moreover, these perceptions are limited to the visible spectrum and each color in the spectrum has a unique wavelength. Lastly, the most important characteristics of a color are its hue, chroma, and value and these dimensions influence the psychological processes of human beings. Thus, the first hypothesis is formed as follows:

H1: Color is a property of an object that can only be perceived in the presence of light and color hue, chroma, and value impact cognitive processes of people.

2.2 What entails emotion?

Emotion has been defined as a mental state that appears as a result of subjective and objective determinants, and has both an affective and cognitive nature (Bagozzi et al., 1999; Kleinginna & Kleinginna, 1981). Kleinginna & Kleinginna (1981) further elaborates that emotions are controlled by neural-hormonal systems and often lead to behaviors that reflect the emotions. Mehrabian and Russell (1974) proposed that all emotions can be described within the dimensions of three concepts: pleasure (+P) - displeasure (-P), arousal (+A) - nonarousal (-A), and dominance (+D) - submissiveness (-D). This aligns with the findings of Osgood, Suci, and Tannenbaum (1957) which suggest that Evaluation, Activity, and Potency are the basic dimensions of emotion categorizations. Shaver et al. (1987) also utilized multidimensional methods to study emotional states and their results harmonize with the PAD emotion

[1] Munsell Color System, http://en.wikipedia.org/wiki/Munsellcolorsystem uploaded on 16 April 2007.

model. Valdez and Mehrabian (1994) then made a list of possible combinations of these dimensions and assigned emotional states to each of them. For the sake of simplicity, one emotional state per situation is mentioned here as follows:

+P+A+D → powerful	+P+A-D → amazed	+P-A+D → comfortable	+P-A-D → calm
-P+A+D → hateful	-P+A-D → upset	-P-A+D → indifferent	-P-A-D → bored

As mentioned before, emotions are often a reaction to an external source, which could be either subjective or objective. Colors have also been proven to be an impactful factor on emotional states. Gil and Biggot (2014) argue that colors convey a deeper message than what their visual elements represent, thanks to the emotional associations that they create within the human mind. Elliot and Maier (2007) suggest that these associations occur in two ways: biological inclinations that often show up similarly for different individuals and learned associations that are formed as a result of specific experiences, which explain different cultural perceptions of the same colors. In summary, emotions arise due to various types of factors and appear as a mental state that has both cognitive and affective elements. In addition, colors impact human emotions by creating mental connections, which could either be a biological instinct or a learned reaction from an experience. Thus, the following hypothesis can be concluded:

H2: Emotions emerge as a reactional mental state and colors have an impact on emotions.

2.3 What entails the consumer decision-making process?

The core of marketing efforts is about understanding why and how consumers behave in a market situation so that marketers can lead them to a direction that is more favorable for the brand. The act of a purchasing behavior not only depends on the feelings, thoughts, or beliefs of the consumer but also the environmental factors such as family & friends, culture, media, etc. (Stankevich, 2017). Moreover, Kotler and Keller (2012) discussed in their book the five-stage model -which was established by John Dewey in 1910- that demonstrates the consumer purchasing process and the stages are as follows: need recognition, information search, evaluation of alternatives, purchase, and post-purchase behavior. Even though these steps may vary according to the context or the consumer type (e.g., first-time, or regular buyer), they observed a strong enough trend to believe that this model applies to most cases. Furthermore, Belch G. & Belch M. (2009) analyzed this process even further and came up with the following psychological reasonings for each corresponding stage of the model: motivation, perception, attitude formation, integration, and learning. In addition, Belch G. & Belch M. (2009) differentiated the high and low levels of involvement during a consumer decision-making process. High-level involvement decisions are more

important to the buyer, and they spend more time researching and evaluating so that they can make a careful decision, while low-level involvement decisions are less crucial and are often made without contemplating too much. Furthermore, Solomon et al. (2006) stated that although the five-stage model works on a rational basis, consumers often behave irrationally, which makes this model impractical.

Emotions are an essential part of the consumer decision-making process as they impact the cognitive systems of individuals and influence the outcome without needing to be supported by logic. In a consumption context, the power of emotions on purchasing behavior has increased since competitive industries caused many different companies to present extremely similar products (Jordan, 2001). As a result, consumers now have to make their consuming decisions according to psychological needs regarding the product rather than functional needs (Domenico, 2009). Companies are also aware of this and thus execute emotional marketing to make sales, which targets the type of experience that the product is aimed to create and manifests it with the help of senses such as smell, hear, etc. (Mailund and Halskov, 2008). Moreover, Rucker and Petty (2004) found out that angry feelings resulted in choosing the more active product/service while sadness led the consumer to the passive option instead. Moreover, Watson & Spence (2007) made the following propositions in their paper: proud and guilty people will go through a more comprehensive decision-making process than grateful and angry people, respectively. Regarding the emotions that arise during the experience rather than priorly, gaining positive emotions has been seen to increase consumer satisfaction and thus, the possibility of the consumer repeating the transaction, which is indeed desirable by marketers (Kunielda, 2014).

These findings show that even though the traditional five-stages model creates a strong base to understand the consumer buying process, it is difficult to generalize consumer behavior as it depends on many factors such as the level of involvement, environmental context, consumer personality, etc. and people tend to act irrationally, which is hard to predict. Moreover, emotions have become the deciding factor in market situations since technical aspects of products became too similar to compare. Negative emotions such as anger, guilt, and pride impact the extensity of the decision-making process and positive emotions during the consumption experience often lead to behavior repetition. Therefore, the following hypothesis is prepared:

H3: Consumer decision-making process refers to the stages that consumers go through to reach a conclusion regarding buying behavior and emotions have a significant influence on consumer decision-making process.

2.4 What entail social media and social media advertisements?

Social media has become one of the biggest communication methods for both personal and professional purposes. While it began as a way to connect with people who are distant and share ideas, thoughts, feelings, etc., it now turned into a business platform where consumers can engage with their preferred brands and buy product more easily than ever (Sundaram, 2020). This is partly because the concept of advertisement has switched from conveying direct cognitive information to integrating it into entertainment and social aspects, which makes it easier for the consumer to comprehend and accept the message (Philip et al., 2018). This is made possible by a marketing strategy called "social media advertising", where users are presented with product and service promotions, often as a result of personalized targeting (Zubcsek & Sarvary, 2011). These promotions can be in the form of a photo, video, or even a written message. Social media platforms usually include an algorithm that detects the interests of the user and places relevant advertisements. Thus, traditional marketing, which puts the consumer in a passive position, is getting replaced by digital marketing, which enables data transaction between the user and marketer (Kaur, 2008).

The key finding regarding the above sub-question is that social media advertisements entail online marketing messages -mostly in a visual form- being presented on social media platforms, with the aim of selling products and services that the algorithm has often judged to be relevant to that specific user. Relatedly, the third hypothesis is written as follows:

H4: Social media advertisements entail online marketing materials that are targeted at specific users on social media platforms according to the users' compatibleness to the relevant product or service.

2.5 What entail young adult consumers?

A young adult is someone between the age range of 18 and 30 (Rindfuss, 1991). 18 is often recognized by law as the age of majority, meaning it is the official beginning of adulthood, and Costa & McCrae (1994) state that personality becomes stable at the age of 30. Erikson & Erikson (1998) describe the young adulthood stage as the time when an individual strives to fit in social environments, forms emotional relationships, and overall creates an identity. As consumers, young adults are thought to have a strong power on household spending (Grant & Waite, 2003) and considered "the forefront of globalization" (Rašković et al., 2016). Furthermore, this age group is the most active shopper via social media, since 33% of young adults (aged 18-34) in the UK who were asked whether they bought something through social media answered positively, whereas this percentage was 21% for the age range 35-54 and 6% for ages 55 and higher (Statista, 2020). Thus, the following hypothesis is formed accordingly:

H5: Young adult consumers are individuals between the ages of 18 and 30 who are prone to use social media for shopping purposes.

2.6 Key Findings of Literature Study

During literature study, five hypotheses have been prepared that are tested with the quantitative data gathered from the research survey. The summary of all the key findings is as follows:

Firstly, color is a physical property of an object that the human eye can sense due to light reflection. Different color hues appear because of different light wave lengths. In addition, the hue, chroma, and value of a color are its most crucial properties. Past research shows that these characteristics can influence people's psychological processes and change their emotional states. Moreover, emotions can be described as a mental state that often arise from external sources and colors can influence emotions. According to the PAD model developed by Mehrabian and Russell (1974), basic human emotions can be categorized in accordance with whether they have positive or negative "pleasure", "arousal", and "dominance" concepts. After considering all the possible combinations, the following eight emotions have been judged to be relevant in this research: powerful, amazed, comfortable, calm, hateful, upset, indifferent, and bored.

Secondly, consumer decision-making process is the thought journey that takes place inside a person's head before they make a purchase choice. This process is often described within a five-stage model, starting with gathering information and ending with post-purchase thoughts, but the steps could vary according to the product, level of involvement, shopper type, etc. Since this model also assumes rational behavior, it often fails to consider human irrationality and thus may not predict the outcome accurately. Furthermore, past research demonstrates that emotions are a critical factor during the consumer decision-making process. However, there is a debate regarding whether positive or negative emotions are more impactful on the outcome and since the answer is mostly contextual, it is hard to reach a general assumption. Moreover, social media advertisements refer to marketing materials that are strategically placed on various social media platforms and often operate with an algorithm that matches the users with the most appropriate products. Lastly, young adult consumers, which is the relevant population of this research, are people between the age range 18-30 who are proven to use social media as a shopping tool the most, compared to other age ranges.

2.7 Conceptual Research Model

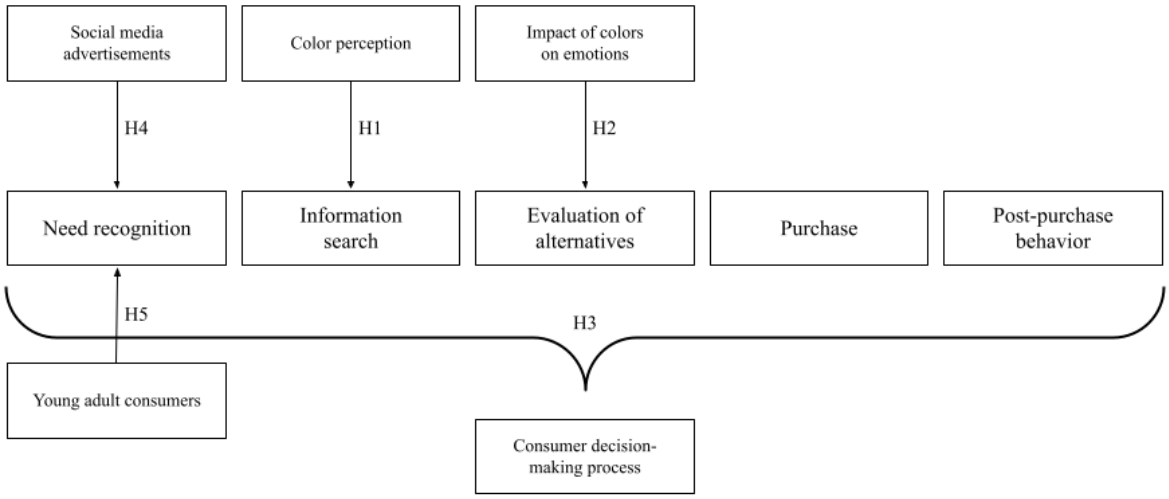


Figure 2. Conceptual research model for the literature hypotheses

Chapter 3. Research Methodology

3.1 Data Collection

In academic research, there are two types of methods that can be used: quantitative and qualitative research. Qualitative research focuses on subjective points and aims to gather exploratory data regarding the opinions and feelings of people. Some examples of this type of research are focus groups, in-depth interviews, qualitative observation, etc. The purpose of qualitative research is often to prepare a basis that can be pursued by more measurable methods. Quantitative research, on the other hand, relies on factual and numerical data to come to conclusive results. Statistical tests are usually utilized to prove mathematical and logical techniques. For example, surveys, scientific experiments, and correlational research are some of the commonly used quantitative research methods. In this research, quantitative research is used due to the need for more objective conclusions regarding the color theory. As Lakshman et al. (2000) stated, measurable things offer more scientific credibility than the unmeasurable. In addition, thanks to the high number of qualitative experiments that were done priorly on this topic, it was possible to confidently use reliable assumptions and decide on a research model related to them. Quantitative research also has an advantage regarding the validity of results as it often concerns a bigger sample.

Data collection for this research was conducted in the form of an online survey and primary data was gathered. To answer the research question and test the hypotheses, a within-subject study design was used, which means that each participant of the survey was presented with all the experimental conditions. The goal of this study design was to increase the validity of the results as all the variables except for the independent one is guaranteed to be stable, thus there is no variation in individual differences. This also means that reliable conclusions can be reached with a smaller sample than what would be required for a between-subject design, which is done by presenting only one of the conditions to each respondent. Furthermore, formatting the research into a survey sped up the data collection process as it was able to gather a lot of data in a short period of time and the link was easily distributable on the web. The main distribution channels were social media platforms (e.g., Instagram, Facebook, LinkedIn), since the aim was to reach social media users, and the process remained under control to avoid large variations regarding the age and location information of the participants. The data is collected within the time frame of June 2022.

3.2 Research Sample

The population of this research is young adult consumers, hence people aged between 18-30. Furthermore, this research specifically focuses on people currently residing in the Netherlands, thus participants who do not fit in these criteria are excluded from the sample to increase the reliability of the

data. The online survey was distributed through social media platforms (i.e., Instagram, Facebook, LinkedIn) as both public posts and private messages. Before sending personal messages, it was checked whether the person's age and location fit the criteria. While doing so, convenience sampling was utilized, which led the majority of the sample to be either bachelor's or master's students. This type of sampling can be defined as selecting the most conveniently available pool of candidates, while still testing the fitness to the mandatory criteria. Moreover, snowball sampling also took place as participants were requested to forward the survey to other people they know who would carry the necessary characteristics. The distribution process happened in June 2022. At the end, 212 relevant responses were gathered and analyzed. All the raw data gathered from the survey can be found in Appendix D.

3.3 Survey Overview

The survey begins with a short introduction to the topic and a consent question, followed by four demographic questions (i.e., social media usage, age, location, gender) that are used to check the fitness of the sample to the target population. All the survey questions can be found in Appendix C. Afterwards, two questions regarding social media are asked to test hypotheses 4 and 5 from literature review. Next, respondents are asked whether they think colors used in social media advertisements influence their shopping behavior, which is aimed to reflect the initial impression of what the participants think about the topic, as well as to make them more aware of the objective of the survey. Later, the layout of the survey contains six social media advertisements (twelve versions in total) with the same two questions. These questions are as follows: "To what extent does the background color of this advertisement make you feel: Amazed, powerful, bored, comfortable, hateful, calm, upset, indifferent" (separate scales for each emotion) and "How likely are you to purchase the product in the advertisement?" Both questions include a five-point scale for answers. These advertisements are meant to test one of the three main attributes of a color: chroma, value, and hue. For each advertisement, two different versions are presented side by side: high chroma vs. low chroma; high value vs. low value; high hue vs. low hue (hue level is represented by wavelength). Each characteristic is tested twice. The reason why the different versions are placed next to each other is to make it easier for respondents to recognize the differences and answer the questions accordingly. The advertisements are as follows:



Figure 3a. High chroma ad #1 **Figure 3b.** Low chroma ad #1 **Figure 4a**. High chroma ad #2 **Figure 4b**. Low chroma ad #2




Figure 5a. High value ad #1 **Figure 5b.** Low value ad #1 **Figure 6a**. High value ad #2 **Figure 6b**. Low value ad #2

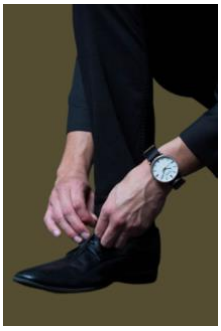
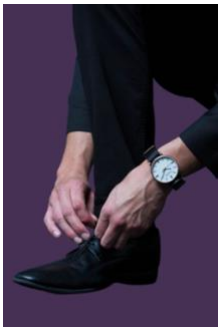



Figure 7a. High hue ad #1 **Figure 7b.** Low hue ad #1 **Figure 8a**. High hue ad #2 **Figure 8b**. Low hue ad #2

Brand recognition is not considered an issue as the testing is done in between the same products, thus eliminating the brand as a significant variable. These advertisements have been found on the internet as real social media advertisements (see Appendix B for original images), and the backgrounds have been altered by the researcher through the editing platform Adobe Photoshop. Lastly, the last page of the survey includes three ranking questions regarding how attractive the respondents find the presented colors. The aim is to observe the preference of colors (i.e., their characteristics) separately from an advertisement context. Each ranking question tests one of the variables: value, chroma, and hue. The presented colors can be found in Table 1.

Table 1. Ranking colors

	High	Middle	Low
Value	#fefddf	#fffaa9	#fef250
Chroma	#1054a5	#376797	#5F758a
Hue	#c22c28	#38821b	#5f2a8d

3.4 Data Analysis Techniques

The data software R is used in this research because it is a reliable, powerful, and open-source platform, and it can perform all the necessary analysis methods efficiently. Data analysis for this research is completed in six parts as there are six different advertisements. In each part, the same tests are used for the corresponding data and separate conclusions are reached. The research variables are the points given to the eight presented emotional states and the self-reported possibilities to purchase the product. The answers include a 5-point scale, which makes the dependent variable ordinal. In addition, the final question includes ranking variables (i.e., 1-3) as well.

Firstly, two-sample t-tests are performed between the emotional state scores of the two versions (i.e., high vs. low) of the same characteristics (e.g., value) to compare their means and determine whether the impact of the characteristic on emotions is significant. The reason two-sample tests were selected for this analysis rather than paired t-tests is that the data values regarding the emotions are independent from each other, since it is not expected for them to influence one another. This step is repeated for each emotional state and each characteristic (i.e., value, chroma, hue) is tested twice, since there are two advertisements per each. Similarly, the same t-test is done between the purchasing possibility means of the different version of the same advertisements. The p-values of these tests are interpreted to check whether there is a change between the stated points. Later, a multiple regression analysis is done where the self-reported possibility to purchase the product is the outcome variable and the eight emotional states are the independent variables. By doing so, it is possible to not only check whether all emotions have an influence on the purchasing possibility, but also to compare the magnitude of their influences by their coefficients.

Chapter 4. Research Outcome

This chapter presents the data gathered by the research survey and the results of the analysis conducted with the software R. The first section describes the raw survey data and the variables that are used further in this chapter. Afterwards, each hypothesis is tested one by one in accordance with the data analysis techniques explained in Chapter 3 (Research Methodology). Lastly, the chapter ends with a summary of all the key findings.

4.1 Raw Survey Data

In total, 212 responses were collected via this online questionnaire. 63.21% (134) of this sample reported being female, 34.91% (74) reported being male, 1.42% (3) reported being non-binary, and 0.47% (1) stated that they would prefer not to answer. Furthermore, as this sample was aimed to represent the young adult consumer profile in the Netherlands, the respondents were filtered to only include people between the ages 18 and 30, and currently residing in the Netherlands. Their race was not asked since their residency is considered the important variable in this case rather than their nationality. Moreover, respondents who stated that they do not use social media were automatically removed from the survey, and the reason was explained kindly through a webpage message. As the following questions were closely related to their experiences on social media and corresponding perceptions, it was decided by the researcher that the relevant sample should be using social media. Lastly, when respondents were asked whether they personally think that colors in social media advertisements could impact their shopping behavior, 76.89% (163) of them reported that they think so, while 23.11% (49) stated that they do not. This outcome shows that most of the respondents already thought colors would have a significant impact on their decisions.

In the next sections, the following variables will be used to represent the point (i.e., 1-5) given to the corresponding emotional state regarding the background color of the presented advertisement: *Amazed, Powerful, Bored, Comfortable, Hateful, Calm, Upset, Indifferent.* Additionally, the variable *Purchasing possibility* reflects the self-reported possibility (i.e., 1-5) of the respondent to purchase the product in the relevant advertisement.

4.2 Hypothesis 1

The first hypothesis has been prepared as follows: *Color is a property of an object that can only be perceived in the presence of light and color hue, chroma, and value impact cognitive processes of people.* The first part of the hypothesis is automatically accepted as colors were successfully perceived by respondents as a result of light-emitting diodes (LED), which make up the screens of technological devices

such as computers, phones, and tablets, emitting the present light and displaying observable colors to the respondents (Cajochen et al., 2011). To either accept or reject the rest of the hypothesis, it should be tested whether hue, chroma, and value had a significant influence on the cognitive processes of the respondents. Before testing this hypothesis in the context of consumer decision-making process, it was analyzed whether the respondents have a clear preference between the high, middle, and low levels of these characteristics (i.e., value, chroma, and hue). This was done by asking the respondents to rank these options in the survey (see Chapter 3.3 for the colors). Afterwards, a ranking score for each level is calculated. The formula for this score is as follows:

Score = 3*frequency of ranking #1 + 2*frequency of ranking #2 + 1*frequency of ranking #3

Table 2. Ranking scores

	Value	**Chroma**	**Hue**
High	438	412	444
Middle	452	478	406
Low	382	382	422

As can be seen in Table 2, the middle option has been considered the most attractive within the value and chroma levels, whereas the high option (longest wavelength) is the winner within the hue levels. While this can be explained by potential extremeness aversion, which suggests that people tend to avoid the extreme options and be more comfortable picking the middle option (Chernev, 2004), it fails to provide valuable insights regarding value and chroma, but shows that colors with a higher hue tend to be preferred more than middle or lower hue within this sample.

Now that the general perception of colors is analyzed, it is time to check their impact on how people make their decisions. In this case, the cognitive process is reflected within their self-reported possibility to purchase the product. Thus, two-sample t-tests were performed between the *Purchasing possibilities* of the two different versions of each social media advertisement. Since the test was two-sided, the null hypothesis suggests that the means of the two groups (i.e., high and low) are equal. If the test results show a p-value of less than 0.05 (5%), then it will be accepted that there is a significant difference between the *Purchasing possibilities* concerning the different levels of the relevant color characteristics, meaning that the characteristic has a significant impact on the cognitive processes of the respondents. 95% confidence interval is accepted in this research.

The relevant outcomes of these t-tests are presented in Table 3. The more detailed test output and R commands can be found in Appendix F. As can be seen in Table 3, the mean difference for the first social media advertisement that tests different levels of color value is not significant [$t(422) = 0.82$, $p = .41$], for the first chroma advertisement it is significant [$t(422) = 8.01$, $p = .00$], for the first hue advertisement it is significant [$t(422) = -4.35$, $p = .00$], for the second value advertisement it is significant [$t(422) = 8.45$, $p = .00$], for the second chroma advertisement it is significant [$t(422) = 6.82$, $p = .00$], and for the second hue advertisement it is also significant [$t(422) = -2.22$, $p = .00$]. The only p-value that is above .05 is the first value advertisement, which indicates evidence for the null hypothesis and thus, fails to reject it. However, since the second advertisement regarding value showed such strong results, the first one can be disregarded due to potential invalidity. The other characteristics, namely chroma and hue, show significant results for both of their own advertisements. Moreover, the significant results show that the high levels of chroma and value are preferred more, as they received a higher mean of *Purchasing possibilities*, while the low level of hue presented a higher mean for the same variable, thus meaning the color with a shorter wavelength influenced people's purchasing decisions more positively. In summary, it can be concluded that respondents reported significantly different *Purchasing possibilities* for different levels of characteristics and therefore, colors have a significant impact on the cognitive processes of people. As a result, the first hypothesis is accepted.

Table 3. Mean differences and p-values regarding purchasing probability of groups "High" and "Low"

	Mean of "High"	**Mean of "Low"**	**P-value**
Value #1	2.40	2.30	0.41
Chroma #1	3.06	2.19	0.00***
Hue #1	2.40	2.90	0.00***
Value #2	2.89	1.95	0.00***
Chroma #2	3.24	2.44	0.00***
Hue #2	2.10	2.36	0.02**

Note. *** significant at $p < 0.01$ ** significant at $p < 0.05$ * significant at $p < 0.1$

4.3 Hypothesis 2

The second hypothesis suggests the following: *Emotions emerge as a reactional mental state and colors have an impact on emotions.* The first part of this hypothesis can be accepted since the self-reported points given to the emotional states are a reaction towards the background color of the social media advertisement, which is implied in the survey question. In order to test the second part of the hypothesis, it should be analyzed whether there is a significant difference between the points given to each emotional

state. This analysis is done by conducting two-sample t-tests between the different levels of each color characteristic and the corresponding p-values are checked on whether they exceed .05 (5%) or not. If the p-value of an emotional state is lower than .05, then it can be concluded that colors (i.e., the relevant characteristic of the color) have a significant impact on triggering that emotion.

Table 4. P-values for each emotional state regarding the advertisements

	Value #1	**Chroma #1**	**Hue #1**	**Value #2**	**Chroma #2**	**Hue #2**
Amazed	0.84	0.00***	0.00***	0.00***	0.00***	0.00***
Powerful	0.26	0.00***	0.00***	0.00***	0.00***	0.00***
Bored	0.43	0.00***	0.00***	0.00***	0.00***	0.00***
Comfortable	1	0.00***	0.25	0.00***	0.00***	0.17
Hateful	0.11	0.00***	0.44	0.00***	0.06*	0.85
Calm	0.00***	0.00***	0.00***	0.00***	0.08*	0.26
Upset	0.12	0.00***	0.12	0.00***	0.01**	0.09*
Indifferent	0.73	0.00***	0.03**	0.00***	0.00***	0.57

Note. *** significant at $p < 0.01$ ** significant at $p < 0.05$ * significant at $p < 0.1$

As can be seen in Table 4, there are varying results regarding which emotions are triggered by a change in which characteristic. To start with the first advertisement that tests different levels of value, it can be concluded that only *Calm* had a significant change in between the different versions. However, the second advertisement that tests value presented strong results in accordance with its impact on different emotional states, since all the emotions showed a significant change. As a result, there can only be a confident conclusion regarding *Calm* and not the other emotions without proving one of the advertisements' invalidity. Moreover, the first chroma advertisement presented quite low p-values, which reflect the significance of its impact. This is backed up by the second chroma advertisement as well, since only *Hateful* and *Calm* seemed to have a p-value higher than .05, but still lower than .1. Overall, it can be concluded that the color chroma has a significant impact on all the presented emotions. Furthermore, both hue advertisements resulted in significant p-values for *Amazed, Powerful,* and *Bored* and insignificant p-values for *Comfortable, Hateful,* and *Upset.* However, no conclusions can be reached regarding *Calm* and *Indifferent* because they presented significant results in the first advertisement but not in the second one.

Table 5. The option that has a higher mean from each advertisement

	Value #1	**Chroma #1**	**Hue #1**	**Value #2**	**Chroma #2**	**Hue #2**
Amazed	Low	High	Low	High	High	Low

Powerful	High	High	Low	High	High	Low
Bored	High	Low	High	Low	Low	High
Comfortable	Equal	High	Low	High	High	Low
Hateful	Low	Low	High	Low	Low	High
Calm	Low	Low	High	High	High	Low
Upset	Low	Low	High	Low	Low	High
Indifferent	Low	Low	High	Low	Low	High

In short, it was observed that the color value influences *Calm*, the color chroma influences all eight of the emotional states, and the color hue influences *Amazed, Powerful,* and *Bored.* It is also concluded that the color value does not have an impact *Comfortable, Hateful,* and *Upset.* The emotions that have not been mentioned regarding value and hue are considered undecided as the outcome showed contradicting results. Moreover, Table 5 presents which option (i.e., high, or low) ended up having a higher mean for each emotion (see Appendix G for the exact means). Only the significant results are discussed in the following sentences. Firstly, in regard to value, *Calm* received a higher mean for the high value option in the first advertisement, whereas the low value option ended up with a higher mean in the second advertisement. Therefore, no certain conclusion can be made regarding which option triggered the emotion *Calm* more.

In addition, the chroma advertisements showed the same results for all the emotions, except for *Calm*. The high chroma version influenced *Amazed, Powerful,* and *Comfortable* more, while the low chroma version triggered *Bored, Hateful, Upset,* and *Indifferent* more. There can be no precise conclusion regarding *Calm* as it was triggered more by the low chroma option in the first advertisement, but by the high chroma option in the second advertisement. Lastly, all the relevant emotions, which are the ones that presented a significant p-value at the t-test, presented the same conclusions for the hue advertisements. The low hue (shorter wavelength) option influenced *Amazed* and *Powerful* more, whereas the high hue option (longer wavelength) triggered *Bored* more. Overall, it can be concluded that the color characteristics had significant impact on many of the emotions, thus the second hypothesis is accepted.

4.4 Hypothesis 3

The third hypothesis suggests the following: *Consumer decision-making process refers to the stages that consumers go through to reach a conclusion regarding buying behavior and emotions have a significant influence on consumer decision-making process.* The first two steps of the five-stage model created by John Dewey in 1910, which are *need recognition* and *information search,* have been eliminated during this research since pre-prepared information has been made available to the survey respondents.

Thus, the relevant connection that makes the aim of this research is between the fourth and fifth steps, which are *evaluation of alternatives* and *purchase*. Moreover, as the respondents were asked about their emotional states and possibility to purchase the product, it is possible to create a multiple regression model to determine the impact of emotions on the purchase decision. In Table 6, there are the results of the multiple regression models where the dependent variable is *Purchasing possibility* and the independent variables are the eight emotional states. The coefficient and p-value of each emotion is stated (see Appendix H for more details).

Table 6. Multiple regression results

	Value #1		**Chroma #1**		**Hue #1**		**Value #2**		**Chroma #2**		**Hue #2**	
	B	**P**	**B**	**P**	**B**	**P**	**B**	**P**	**B**	**P**	**B**	**P**
(Intercept)	0.99***	0.00	1.43***	0.00	1.20***	0.00	0.73***	0.00	1.11***	0.00	0.90***	0.00
Amazed	0.11*	0.08	0.16***	0.01	0.18***	0.01	0.20***	0.00	0.20***	0.00	0.23***	0.00
Powerful	0.33***	0.00	0.26***	0.00	0.25***	0.00	0.40***	0.00	0.32***	0.00	0.21***	0.00
Bored	-0.19***	0.00	-0.23***	0.00	-0.14***	0.00	-0.02	0.66	-0.09*	0.06	-0.09**	0.02
Comfor-table	0.13**	0.02	0.10*	0.07	0.22***	0.00	0.10*	0.09	0.14**	0.03	0.14*	0.04
Hateful	-0.06	0.43	-0.06	0.38	0.17*	0.08	0.02	0.79	-0.08	0.31	0.09	0.18
Calm	0.11**	0.02	0.13***	0.01	0.00	0.97	0.02	0.72	0.02	0.76	0.10	0.11
Upset	0.15**	0.04	0.08	0.21	-0.08	0.38	0.02	0.72	0.11	0.14	-0.06	0.35
Indifferent	-0.03	0.51	-0.05	0.24	-0.10**	0.02	-0.08**	0.04	-0.04	0.30	-0.06*	0.09
Adjusted R^2	0.41		0.35		0.33		0.46		0.39		0.36	
F(8, 415)	37.45		29.47		27.52		46.44		34.92		30.9	

Note. *** significant at $p < 0.01$ ** significant at $p < 0.05$ * significant at $p < 0.1$

B = coefficient P = p-value

For the value advertisements, *Amazed, Powerful,* and *Bored* are concluded to have a significant impact on *Purchasing possibility*, whereas *Hateful* showed insignificant results. In addition, *Powerful* presents the biggest coefficient in both advertisements, which makes it the most impactful emotion during the consumer decision making process in the context of these specific advertisements. Furthermore, for the chroma advertisements, *Amazed, Powerful, Bored* and *Comfortable* ended up showing significant influence on the purchasing decision, while *Hateful, Upset,* and *Indifferent* presented insignificant ones. It can further be seen that *Bored* had a negative impact on *Purchasing possibility*, but *Amazed*, *Powerful*, and *Comfortable* had a positive impact. Additionally, *Powerful* can be considered the most influential emotion in this case, while *Amazed* goes second and *Comfortable* goes last. Similar to chroma, the hue advertisements also ended up with significant results for *Amazed, Powerful, Bored* and *Comfortable,* with an addition of *Indifferent* as well. Both *Bored* and *Indifferent* presented negative impact, but the magnitude of the impact of *Bored* is bigger. The other significant emotions cannot be put in an order as the ranking

differs between the two advertisements. Moreover, *Upset* is indeed an insignificant emotion in this regression. The emotions that have not been mentioned in the above descriptions had contradicting results between the advertisements, thus no certain conclusion can be reached regarding them.

Overall, it can be concluded that many of the presented emotions proved a significant impact on the purchasing possibility, which reflects the consumer decision-making process in this context. As a result, the third hypothesis can be accepted.

4.5 Hypothesis 4

The fourth hypothesis is as follows: *Social media advertisements entail online marketing materials that are targeted at specific users on social media platforms according to the users' compatibleness to the relevant product or service.* To determine whether this is accurate, respondents were asked how often they see social media advertisements that are targeted to their interests. If the majority of the sample state that they frequently run into these personalized advertisements, then the hypothesis can be accepted. 52.4% (111) of the sample reported seeing them every day, 29.25% (62) reported seeing them 2-3 times a week, 12.26% (26) reported seeing them 2-3 times a month, 5.19% (11) reported seeing them less than once a month, and 0.94% (2) reported never seeing them (see Appendix E.1 for the figure).. With the vast majority stating a positive response regarding noticing these advertisements, and most of them seeing them even every day, the fourth hypothesis can be confidently accepted.

4.6 Hypothesis 5

The fifth hypothesis has been written as follows: *Young adult consumers are individuals between the ages of 18 and 30 who are prone to use social media for shopping purposes.* Since young adult consumers are the focus population of this research, the gathered survey data has been filtered to only include the relevant ages (i.e., 18-30). Thus, the respondents of the survey can be accepted as an accurate representation of the goal population. To see whether their shopping behavior through social media is the same as what was found during the literature review and reflected on this hypothesis, the respondents were asked how often they shop via social media. If most of the responses lead to a positive outcome, then the hypothesis can be accepted. 0.47% (1) of the sample stated that they shop via social media every day, 4.72% (10) stated that they do it 2-3 times a week, 12.74% (27) stated that they do it 2-3 times a month, 42.45% (90) stated that they do it less than once a month, and 39.62% (84) stated that they never shopped via social media before (see Appendix E.2 for the figure). Considering that the majority of the answers, 60.38% (128) of them to be exact, reported having shopped via social media before, it can be concluded that the fifth hypothesis can be accepted.

4.7 Summary of Key Findings

Overall, all five hypotheses ended up being accepted. For the first hypothesis, two-sample t-tests were conducted between the self-reported purchasing possibilities given to the different versions of each advertisement. Five out of six advertisements gave significant p-values, which proved that the means of the high and low groups are significantly different. This shows that the color value, chroma, and hue impact cognitive processes of people. Secondly, to test the second hypothesis, two-sample t-tests were done between the scores given to emotional states related to the background colors of the advertisements. It is concluded that a change in color value influences how *calm* the respondents feel, a change in color hue influences how *amazed, powerful,* and *bored* the respondents feel, and a change in color chroma influences all eight emotional states. In addition, there is a positive correlation between the level of color chroma and feeling *amazed, powerful,* and *comfortable*, where a negative correlation takes place with feeling *bored, hateful, upset,* and *indifferent*. Moreover, increasing the color hue (i.e., wavelength) resulted with an increase in feeling *bored,* while decreasing it resulted with an increase in feeling *amazed* and *powerful*. In short, it was determined that colors have an impact on emotions.

Furthermore, to test the third hypothesis, multiple regression models have been created where the dependent variable is the self-reported purchasing possibility, and the independent variables are the scores given to the eight emotional states, and this process has been repeated for each advertisement. It was concluded that feeling *amazed, powerful,* and *comfortable* had significant and positive impact on the purchasing possibility for all the advertisements, while feeling *bored* had a negative influence within the chroma advertisements, and feeling *bored* and *indifferent* had a negative influence within the hue advertisements. Overall, the results proved that emotions have an impact on the consumer decision-making process. Next, for the fourth hypothesis, the respondents were asked how frequently they run into personalized social media advertisements and the vast majority (99.06%) answered the question positively, meaning they have seen them before, and 52.4% of them even reported seeing them every day. This proved that social media platforms indeed place advertisements according to users' interests. Finally, for the fifth hypothesis, the respondents were asked about their shopping behavior via social media. Most of the answers (60.38%) were positive, which means that they have shopped through social media before. Since the sample was filtered to only include young adults, it can be stated that young adults have the tendency to use social media for shopping purposes.

Chapter 5. Conclusions & Recommendations

This chapter first explains the key findings of the literature study and empirical research, and then compares these to see what similarities and differences there are. Afterwards, the central research question is answered with the help of all the conclusions. Then, limitations that might have arisen during the research are discussed. Lastly, the chapter is finished with recommendations for both the market and future researchers, and the personal reflections of the researcher.

5.1 Conclusions

5.1.1 Literature Study Conclusions

Firstly, color is a visual property of an entity that produces sensations on the eye as a result of lights getting reflected. Newton discovered that when the sunlight passes through the prism, it gets separated into different hues according to refrangibility degree of the rays. Additionally, there is a continuous scale of colors that are in a rank according to their wavelengths. These different wavelengths result in different color hues that are detectable by the eye (Mollon, 2003). Moreover, the chroma of a color refers to how saturated the color is, while the value of a color can be defined as its brightness on the white-to-black scale (Fairchild, 2005). It has been proven by past research that human cognitive processes can be influenced by colors (Kumar, 2017). Secondly, emotions are mental states that arise as a reaction to either subjective or objective triggers (Bagozzi et al., 1999). Mehrabian and Russell (1974) created a framework to categorize emotions in accordance with the following three concepts: pleasure (P), arousal (A), and dominance (D). By combining these elements and deciding whether their sign is positive and negative, eight fundamental categories have been made and an emotion per category has been selected to be used in this research as follows: powerful, amazed, comfortable, calm, hateful, upset, indifferent, and bored. As Gil and Biggot (2014) said, colors form emotional associations in the human mind, which means that colors have an impact on emotions.

Furthermore, John Dewey established the five-stage model regarding consumer decision-making process which includes the following steps: need recognition, information search, evaluation of alternatives, purchase, and post-purchase behavior (Kotler & Keller, 2012). However, this model assumes that all consumers act rationally, while in real life this often fails to be the case (Solomon et al., 2006). External factors such as emotions can influence the decisions of consumers without needing to be backed up by logic. Especially due to intense competition over various markets and most products ending up looking too similar, psychological and emotional needs regarding products have become more crucial than functional needs (Domenico, 2009). Rucker & Petty (2004), as well as Watson & Spence (2007), further discovered that negative feelings such as anger and guilt influence the decisions of consumers immensely.

Moreover, social media has turned into the biggest tool of communicating with both people and companies, which also made it more convenient to engage with and buy products from brands (Sundaram, 2020). In addition, brands promote their marketing materials more efficiently nowadays due to advanced social media algorithms, which allow specific advertisements to be shown only to people who are detected to be relevant to the target audience (Zubcsek & Sarvary, 2011). This has resulted in an increase in shopping behavior related to social media, especially within the young adult consumer group who are between the ages of 18 and 30. As this group is considered "the forefront of globalization" (Rašković et al., 2016), it is important to understand their decision-making process in a consumption context.

5.1.2 Empirical Research Conclusions

The empirical part of this research has tested five hypotheses, prepared as a result of the literature study, that were applied to the sample of 212 young adult consumers living in the Netherlands. Firstly, it was found that 76.89% (163) of the sample already believe that colors in social media advertisements impact their consumption decisions, while the rest disagrees. Next, when the respondents were asked to rank the different levels of color value, chroma, and hue according to their attractiveness, the middle options for value and chroma ended up with the highest scores, while the high option had more votes within the hue levels. These results failed to provide linearly proportional preferences for the different levels of these characteristics. Furthermore, as a result of the two-sample tests conducted between the self-reported purchasing possibilities given to the different versions of each advertisement, it was concluded that the means of the high and low groups are significantly different, thus the level of color value, chroma, and hue have a significant impact on the cognitive processes of people (in this case reflected by purchasing possibilities).

Additionally, two-sample t-tests were done between the scores given to emotional states related to the background colors of the advertisements and the results showed that changing the color value influenced the emotion *calm,* changing the color hue influence the emotions *amazed, powerful*, and *bored,* and changing the color chroma influenced all the eight emotions. Plus, the level of chroma had a positive correlation with the feelings *amazed, powerful*, and *comfortable,* and a negative correlation with the feelings *bored*, *hateful*, *upset*, and *indifferent*. On top of that, a positive correlation was spotted between the hue level and feeling *bored* and a negative correlation was spotted with feeling *amazed* and *powerful.* These results proved that color characteristics indeed have an influence of emotions. Afterwards, multiple regression analysis has been done where the dependent variable is the self-reported purchasing possibility, and the independent variables are the scores given to the eight emotional states. The results presented that feeling *amazed, powerful*, and *comfortable* had significant and positive effect on the purchasing possibility

for all the advertisements, whereas the emotion *bored* had a negative impact within the chroma advertisements, and the emotions *bored* and *indifferent* had a negative impact within the hue advertisements. At the end, it was accepted that emotions impact the consumer decision-making process.

Furthermore, when the respondents were asked about the frequency of them noticing targeted social media advertisements, most of them (99.06%) replied by saying they have seen them before, and 52.4% of them noted seeing them every day. These support the hypothesis that social media algorithms are actively promoting personalized advertisements according to the data they gather from users. Lastly, when the respondents were asked about the frequency of them purchasing products through social media, 60.38% of them reported having done it before, which reflects the active shopping behavior of young adults when it comes to social media advertisements.

5.1.3 Comparison Key Outcomes Literature and Empirical Research

All five hypotheses were accepted after analyzing the data gathered by the field research. This implies that the conclusions of the literature study and empirical research are quite compatible. Firstly, past research established that the value, chroma, and hue of a color are important properties that have a considerable impact on how people think and feel. After comparing the means of the self-reported purchasing possibilities and scores given to emotional states, significant changes have been detected between different levels of color characteristics (i.e., value, chroma, and hue). This means that the literature and the empirical research came up with the same conclusions. Moreover, by analyzing the respondents' decision-making processes with the help of their purchasing possibilities, it was seen that some emotions have significantly affected their decisions, which supports the claim made by Domenico (2009) that psychological and emotional aspects are influential when it comes to making a purchase. In addition, past research had proposed that personalized advertisements as a form of social media marketing are becoming more active every day (Zubcsek & Sarvary, 2011), which was also proven by the field research results since 99.06% of the respondents have notices these strategies before. Finally, the literature study found that young adults had the biggest percentage (33%) of having shopped through social media before compared to other age ranges, which were 21% for ages 35-54 and 6% for ages 55+ (Statista, 2020). This was supported by the empirical results as 60.38% of the respondents stated they have purchased products via social media before.

Even though the majority of the points were similar, there were a few details that resulted in different conclusions. For instance, Rucker and Petty (2004) stated that negative feelings such as anger and sadness affected how consumers make decisions. However, the empirical research showed that positive

emotions such as amazed, powerful, and comfortable have a bigger impact on the consumer decision-making process instead. On top of that, it was concluded that the only negative emotions that appeared to be significant in any of the advertisements were *bored* and *indifferent*, so the emotions *hateful* and *upset* did not prove any significance. In addition, even though the five-stage model has been proven to be a useful concept to objectify the consumer decision-making process, the fact that emotions turned out to be a significant influence on this process has shown that the rationality does not always apply to human beings.

5.1.4 Central Research Question

The central question of this research, as stated in Chapter 1, is as follows:

"How do colors in social media advertisements for the fashion industry impact the consumer decision-making processes of young adult consumers in the Netherlands?"

To answer this question, it was first explained what a color is and which characteristics of it determine and quantify its impact. As a result of the literature study, these characteristics have been defined as color value, chroma, and hue. In order to test each of these characteristics separately, two advertisements per each have been modified so that the only variable that changes from the background color is one of these characteristics. That is why the conclusions are done separately, rather than simply testing the effect of "color". Furthermore, the impact of these characteristics on the consumer decision-making process has been measured in two ways: firstly, by checking whether the purchasing possibilities have changed significantly between the different levels of characteristics; and secondly, by first checking how these characteristics impact emotions, and then how emotions impact the purchasing possibilities. The first way resulted in significant results for five out of six advertisements, meaning that these characteristics impacted the purchasing possibilities significantly. The second way showed that although there were many emotions that were triggered by colors and many emotions that impacted the purchasing possibility, only a few of them overlapped. For color hue, it was concluded that decreasing the hue level (i.e., shorter wavelength) resulted in an increase in feeling *amazing* and *powerful*. These two emotions also have been proven to show a positive correlation with the purchasing possibility. In addition, increasing the color chroma resulted in an increase in feeling *amazed*, *powerful*, and *comfortable*, and these three emotions are also positively correlated to the purchasing possibility.

In short, the impact of color value on the consumer decision-making process could not be explained with emotions. Also taking into consideration that the one out of six advertisements that showed insignificant results during the testing of Hypothesis 1 was related to the color value, it can be determined

that value is not as influential as color chroma and hue. Furthermore, the color hue influences how *amazed* and *powerful* this sample feels, which also ends up influencing their decision-making process related to a purchase. Similarly, the color chroma influences how *amazed*, *powerful*, and *comfortable* this sample feels, and these three emotions impact their consumer decision-making process. It should be noted that all these conclusions are only valid for this specific sample, which reflects the young adult consumers in the Netherlands, and only in regard to fashion products.

5.2 Recommendations

5.2.1 Recommendations to Companies

This research provides valuable insights that can be utilized by the marketing teams of fashion brands. Firstly, the importance of color psychology within marketing materials should be emphasized since it has been proven with significant statistical results that they have the power to influence the likelihood of someone purchasing the product. More specifically, high chroma colors should be preferred rather than low chroma colors to boost up the feelings of *amazed*, *powerful*, and *comfortable* by the audience. Secondly, colors with a shorter wavelength (e.g., purple, blue) should be opted for rather than longer wavelengths (e.g., red, orange) as they tend to increase the feelings of how *amazed* and *powerful.* However, since these circumstances depend on many different factors, it is recommended that companies try out a few different strategies and analyze the results to find the most ideal option.

5.2.2 Recommendations to Future Researchers

Since this research depended on a strict age range and location, future researchers can explore other ages (e.g., elderly, teenagers) or countries, as well as other industries. This conceptual research model can easily be modified according to another target audience. Moreover, this research only utilized the emotional states categorized by one academic paper, thus exploring other papers regarding different emotion types can enrichen the findings on this topic. Furthermore, as this research used within-subject study design, some biases regarding exhaustion, etc. might have impacted the results. Therefore, another research project that has more resources and can access a bigger sample can do a between-subjects study design in order to eliminate this limitation.

5.3 Limitations

Firstly, as also mentioned in Chapter 1.4, this sample only consists of 212 people while the actual population of young adult consumers living in the Netherlands is more than a million (Statista, 2022). Performing this research with a much bigger sample can increase the reliability and validity of the results.

In addition, almost two-thirds of this sample (63.21%) reported being female, which might have caused an overrepresentation of females in the data. This is a limitation since the actual ratio of males and females in the Netherlands are almost 1:1 (Statista, 2022). Moreover, there are some potential limitations that come with the within-subject study design. Since the questionnaire had to be longer to be able to present all the conditions, the respondents might have felt exhausted or bored after a while, resulting with answers of lesser quality in the later questions. Furthermore, the sample was mainly selected from the educational institution and work environments that are relevant to the researcher, due to convenience sampling being used. Moreover, the emotional states selected for this research were the result of a specific academic paper and a model (PAD), thus if another model was taken inspiration of instead, other emotions could have been presented and the conclusions might have been different.

5.4 Reflection

During the process of writing this bachelor thesis, I had the chance to step up my research skills by learning how to search and filter for the best academic resources, as well as improving my academic writing abilities. It also increased my respect for researchers who do this full-time as I found out first-hand how time-consuming it is and how much focus and self-discipline it requires. On the other hand, it also showed me that I need to let things flow sometimes so that pieces can find each other instead of me forcing them. As a person who likes to always keep things under control and plan everything ahead, this experience made me notice the importance of patience and trusting the process. Moreover, this research made my passion for psychology bloom, since I already knew I was interested in these topics but now I am actually considering implementing similar practices and learning opportunities into my future.

Appendix

Appendix A. Bibliography

Bagozzi, R.P. (1981), ‘‘Attitudes, intentions and behavior: a test of some key hypotheses’’, Journal of Personality and Social Psychology, Vol. 24, pp. 426-35.

Belch G. & Belch M. (2009) Advertising and Promotion: An Integrated Marketing Communications Perspective, 8th ed. Homewood, IL: Irwin.

Broyles, S. (2006). Subliminal Advertising and the Perpetual Popularity of Playing to People's Paranoia. The Journal of Consumer Affairs, 40 (2), 392-407.

Cajochen, C., Frey, S., Anders, D., Späti, J., Bues, M., Pross, A., Mager, R., Wirz-Justice, A., & Stefani, O. (2011). Evening exposure to a light-emitting diodes (LED)-backlit computer screen affects circadian physiology and cognitive performance. Journal of Applied Physiology, 110(5), 1432–1438. https://doi.org/10.1152/japplphysiol.00165.2011

Chernev, A. (2004). Extremeness Aversion and Attribute-Balance Effects in Choice. Journal of Consumer Research, 31(2), 249–263. https://doi.org/10.1086/422105

Cheskin, L., Color for Profit, Liveright, New York, 1951.

Costa, P. T., Jr., & McCrae, R. R. (1994). Set like plaster? Evidence for the stability of adult personality. In T. F. Heatherton & J. L. Weinberger (Eds.), *Can personality change?* (pp. 21–40). Washington, DC: American Psychological Association.

Deskera. (2022, April 8). *Everything You Need to Know About Billboard Advertising*. Deskera Blog. https://www.deskera.com/blog/billboard-advertising/

Domenico, C. (2009). "Emotions That Influence Purchase Decisions And Their Electronic Processing ". *Annales Universitatis Apulensis Series Oeconomica*, *2*(11), 996–1008. https://doi.org/10.29302/oeconomica.2009.11.2.45

Elliot, A. J., & Maier, M. A. (2007). Color and Psychological Functioning. *Current Directions in Psychological Science*, *16*(5), 250–254. https://doi.org/10.1111/j.1467-8721.2007.00514.x

Elliot, A. J., Maier, M. A., Moller, A. C., Friedman, R., & Meinhardt, J. (2007). Color and psychological functioning: The effect of red on performance attainment. *Journal of Experimental Psychology: General*, *136*(1), 154–168. https://doi.org/10.1037/0096-3445.136.1.154

Elliot, A. J., & Maier, M. A. (2014). Color Psychology: Effects of Perceiving Color on Psychological Functioning in Humans. *Annual Review of Psychology*, *65*(1), 95–120. https://doi.org/10.1146/annurev-psych-010213-115035

Erikson, E. H., & Erikson, J. M. (1998). The life cycle completed: Extended version. New York, NY: W. W. Norton.

Fairchild MD. 2005. *Color Appearance Models*. New York: Wiley. 2nd ed.

Gil, S., & le Bigot, L. (2014). Seeing Life through Positive-Tinted Glasses: Color–Meaning Associations. *PLoS ONE*, *9*(8), e104291. https://doi.org/10.1371/journal.pone.0104291

Goldstein, K. (1942). Some experimental observations concerning the influence of colors on the function of the organism. *American Journal of Physical Medicine & Rehabilitation*, *1*(1), 147???151. https://doi.org/10.1097/00002060-194206000-00002

Gorn, G. J., Chattopadhyay, A., Yi, T., & Dahl, D. W. (1997). Effects of Color as an Executional Cue in Advertising: They're in the Shade. *Management Science*, *43*(10), 1387–1400. https://doi.org/10.1287/mnsc.43.10.1387

Graham, M. (2021, December 6). *Advertising Market Keeps Growing Much Faster Than Expected, Forecasters Say*. WSJ. https://www.wsj.com/articles/advertising-market-keeps-growing-much-faster-than-expected-forecasters-say-11638784800#:%7E:text=Digital%20advertising%20will%20account%20for,2020%20and%2052.1%25%20in%202019.

Grant, I. C., & Waite, K. (2003). Following the yellow brick road-young adults: Experiences of the information super-highway. *Qualitative Market Research: An International Journal, 6*(1), 48–57.

Jordan P. W., 2001. Pleasure with products: the new human factors. In User interface Design For Electronic Appliances, K. Baumann and B. Thomas, Eds. Taylor & Francis, Bristol, PA, pp. 303-328.

Kareklas, I., Brunel, F. F., & Coulter, R. (2012). Judgment is not color blind: The impact of automatic color preference on product and advertising preferences. Journal of Consumer Psychology, 24, 87–95.

Kaur, J. (2008). Online Social Networking as an Advertising Medium, (M.Sc. thesis). Portobello College, Ireland.

Kjeldgaard, D., & Askegaard, S. (2006). The glocalization of youth culture: The global youth segment as structures of common difference. *Journal of Consumer Research, 33*(2), 231–247.

Kleinginna, P. and Kleinginna, A.M. (1981), ''A categorized list of emotion definitions, with suggestions for a consensual definition'', Motivation and Emotion, Vol. 5 No. 4, pp. 345-79.

Kotler P. & Keller K.L. (2012) Marketing Management, 14th ed.

Kumar, J. S. (2017). The Psychology of Colour Influences Consumers' Buying Behaviour – A Diagnostic Study. *Ushus - Journal of Business Management*, *16*(4), 1–13. https://doi.org/10.12725/ujbm.41.1

Kunieda, Y. (2014). Effects of Emotions on Consumer Behaviour during Online Service Purchasing. In *ENTER 2014 Conference on Information and Communication Technologies in Tourism* (Vol. 4).

Lakshman, M., Sinha, L., Biswas, M., Charles, M., & Arora, N. K. (2000). Quantitative Vs qualitative research methods. The Indian Journal of Pediatrics, 67(5), 369–377. https://doi.org/10.1007/bf02820690

Lee S., Lee K., Lee S., Song J. (2013). Origins of Human Colour preference for food. Journal of Food Engineering.

Mailund, L. and Halskov, K., 2008. "Designing marketing experiences". In Proceedings of the 7th ACM Conference on Designing interactive Systems (Cape Town, South Africa, February). DIS. ACM, New York, NY, pp. 222--229.

Mehrabian, A., & Russell, J. A. (1974). An approach to environmental psychology. Cambridge, MA: MIT Press.

Mollon, J. D. (2003). The origins of modern color science. *The science of color*, *2*, 1-39.

Munsell Color System. (2008, June 23). [Illustration].https://en.wikipedia.org/wiki/Munsell_color_system

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). The measurement of meaning. Urbana: University of Illinois Press.

Philip, K., Armstrong, G., & Opresnik, M. O. (2018). Principles of marketing. Pearson Education.

Rašković, M., Ding, Z., Škare, V., Ozretić Došen, Đ., & Žabkar, V. (2016). Comparing consumer innovativeness and ethnocentrism of young-adult consumers. *Journal of Business Research, 69*(9), 3682–3686.

Rehman, S. U., Bhatti, A., Mohamed, R., & Ayoup, H. (2019). The moderating role of trust and commitment between consumer purchase intention and online shopping behavior in the context of Pakistan. *Journal of Global Entrepreneurship Research*, *9*(1). https://doi.org/10.1186/s40497-019-0166-2

Rindfuss, R. R. (1991). The Young Adult Years: Diversity, Structural Change, and Fertility. *Demography*, *28*(4), 493–512. https://doi.org/10.2307/2061419

Rossotti, H. (1983). Color: Why the World Isn't Grey, Princeton, New Jersey: Princeton University Press.

Rucker, D. D., & Petty, R. E. (2004). Emotion Specificity and Consumer Behavior: Anger, Sadness, and Preference for Activity. *Motivation and Emotion*, *28*(1), 3–21. https://doi.org/10.1023/b:moem.0000027275.95071.82

Shapiro, A. E. (1994). Artists' Colors and Newton's Colors. *Isis*, *85*(4), 600–630. https://doi.org/10.1086/356979

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, *52*(6), 1061–1086. https://doi.org/10.1037/0022-3514.52.6.1061

Singh, N., & Srivastava, S. K. (2011). Impact of Colors on the Psychology of Marketing — A Comprehensive over View. *Management and Labour Studies*, *36*(2), 199–209. https://doi.org/10.1177/0258042x1103600206

Singh, S. (2006). Impact of color on marketing. *Management Decision*, *44*(6), 783–789. https://doi.org/10.1108/00251740610673332

Solomon M., Bamossy G., Askegaard S., Hogg M.K. (2006) Consumer Behaviour. A European perspective, 3rd ed. Prentice Hall Financial Times.

Stankevich, A. (2017). Explaining the Consumer Decision-Making Process: Critical Literature Review. *JOURNAL OF INTERNATIONAL BUSINESS RESEARCH AND MARKETING*, *2*(6), 7–14. https://doi.org/10.18775/jibrm.1849-8558.2015.26.3001

Statista. (2022, February 24). *Population of the Netherlands in 2021, by age and gender*. https://www.statista.com/statistics/755052/population-of-the-netherlands-by-age-and-gender/

Statista. (2022, May 9). Population of the Netherlands 2021, by gender. https://www.statista.com/statistics/519796/population-of-the-netherlands-by-gender/#:%7E:text=On%20January%201%2C%202021%2C%20approximately,in%20the%20Netherlands%20the%20majority.

Statista. (2020, December). *Share of online shoppers who have made a purchase via social media in the past six months in selected countries worldwide in 2020, by age group.* https://www.statista.com/statistics/1192455/share-of-people-who-purchased-goods-on-social-media-by-age-group/

Stokley, S. R. (2018). Historic look on color theory. *Johnson & Wales University, Providence*.

Valdez, P., & Mehrabian, A. (1994). Effects of color on emotions. *Journal of Experimental Psychology: General*, *123*(4), 394–409. https://doi.org/10.1037/0096-3445.123.4.394

Watson, L., & Spence, M. T. (2007). Causes and consequences of emotions on consumer behaviour. *European Journal of Marketing*, *41*(5/6), 487–511. https://doi.org/10.1108/03090560710737570

Wexner, L. B. (1954). The degree to which colors (hues) are associated with mood-tones. *Journal of Applied Psychology*, *38*(6), 432–435. https://doi.org/10.1037/h0062181

Zubcsek, P. P., & Sarvary, M. (2011). Advertising to a social network. *Quantitative Marketing and Economics*, *9(*1), 71-107.

Appendix B. Original social media advertisements

Appendix B.1 Benetton Sweaters

Appendix B.2 Converse All Star

Appendix B.3 Keep Shop Tote Bag

Appendix B.4 Xiaomi Mi Band 5

Appendix B.5 Urban Outfitters Sweater

Appendix B.6 La Mine d'Or

Appendix C. Survey questions

Start of Block: Consent

Thank you for participating in this survey.

I am Miray Ayyıldız, a 3rd-year student at Erasmus School of Economics, and this survey is a part of my bachelor thesis. The aim of this research is to observe the impact of colors in social media advertisements on the decision-making process of young adult consumers.

In the following pages, you will be asked about your general social media usage and opinions about the color usage in six social media advertisements. You can answer intuitively as there are no wrong answers.

The survey will take approximately 5 minutes. Please take this survey in an environment where you can be free from distraction and finish it in one sitting. All the obtained data will be kept confidential and participation is voluntary.

If you have any questions/remarks or would like to revoke your consent at any time, please feel free to send an email to 523723ma@eur.nl.

Q1 I have read the above statement and agree to participate in this study.

- ○ Yes (1)
- ○ No (2)

End of Block: Consent

Start of Block: Age

Q2 What is your age range?

- ○ <18 (1)
- ○ 18-24 (2)
- ○ 25-30 (3)
- ○ 31-35 (4)
- ○ 36-40 (5)
- ○ 41-45 (6)
- ○ 46-50 (7)
- ○ 50+ (8)

End of Block: Age

Start of Block: Gender

Q3 What gender do you identify as?

- ○ Female (1)
- ○ Male (2)
- ○ Non-binary (3)
- ○ Prefer not to say (4)
- ○ Other (5) _____

End of Block: Gender

Start of Block: Location

Q4 Where do you reside in?

- Netherlands (1)
- Germany (5)
- France (6)
- Spain (7)
- Italy (8)
- United Kingdom (11)
- Turkey (9)
- Other (10) _____

End of Block: Location

Start of Block: Social media condition

Q5 Do you use social media?

- Yes (1)
- No (2)

End of Block: Social media condition

Start of Block: Social media

Social media platforms have **algorithms** that gather data from their users and categorize them according to their personal information e.g., age, location, interests. Social media **targeting** occurs when brands use these data and display advertisements only to users who would most likely be interested in them.

For example, after looking at sneaker images on Instagram, you will probably start receiving more advertisements from sneaker brands.

Q6 How often do you see social media advertisements that are targeted to your interests?

- Never (1)
- Less than once a month (2)
- 2-3 times a month (3)
- 2-3 times a week (4)
- Every day (5)

Q7 How often do you shop via social media?

- Never (1)
- Less than once a month (2)
- 2-3 times a month (3)
- 2-3 times a week (4)
- Every day (5)

End of Block: Social media

Start of Block: Color

Q8 Do you think colors used in social media advertisements influence your shopping behavior?

- Yes (1)
- No (2)

End of Block: Color

Start of Block: Instruction

In the following pages, you will see **six** social media advertisements for **fashion** products. Please pick a score from 1 to 5 to answer the questions.

End of Block: Instruction

Start of Block: New #1

Q9 To what extent do the background colors of these social media advertisements make you feel:
(1 = Not at all, 2 = Very little, 3 = Moderately, 4 = Very much, 5 = Extremely)

Ad #1

Ad #2

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
Amazed (1)	○	○	○	○	○	○	○	○	○	○
Powerful (2)	○	○	○	○	○	○	○	○	○	○
Bored (3)	○	○	○	○	○	○	○	○	○	○
Comfortable (4)	○	○	○	○	○	○	○	○	○	○
Hateful (5)	○	○	○	○	○	○	○	○	○	○
Calm (6)	○	○	○	○	○	○	○	○	○	○
Upset (7)	○	○	○	○	○	○	○	○	○	○
Indifferent (8)	○	○	○	○	○	○	○	○	○	○

Q10 How likely are you to purchase the product in the advertisements?
(1 = Extremely unlikely, 2 = Moderately unlikely, 3 = Neutral, 4 = Moderately likely, 5 = Extremely likely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
1 (1)	○	○	○	○	○	○	○	○	○	○

End of Block: New #1

Start of Block: New #2

Q11 To what extent do the background colors of these social media advertisements make you feel:
(1 = Not at all, 2 = Very little, 3 = Moderately, 4 = Very much, 5 = Extremely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)

Amazed (1)	○	○	○	○	○	○	○	○	○	○
Powerful (2)	○	○	○	○	○	○	○	○	○	○
Bored (3)	○	○	○	○	○	○	○	○	○	○
Comfortable (4)	○	○	○	○	○	○	○	○	○	○
Hateful (5)	○	○	○	○	○	○	○	○	○	○
Calm (6)	○	○	○	○	○	○	○	○	○	○
Upset (7)	○	○	○	○	○	○	○	○	○	○
Indifferent (8)	○	○	○	○	○	○	○	○	○	○

Q12 How likely are you to purchase the product in the advertisements?
(1 = Extremely unlikely, 2 = Moderately unlikely, 3 = Neutral, 4 = Moderately likely, 5 = Extremely likely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
1 (1)	○	○	○	○	○	○	○	○	○	○

End of Block: New #2

Start of Block: New #3

Q13 To what extent do the background colors of these social media advertisements make you feel:
(1 = Not at all, 2 = Very little, 3 = Moderately, 4 = Very much, 5 = Extremely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
Amazed (1)	○	○	○	○	○	○	○	○	○	○
Powerful (2)	○	○	○	○	○	○	○	○	○	○
Bored (3)	○	○	○	○	○	○	○	○	○	○
Comfortable (4)	○	○	○	○	○	○	○	○	○	○
Hateful (5)	○	○	○	○	○	○	○	○	○	○
Calm (6)	○	○	○	○	○	○	○	○	○	○
Upset (7)	○	○	○	○	○	○	○	○	○	○
Indifferent (8)	○	○	○	○	○	○	○	○	○	○

Q14 How likely are you to purchase the product in the advertisements?
(1 = Extremely unlikely, 2 = Moderately unlikely, 3 = Neutral, 4 = Moderately likely, 5 = Extremely likely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)

1 (1)	○	○	○	○	○	○	○	○	○	○

End of Block: New #3

Start of Block: New #4

Q15 To what extent do the background colors of these social media advertisements make you feel:
(1 = Not at all, 2 = Very little, 3 = Moderately, 4 = Very much, 5 = Extremely)

	 Ad #1					 Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)

Amazed (1)	○	○	○	○	○	○	○	○	○	○
Powerful (2)	○	○	○	○	○	○	○	○	○	○
Bored (3)	○	○	○	○	○	○	○	○	○	○
Comfortable (4)	○	○	○	○	○	○	○	○	○	○
Hateful (5)	○	○	○	○	○	○	○	○	○	○
Calm (6)	○	○	○	○	○	○	○	○	○	○
Upset (7)	○	○	○	○	○	○	○	○	○	○
Indifferent (8)	○	○	○	○	○	○	○	○	○	○

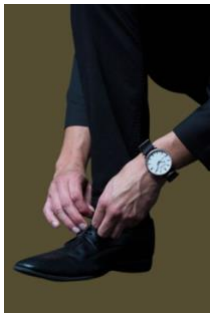
Q16 How likely are you to purchase the product in the advertisements?
(1 = Extremely unlikely, 2 = Moderately unlikely, 3 = Neutral, 4 = Moderately likely, 5 = Extremely likely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
1 (1)	○	○	○	○	○	○	○	○	○	○

End of Block: New #4

Start of Block: New #5

Q17 To what extent do the background colors of these social media advertisements make you feel:
(1 = Not at all, 2 = Very little, 3 = Moderately, 4 = Very much, 5 = Extremely)



	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
Amazed (1)	○	○	○	○	○	○	○	○	○	○
Powerful (2)	○	○	○	○	○	○	○	○	○	○
Bored (3)	○	○	○	○	○	○	○	○	○	○
Comfortable (4)	○	○	○	○	○	○	○	○	○	○
Hateful (5)	○	○	○	○	○	○	○	○	○	○
Calm (6)	○	○	○	○	○	○	○	○	○	○
Upset (7)	○	○	○	○	○	○	○	○	○	○
Indifferent (8)	○	○	○	○	○	○	○	○	○	○

Q18 How likely are you to purchase the product in the advertisements?
(1 = Extremely unlikely, 2 = Moderately unlikely, 3 = Neutral, 4 = Moderately likely, 5 = Extremely likely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
1 (1)	○	○	○	○	○	○	○	○	○	○

End of Block: New #5

Start of Block: New #6

Q19 To what extent do the background colors of these social media advertisements make you feel:
(1 = Not at all, 2 = Very little, 3 = Moderately, 4 = Very much, 5 = Extremely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)

Amazed (1)	○	○	○	○	○	○	○	○	○	○
Powerful (2)	○	○	○	○	○	○	○	○	○	○
Bored (3)	○	○	○	○	○	○	○	○	○	○
Comfortable (4)	○	○	○	○	○	○	○	○	○	○
Hateful (5)	○	○	○	○	○	○	○	○	○	○
Calm (6)	○	○	○	○	○	○	○	○	○	○
Upset (7)	○	○	○	○	○	○	○	○	○	○
Indifferent (8)	○	○	○	○	○	○	○	○	○	○

Q20 How likely are you to purchase the product in the advertisements?
(1 = Extremely unlikely, 2 = Moderately unlikely, 3 = Neutral, 4 = Moderately likely, 5 = Extremely likely)

	Ad #1					Ad #2				
	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)
1 (1)	○	○	○	○	○	○	○	○	○	○

End of Block: New #6

Start of Block: Color Ranking

For the following **three** questions, please drag and drop the items in your preferred order.

Q21 Please rank the following colors according to how attractive you find them.
(1 = Most favorite, 3 = Least favorite)

_____ 

_____ 

_____ 

Q22 Please rank the following colors according to how attractive you find them.
(1 = Most favorite, 3 = Least favorite)

_____ 

_____ 

_____ 

Q23 Please rank the following colors according to how attractive you find them.
(1 = Most favorite, 3 = Least favorite)

_____

_____

_____

End of Block: Color Ranking

Appendix D. Raw Survey Data

Appendix D.1 Raw data for chroma advertisement #1

Q8#1_1	Q8#1_2	Q8#1_3	Q8#1_4	Q8#1_5	Q8#1_6	Q8#1_7	Q8#1_8	Q8#2_1	Q8#2_2	Q8#2_3	Q8#2_4	Q8#2_5	Q8#2_6	Q8#2_7	Q8#2_8	Q10#1_1	Q10#2_1
Amazed (High)	Powerful (High)	Bored (High)	Comfortable (High)	Hateful (High)	Calm (High)	Upset (High)	Indifferent (High)	Amazed (Low)	Powerful (Low)	Bored (Low)	Comfortable (Low)	Hateful (Low)	Calm (Low)	Upset (Low)	Indifferent (Low)	Purchase possibility (High)	Purchase possibility (Low)
3	1	2	3	1	3	1	2	2	1	3	3	1	3	1	3	3	2
4	4	2	2	3	1	1	2	2	3	4	3	2	4	2	3	3	4
5	4	1	2	3	1	2	2	2	1	4	4	1	5	1	3	2	5
5	2	4	1	4	5	3	3	4	5	4	5	2	3	2	4	4	5
4	4	1	2	2	1	3	4	2	5	2	4	1	3	1	3	4	5
4	4	1	4	1	3	1	1	3	5	1	4	1	4	1	1	4	5
3	4	2	3	2	2	1	3	3	3	4	5	1	3	1	2	2	2
2	1	4	3	1	2	1	5	1	1	5	2	1	1	1	5	1	1
2	2	2	2	2	2	2	5	1	1	1	1	1	1	1	5	4	1
4	4	1	2	1	2	1	1	2	2	5	2	1	4	1	2	4	3
2	3	1	3	1	3	1	5	2	2	3	4	1	5	1	5	1	1
4	4	1	3	1	2	1	2	2	2	4	4	1	3	1	4	4	2
3	2	1	4	1	2	1	2	2	4	1	4	1	3	1	3	4	3
4	4	1	5	1	2	1	2	2	2	4	4	1	2	1	4	4	2
2	2	3	3	1	3	1	4	2	2	4	4	1	4	1	5	2	1
4	3	4	4	4	3	4	3	3	3	4	3	4	4	4	4	4	4
3	3	1	4	1	1	1	1	1	1	5	1	1	1	2	3	3	1
2	1	2	3	1	4	1	3	1	1	4	3	1	5	1	4	2	2
3	4	1	3	2	2	2	2	1	1	4	1	1	1	3	5	2	1
2	1	2	3	1	2	1	4	1	1	2	3	1	2	1	4	3	2
4	4	4	4	1	4	4	4	3	4	4	4	4	3	3	3	4	2
4	4	2	4	2	3	2	2	2	2	4	4	2	4	2	2	4	3
3	5	1	4	1	2	1	1	2	1	1	3	1	4	1	1	3	3
4	4	1	4	2	4	2	2	2	2	4	2	3	3	5	4	4	2
3	3	2	2	1	2	1	4	2	2	2	3	1	2	1	4	3	3
3	4	2	5	1	4	1	4	1	2	4	5	1	2	1	4	4	2
4	4	1	4	1	4	1	1	2	2	5	2	2	2	4	3	4	1
3	4	3	3	1	3	1	3	3	3	3	4	1	4	1	3	1	1
2	2	4	4	1	3	4	3	4	3	2	4	1	4	2	4	2	4
3	4	4	5	1	3	1	3	5	5	3	3	1	4	1	3	2	4
4	4	2	4	2	3	2	2	2	3	5	4	3	4	4	3	4	3
2	3	1	2	1	1	2	1	1	2	3	4	1	2	1	2	1	1
3	5	1	2	1	1	2	3	2	2	5	3	1	5	1	1	2	2
3	3	2	3	1	1	1	1	2	3	2	3	1	3	1	1	3	3
2	1	1	2	1	1	1	4	1	1	1	1	1	2	1	4	1	1
4	4	1	1	1	2	1	3	2	2	4	1	1	2	1	3	4	1
5	4	2	4	1	2	1	3	3	3	3	4	1	4	1	3	3	2
5	4	2	3	1	3	1	1	3	3	3	4	1	4	2	1	2	2
1	4	1	4	1	4	1	5	1	3	2	4	1	4	1	5	4	3
3	1	4	4	1	2	1	5	3	1	4	4	1	4	1	5	1	1
4	3	2	3	1	3	1	3	2	4	3	4	3	4	2	3	2	1
2	4	2	3	1	4	1	4	1	3	4	1	1	3	2	3	2	2
4	3	2	5	1	3	1	1	2	2	5	2	3	2	4	2	1	1
4	5	2	4	1	2	1	1	3	3	2	3	1	2	1	1	4	3
3	2	3	3	1	2	1	1	2	1	4	2	1	2	1	1	2	1
4	5	1	3	1	2	2	1	2	3	5	3	1	4	3	3	4	3
3	2	1	4	1	1	1	4	1	2	1	3	1	1	1	4	2	1
4	4	1	4	1	3	1	3	3	2	3	4	1	3	1	3	4	4

3	3	4	4	1	4	1	4	2	2	5	3	1	4	1	5	2	1
1	1	1	4	1	1	1	4	3	3	1	4	1	3	1	4	1	1
3	4	2	3	2	2	2	1	2	2	4	2	2	4	3	1	3	1
1	1	2	4	1	3	1	5	1	1	4	3	1	2	4	2	4	2
3	4	1	4	1	1	1	3	2	2	4	4	1	5	1	3	5	3
5	5	1	3	1	3	1	1	4	3	1	5	1	4	1	1	4	4
4	4	2	4	1	2	1	3	2	3	4	4	1	2	1	3	4	3
4	5	1	2	1	1	2	4	2	3	4	3	2	3	1	3	5	4
4	4	2	4	1	2	1	1	1	1	3	2	1	1	1	2	4	2
4	4	1	3	1	3	1	3	2	2	3	1	1	3	1	3	3	1
5	3	1	5	1	2	1	1	1	1	5	1	1	5	3	3	4	2
3	2	3	3	1	1	1	1	3	2	2	1	1	1	1	1	3	3
2	4	3	2	2	1	1	5	1	2	5	4	4	4	2	4	4	3
1	1	1	3	1	3	1	3	2	1	1	3	1	3	1	1	1	1
4	3	1	4	1	3	1	2	1	1	3	2	3	4	3	4	4	2
4	1	5	4	1	5	1	1	2	1	5	4	1	3	1	1	3	3
4	3	2	4	1	4	1	3	2	3	4	3	1	5	3	3	4	3
4	4	1	3	1	2	1	2	2	3	5	3	3	3	4	1	4	1
4	4	1	3	1	5	1	1	1	1	5	1	5	1	3	5	3	1
4	4	2	5	1	4	1	1	3	4	2	4	1	5	1	1	5	4
4	4	2	3	1	2	1	3	3	3	3	3	2	2	2	3	1	1
4	3	1	3	1	2	1	4	5	4	2	4	1	4	3	4	3	5
5	5	1	5	1	3	1	1	1	1	5	2	1	1	1	1	5	1
3	4	2	3	1	3	1	1	2	1	4	3	1	2	1	3	3	2
5	5	4	4	2	3	1	4	4	4	3	4	2	5	1	3	3	3
4	3	3	5	1	3	2	3	3	4	2	5	1	4	3	3	3	3
4	5	1	2	1	1	1	4	1	1	5	3	2	4	4	2	4	1
4	5	2	4	1	3	1	1	4	2	2	3	1	4	1	3	4	2
3	2	2	3	1	3	1	4	2	1	3	2	1	3	2	4	3	2
3	4	3	4	1	4	2	2	2	2	4	3	2	3	3	4	3	2
3	2	2	4	1	4	1	1	2	1	4	2	1	3	1	2	1	1
4	4	2	4	1	2	1	3	2	2	4	2	2	3	2	3	4	2
5	2	2	4	1	1	1	1	3	5	3	4	1	1	1	1	1	1
5	5	1	4	1	3	1	3	4	3	3	4	1	4	2	3	5	3
4	2	2	5	1	3	1	1	3	1	4	5	1	4	3	1	3	2
2	1	3	4	1	3	1	3	1	1	3	3	1	4	1	3	1	1
3	2	4	2	1	3	1	5	1	1	5	1	1	1	1	5	2	1
3	3	2	4	1	3	2	3	2	3	4	3	1	4	2	3	4	3
4	1	1	1	1	1	1	5	2	1	1	1	1	1	1	5	4	2
4	4	1	4	1	1	3	1	2	2	3	1	2	3	2	1	4	1
3	3	3	4	1	3	1	1	2	2	5	1	2	1	3	5	3	1
2	3	2	3	1	2	1	3	2	2	3	2	1	4	1	5	3	2
3	2	2	3	2	3	2	2	2	2	2	3	2	3	2	1	3	3
2	1	2	4	1	4	1	2	2	1	4	2	1	3	1	4	3	2
4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	2
4	4	2	4	1	3	2	2	1	2	4	3	2	3	4	3	4	3
2	3	2	3	1	2	1	3	2	2	2	3	1	3	1	4	3	3
1	1	4	3	1	1	2	1	2	3	1	4	1	4	1	1	1	3
4	5	2	2	2	1	1	3	3	2	3	4	1	4	1	5	5	2
4	4	2	4	1	2	1	2	3	3	4	3	1	4	1	4	3	2
4	4	1	4	1	3	1	1	3	3	2	5	1	4	1	1	1	1
3	3	3	2	1	3	1	3	3	4	3	3	1	2	1	3	2	2
3	1	1	1	1	4	1	1	1	1	4	1	1	2	3	1	4	2
2	2	5	3	2	1	4	1	4	4	1	5	1	5	2	3	3	5
4	4	2	4	1	1	1	3	2	2	4	3	3	4	3	3	4	2
3	2	4	3	2	4	2	3	4	4	2	3	2	3	2	3	2	3
1	5	1	4	1	3	1	2	1	2	1	2	3	3	1	2	5	3
1	2	1	5	1	3	1	1	1	5	3	3	1	3	1	1	4	3

4	4	1	3	2	2	3	1	2	3	2	4	2	4	3	3	4	4
5	5	1	5	1	2	1	1	1	3	5	2	5	4	5	5	5	1
5	5	1	5	1	5	1	1	3	3	3	3	3	3	3	5	4	2
4	5	4	3	1	2	4	3	2	1	2	3	1	4	4	4	4	3
4	4	1	4	1	3	1	3	3	3	1	3	1	4	1	3	4	3
1	1	1	1	1	3	1	3	1	1	1	1	1	3	1	3	3	3
4	4	5	3	1	3	1	4	2	3	2	4	1	5	1	2	2	3
3	4	1	3	1	3	1	3	1	2	3	2	1	2	2	3	2	1
4	4	2	4	1	3	1	1	3	3	3	4	1	2	1	1	5	4
4	4	1	3	1	1	1	3	2	2	5	4	2	4	1	3	4	3
3	4	1	4	1	3	1	1	1	2	4	3	1	1	1	4	4	1
4	3	1	4	3	4	1	2	1	2	4	2	2	1	5	4	5	1
4	4	2	5	1	4	1	1	2	2	4	3	4	4	2	5	4	2
4	4	2	3	3	2	3	3	2	2	4	2	3	4	2	3	4	1
3	4	2	3	3	2	3	3	2	2	4	3	3	4	3	3	4	3
4	4	2	5	2	2	4	4	2	2	4	3	3	4	2	4	4	2
4	4	2	4	2	4	2	2	4	3	4	4	2	4	2	2	4	3
4	5	2	4	1	4	1	3	3	3	4	3	3	3	3	3	3	2
4	3	3	2	1	2	1	5	3	3	4	3	1	4	1	5	3	3
2	2	3	3	1	2	1	4	2	2	3	3	1	3	1	4	2	2
3	4	2	4	1	2	1	2	2	3	4	3	1	2	1	3	4	2
4	4	2	4	1	2	2	2	3	3	3	4	1	4	3	4	3	3
4	3	1	2	1	2	1	3	2	4	2	5	1	5	1	4	5	3
3	3	1	4	1	2	1	2	2	2	2	2	1	4	1	3	4	2
3	1	1	3	1	3	1	2	2	1	2	2	1	2	1	1	4	2
3	4	2	4	1	2	1	3	2	2	4	2	1	2	1	3	4	1
4	5	2	4	1	3	1	2	4	4	2	3	1	4	1	2	2	2
4	4	3	4	1	3	1	2	3	3	4	4	1	4	2	3	4	3
3	3	1	4	1	4	1	2	2	1	2	3	1	4	1	3	4	3
4	4	2	4	1	2	1	4	2	2	4	2	1	2	1	5	1	1
5	5	1	3	1	5	1	1	3	3	4	2	3	2	5	5	5	1
5	4	4	3	1	3	2	3	4	4	3	4	3	4	2	3	2	3
4	3	2	4	1	2	1	1	3	2	3	3	1	4	1	2	2	2
5	5	5	5	5	5	5	5	1	1	1	1	1	1	1	1	2	1
4	4	1	4	1	4	1	1	1	2	5	1	2	2	3	3	2	1
5	3	2	4	1	4	1	2	3	2	5	2	3	3	3	3	4	2
4	4	2	4	2	4	2	3	2	2	4	2	4	2	4	3	4	3
5	5	1	5	1	3	1	1	2	2	5	4	1	3	2	3	4	2
4	4	2	3	1	2	1	1	2	2	4	2	3	3	2	1	3	1
4	4	2	3	3	2	3	2	2	2	5	3	3	4	3	4	1	1
4	4	2	3	1	2	1	1	3	3	4	4	1	4	1	1	2	2
3	4	2	4	1	4	1	3	3	3	4	4	1	4	1	3	3	2
3	4	1	3	1	3	1	2	2	3	4	2	1	4	1	4	2	2
4	3	2	4	1	4	1	1	4	3	2	4	1	3	1	1	2	2
3	4	2	4	1	4	1	3	1	2	3	2	1	3	2	3	3	1
4	1	2	5	1	4	1	4	2	1	5	2	1	4	1	2	1	1
3	4	2	3	1	3	1	1	2	2	4	3	3	4	2	5	4	2
5	5	1	3	1	3	1	1	1	1	3	2	2	2	2	2	4	2
5	5	1	3	2	3	3	2	3	3	5	3	3	3	3	4	2	1
2	3	3	4	1	3	1	1	3	4	3	3	1	2	1	2	3	4
3	3	2	4	1	3	1	3	2	2	4	3	1	3	1	4	4	2
3	3	1	3	1	3	2	2	1	2	4	2	1	2	4	3	3	2
3	1	1	5	1	4	1	1	1	1	2	4	1	4	1	3	4	2
3	3	2	3	1	3	1	3	3	3	2	4	1	4	1	3	4	4
4	5	1	3	1	2	1	3	2	3	2	4	1	4	1	4	4	3
5	5	2	3	1	2	1	2	3	3	4	3	1	4	1	2	4	3
4	1	1	4	1	3	1	3	3	1	1	3	1	2	1	3	3	2
2	2	1	4	1	1	1	1	4	2	1	4	1	3	1	1	1	2

4	4	1	3	1	2	1	1	2	2	5	3	3	5	4	4	2	1
5	5	1	5	1	2	1	2	4	3	2	5	1	5	2	3	4	4
3	3	3	3	1	3	1	1	4	4	3	4	1	4	1	1	3	4
2	3	3	3	1	2	1	4	2	2	4	4	1	4	1	4	1	1
3	1	2	3	1	2	1	4	2	1	2	3	1	3	1	4	1	1
3	4	2	4	1	3	1	4	2	2	2	4	1	3	1	4	3	3
2	2	2	4	1	4	3	3	2	2	3	4	1	5	2	3	3	3
4	4	2	3	1	2	1	1	1	1	5	3	1	3	4	1	2	1
5	5	4	4	4	5	4	5	1	2	3	2	3	3	2	3	4	2
1	1	1	3	1	3	1	5	1	1	1	3	1	3	1	5	1	1
5	4	1	4	1	3	1	2	2	2	5	3	4	2	4	5	1	1
4	2	1	3	1	2	2	2	1	4	4	3	1	4	3	4	3	2
5	5	1	4	1	3	1	1	4	3	2	5	1	4	1	1	5	4
4	5	2	3	1	2	2	2	1	1	2	1	3	3	3	4	3	1
4	5	1	4	1	3	1	4	2	3	3	3	1	5	4	4	4	3
4	3	1	4	1	2	1	2	5	4	1	4	1	3	1	4	4	4
4	4	2	3	1	2	1	2	3	3	4	2	3	3	2	2	3	1
4	3	1	4	2	2	2	3	2	3	1	2	3	4	2	4	4	3
4	4	4	4	4	4	4	4	2	2	5	2	2	2	2	2	2	1
3	4	1	4	1	4	1	3	3	4	2	3	1	5	1	3	5	4
4	4	2	4	2	3	2	2	3	3	3	3	2	4	2	3	4	3
2	2	5	2	1	3	2	2	4	4	2	4	4	4	4	4	2	3
4	5	2	3	1	2	1	1	3	3	4	4	1	5	1	1	4	3
3	3	2	4	1	4	1	1	3	3	2	2	1	1	1	1	3	1
4	3	4	4	2	2	4	4	2	2	4	3	3	4	2	4	4	2
4	4	2	4	1	2	1	3	3	3	3	4	1	4	1	3	1	1
4	3	1	4	1	1	1	3	1	1	1	1	1	1	1	1	3	1
5	5	1	3	1	4	3	5	2	1	5	3	5	3	2	1	4	1
3	4	2	1	3	2	3	2	3	5	3	5	3	5	3	3	2	3
4	4	2	3	1	3	1	2	3	3	5	3	1	4	1	4	4	2
3	2	1	3	1	2	1	4	2	2	1	2	1	1	1	4	3	2
2	1	1	3	1	3	1	4	1	1	4	3	1	4	1	5	1	1
4	3	1	4	1	2	1	1	3	2	2	3	2	4	1	2	4	3
4	3	1	4	1	4	1	1	2	1	1	3	2	3	2	4	3	1
4	3	1	4	1	3	1	1	2	2	3	2	1	3	1	3	2	1
4	3	2	4	1	5	1	3	3	5	3	3	1	3	2	3	1	1
2	2	1	2	1	2	1	2	2	2	2	3	1	3	1	3	2	2
2	1	2	4	1	3	1	3	1	3	4	4	1	4	1	3	2	2
4	5	2	2	1	3	1	2	3	2	4	4	5	4	1	4	4	2
4	4	2	4	1	4	1	3	3	3	3	4	2	3	3	3	1	1
3	3	1	4	1	3	1	3	2	2	3	4	2	3	2	3	2	2
2	1	4	3	1	3	1	5	1	1	5	1	3	1	3	3	1	1
3	4	2	4	2	3	1	3	4	4	2	4	1	4	1	2	2	2
4	3	2	4	1	3	1	3	3	3	4	3	1	4	1	3	4	3
4	4	2	4	1	4	1	1	3	2	3	3	1	4	1	1	4	3
4	4	2	4	2	3	2	3	3	3	1	2	1	2	1	2	2	2
3	1	1	3	1	2	1	1	1	1	4	2	1	4	1	2	4	3
2	1	2	2	1	2	1	2	1	1	3	2	1	2	1	3	3	3

Appendix D.2 Raw data for value advertisement #1

Q11#1_1	Q11#1_2	Q11#1_3	Q11#1_4	Q11#1_5	Q11#1_6	Q11#1_7	Q11#1_8	Q11#2_1	Q11#2_2	Q11#2_3	Q11#2_4	Q11#2_5	Q11#2_6	Q11#2_7	Q11#2_8	Q13#1_1	Q13#2_1

Amazed (High)	Powerful (High)	Bored (High)	Comfortable (High)	Hatefull (High)	Calm (High)	Upset (High)	Indifferent (High)	Amazed (Low)	Powerful (Low)	Bored (Low)	Comfortable (Low)	Hatefull (Low)	Calm (Low)	Upset (Low)	Indifferent (Low)	Purchase possibility (High)	Purchase possibility (Low)
2	1	2	3	1	3	1	2	2	1	3	2	1	3	1	3	3	2
2	2	4	4	1	3	2	4	1	3	5	2	3	1	3	2	4	3
2	3	4	4	1	4	2	2	5	4	3	2	2	2	3	4	5	3
5	5	2	4	1	5	2	4	4	3	4	2	3	2	5	3	4	3
4	3	5	4	1	3	1	4	3	2	5	3	2	1	2	5	4	2
4	1	1	4	1	3	1	1	1	1	3	1	1	2	1	1	3	2
3	3	3	4	1	3	1	5	1	1	3	2	1	1	1	3	3	2
2	2	5	2	1	1	1	5	2	2	5	2	1	1	1	5	1	1
2	2	2	2	2	2	2	5	2	2	2	2	2	2	2	5	1	3
4	3	4	1	1	2	1	5	3	4	1	4	1	3	1	2	3	4
3	2	2	4	1	3	1	4	2	2	2	2	3	2	3	3	4	1
2	2	4	4	1	4	1	5	2	1	4	3	1	4	1	5	1	1
3	3	4	2	1	2	1	5	3	3	4	3	1	3	1	5	1	1
2	1	4	3	1	3	1	5	3	2	4	3	1	3	1	4	1	1
1	1	4	4	1	4	1	5	1	1	4	4	1	4	1	5	1	1
5	4	5	4	3	4	3	3	4	4	4	4	3	5	5	5	4	4
1	3	1	3	1	2	1	1	1	1	3	2	1	3	1	1	3	2
1	1	2	3	1	3	2	3	1	1	2	4	1	5	1	3	3	3
2	2	2	2	2	2	2	2	3	3	2	2	3	3	3	2	2	2
1	1	3	2	1	2	1	3	1	1	1	4	1	4	1	2	1	2
3	4	3	3	3	4	4	4	3	5	3	4	3	3	3	3	4	3
5	5	2	4	1	3	2	1	4	4	2	4	1	4	2	1	5	4
1	5	1	4	1	1	3	1	3	1	3	1	1	3	4	1	3	1
2	2	5	2	4	2	2	3	3	3	3	5	2	5	4	2	2	4
1	1	2	2	1	2	1	3	2	2	2	3	1	3	1	3	2	3
3	4	2	5	1	3	1	3	1	1	3	5	1	2	1	4	2	2
4	4	1	2	1	3	1	1	3	3	3	3	1	4	1	1	2	2
2	2	3	2	1	3	1	3	2	2	3	2	1	3	1	3	1	1
5	4	2	4	3	3	4	3	3	2	4	2	2	3	2	2	3	4
3	4	4	3	1	2	1	1	4	4	1	4	1	4	1	1	4	4
2	2	4	2	3	3	1	3	2	2	4	2	3	3	1	3	1	1
1	1	3	1	1	3	1	3	1	1	3	2	1	3	2	3	1	1
4	4	1	3	1	1	2	2	2	2	5	4	1	5	2	3	2	2
2	2	4	3	1	1	1	1	2	2	3	3	1	1	1	1	3	3
1	1	1	2	1	2	1	3	1	1	1	2	1	2	1	3	3	3
4	3	1	4	1	3	1	3	4	3	1	4	1	3	1	3	4	4
2	2	4	4	1	3	1	4	2	2	3	4	1	4	1	3	1	2
3	3	2	4	1	5	1	2	3	3	1	4	1	4	1	2	4	4
1	1	4	4	1	4	1	5	1	1	4	4	1	4	1	5	1	1
2	1	5	4	1	5	1	5	1	1	5	2	2	5	1	5	1	1
4	4	3	3	2	4	1	1	3	3	3	4	2	5	1	1	2	2
2	2	4	2	2	2	2	4	3	2	2	3	1	3	1	3	1	2
3	3	5	2	3	2	2	1	5	4	2	4	2	4	1	1	1	1
3	4	2	1	1	1	1	2	5	5	2	3	1	4	1	1	2	4
2	2	4	1	1	3	1	1	2	2	4	1	1	3	1	1	1	1
3	2	4	5	1	3	1	4	4	2	3	5	1	4	1	3	2	2
4	2	2	3	1	3	1	2	4	3	1	4	1	4	1	2	2	2
3	3	3	3	1	3	1	3	4	3	2	4	1	4	1	2	4	4
1	1	5	2	1	3	1	5	2	1	4	3	1	3	1	5	1	1
1	1	2	3	1	1	1	3	1	1	2	3	1	1	1	3	1	1
2	2	2	2	1	2	2	3	4	4	4	4	1	3	1	3	2	4
4	3	1	5	1	4	1	1	2	1	3	2	2	3	1	3	4	2
4	3	4	2	1	2	1	2	4	4	2	4	1	3	1	3	3	5
3	2	3	2	1	4	1	2	3	4	2	4	1	4	1	1	2	3

3	2	4	4	1	4	1	4	2	2	4	4	1	4	1	5	3	1
2	3	2	1	3	2	2	4	3	4	3	3	2	4	1	3	2	3
5	4	2	4	1	1	1	1	3	2	4	3	1	1	1	1	3	2
3	3	2	3	1	3	1	3	3	2	2	3	1	2	1	3	2	3
2	2	3	4	1	4	2	4	2	2	4	2	1	3	3	4	2	2
4	4	1	5	1	5	1	3	2	3	4	3	1	2	1	3	4	2
2	3	2	2	1	3	1	4	1	1	4	3	1	4	1	5	3	1
1	1	4	1	1	3	1	3	1	1	3	2	1	3	1	3	1	1
3	1	2	4	1	5	1	2	3	1	2	4	1	3	1	4	3	2
2	1	1	4	1	3	1	1	4	1	1	4	1	5	1	1	1	1
2	3	2	2	1	4	1	3	2	3	4	3	1	5	1	2	4	2
2	2	4	3	1	1	1	1	3	3	2	3	1	2	1	3	1	1
5	5	1	5	1	4	1	1	1	1	5	1	5	1	5	5	5	1
4	4	1	4	1	4	1	2	4	3	1	5	1	5	1	2	3	4
2	2	4	2	3	3	2	3	4	3	2	4	2	4	1	3	1	2
2	4	2	3	1	2	3	4	5	3	4	5	1	5	3	4	4	5
1	1	3	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1
3	3	3	4	1	3	1	2	1	1	4	2	1	2	1	3	3	1
5	5	3	4	2	3	2	2	4	4	3	4	2	4	2	2	4	4
3	5	4	3	3	5	2	3	4	3	3	3	4	5	2	3	5	3
3	2	4	1	1	1	1	2	3	2	4	1	1	1	1	2	1	1
3	2	4	5	1	3	1	1	3	1	4	4	1	2	1	1	3	1
2	2	3	3	1	3	1	3	2	2	2	3	1	4	1	3	2	3
2	2	4	3	2	3	2	3	3	4	2	3	2	4	2	3	2	2
2	2	3	3	5	3	1	2	3	2	2	3	1	3	1	2	1	1
2	3	3	2	1	2	1	3	2	2	2	4	1	5	1	3	1	1
3	3	3	5	1	4	1	1	3	3	3	4	1	5	1	1	3	2
5	1	4	5	2	5	4	4	1	3	4	2	4	2	4	4	1	3
4	5	3	5	1	3	1	1	2	1	4	3	3	5	2	1	3	1
1	1	4	3	1	3	1	4	1	1	4	4	1	4	1	4	1	1
3	2	2	2	2	3	3	2	2	3	3	3	2	2	4	4	4	2
1	1	3	3	2	2	1	4	2	2	1	3	2	4	1	2	2	3
1	1	4	1	1	2	1	5	1	1	1	2	1	3	1	5	1	1
3	4	2	4	1	3	3	3	1	1	4	2	3	3	1	1	4	2
3	2	2	2	1	3	1	4	3	3	1	4	1	4	1	1	2	4
1	1	3	2	1	2	1	2	1	1	3	3	1	4	1	3	1	1
2	2	5	3	2	3	2	2	2	2	5	2	2	3	2	2	3	3
1	1	3	3	1	2	1	5	1	1	2	3	1	3	1	4	1	1
3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	1	2
4	4	2	4	2	4	2	2	1	2	3	3	3	2	3	3	4	2
2	3	3	5	1	4	1	3	2	2	3	2	1	3	1	3	4	2
1	1	4	3	1	2	1	1	1	1	4	3	1	2	1	1	1	1
1	2	3	2	2	2	3	4	4	3	2	4	1	5	2	4	3	4
3	2	3	3	1	4	2	3	4	3	2	4	1	5	1	2	2	3
1	1	5	5	3	2	1	1	2	3	3	4	2	3	2	2	1	1
3	3	4	3	1	1	1	2	3	3	4	3	1	1	1	2	1	1
1	1	4	1	1	1	1	1	3	1	2	4	1	4	1	1	1	2
5	5	2	3	1	5	1	3	1	2	5	3	4	2	4	3	4	3
5	5	1	5	1	1	1	2	3	3	2	3	1	3	3	3	5	3
3	4	2	4	2	3	2	4	1	2	4	2	4	3	2	2	3	1
1	4	1	3	1	3	1	4	1	2	1	4	1	2	2	1	5	2
3	3	1	4	1	1	1	1	3	3	1	3	1	1	1	1	2	2
3	2	3	4	1	3	1	2	3	2	3	4	1	4	1	2	3	3
5	5	1	5	1	5	1	1	1	1	5	1	5	1	5	5	3	1
5	5	1	5	1	4	1	1	5	5	1	5	1	1	1	1	4	2
4	5	3	3	1	4	2	2	2	3	2	3	1	3	2	3	2	2
4	4	1	3	1	2	1	3	4	4	1	3	1	2	1	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3

1	1	5	4	1	4	2	5	2	1	5	2	1	3	3	5	1	1
1	3	4	2	1	2	2	2	3	2	2	4	1	4	1	3	1	3
5	5	1	4	1	4	1	1	4	4	1	4	1	3	1	1	5	4
5	5	1	5	1	1	1	3	3	3	1	2	1	1	1	3	2	2
2	2	3	1	1	1	1	4	3	3	2	3	3	4	1	1	2	2
5	5	1	5	1	3	1	1	1	1	5	1	5	3	5	5	5	1
3	4	3	3	1	3	1	3	4	3	2	4	1	3	3	2	4	3
4	3	2	4	3	2	4	3	2	3	2	2	3	3	2	3	4	2
3	3	4	4	1	2	1	1	2	2	3	4	1	4	1	1	2	1
2	2	4	2	3	3	3	3	4	4	2	4	3	3	3	3	3	4
4	4	2	4	2	3	2	2	3	3	2	4	2	3	2	2	4	4
3	4	3	4	2	3	2	2	3	3	3	3	3	2	4	3	3	2
2	2	4	3	2	3	1	4	4	4	3	4	1	4	1	4	3	3
1	1	3	2	1	2	1	3	1	1	3	2	1	4	1	3	2	2
3	4	2	3	1	2	1	3	3	4	1	4	1	3	1	3	3	4
3	3	2	4	1	3	2	2	2	2	3	3	1	4	2	2	3	3
2	3	5	2	2	2	3	5	4	4	2	3	1	4	2	3	3	4
1	1	4	3	1	2	1	3	2	3	3	4	1	4	1	2	2	3
2	2	1	3	1	3	1	2	3	2	1	4	1	4	1	4	3	4
2	2	4	4	1	4	1	3	1	1	4	2	1	2	1	3	1	1
2	3	4	3	1	3	1	3	4	4	3	3	1	3	1	3	2	2
3	4	4	3	1	3	1	3	3	3	4	4	1	5	1	3	1	2
1	1	3	3	1	3	1	3	3	2	2	4	1	4	1	2	1	2
4	2	5	3	1	3	1	4	2	2	5	3	1	3	1	4	4	3
4	4	1	5	1	5	1	1	2	2	4	4	1	3	1	3	4	3
3	4	3	3	2	2	1	3	4	4	2	3	1	3	1	3	2	3
3	2	4	4	1	3	1	4	3	2	4	3	1	3	1	4	1	1
3	2	2	4	3	2	2	4	4	4	2	3	3	3	2	3	1	1
2	2	5	2	1	4	1	5	2	2	5	1	1	2	1	5	1	1
3	3	2	4	1	3	1	3	4	4	2	4	1	4	1	2	3	4
4	4	2	4	2	4	2	3	4	4	2	4	2	4	2	3	4	4
4	4	1	4	1	1	1	1	4	3	2	3	1	1	1	1	4	3
4	4	1	4	1	4	1	1	4	4	1	4	1	4	1	1	3	3
1	1	5	3	3	4	3	5	1	1	5	3	3	4	3	5	1	1
3	3	3	3	1	1	1	3	4	4	2	3	1	1	1	1	1	1
2	2	4	4	1	4	1	4	2	2	4	3	1	5	1	4	3	3
2	1	4	5	1	5	1	4	1	1	3	4	2	4	3	3	3	1
3	3	1	3	1	3	1	1	4	3	1	3	1	3	1	1	1	1
2	2	2	4	1	3	1	5	2	2	2	3	1	4	1	3	2	2
3	1	4	4	1	4	1	4	3	1	4	4	1	3	1	4	2	1
2	2	4	2	3	1	1	3	3	3	3	4	1	4	2	3	2	3
3	2	2	3	2	4	3	3	4	4	5	4	3	4	1	1	2	4
2	2	5	5	1	4	1	5	4	2	3	5	1	4	1	4	1	2
1	2	1	3	1	5	1	4	1	1	1	3	1	4	1	4	3	3
3	3	1	3	1	4	1	3	4	3	1	3	1	3	1	2	4	4
3	3	2	3	1	3	1	2	4	4	1	4	1	4	1	2	3	4
1	1	3	3	1	3	1	5	1	1	2	3	1	3	1	5	1	1
2	2	4	2	4	3	2	4	2	2	4	3	3	4	3	2	1	1
2	3	2	2	1	2	2	4	4	2	3	4	1	4	1	3	3	4
3	3	4	3	1	3	1	1	4	4	2	4	1	4	1	1	2	3
2	2	1	2	1	2	1	2	2	2	1	2	1	2	1	2	1	1
1	2	2	2	1	3	1	3	1	3	2	2	1	3	1	4	1	1
3	3	4	3	1	2	2	3	1	1	5	2	4	4	4	5	1	1
1	2	4	4	2	2	2	4	1	1	5	2	3	2	3	4	2	1
2	2	4	3	2	2	1	1	4	4	2	4	1	4	1	1	1	2
1	1	4	2	1	2	1	5	1	1	4	2	1	3	1	5	1	1
2	1	3	3	1	3	1	4	1	1	4	2	2	3	2	4	1	1
3	3	3	4	1	2	1	4	3	3	2	4	1	4	1	3	1	2

4	4	2	3	1	3	1	3	4	4	2	3	1	3	1	3	4	4
1	1	3	3	1	1	2	3	2	2	2	4	1	2	1	3	1	2
4	4	4	4	5	5	4	4	2	3	3	2	3	3	2	3	4	5
1	1	4	3	1	1	1	5	1	1	4	2	1	1	1	5	1	1
4	4	2	4	2	4	2	4	4	4	2	4	2	4	2	4	4	4
1	1	5	3	1	3	2	4	1	1	5	2	1	3	2	4	1	1
2	1	4	3	1	5	1	1	3	1	4	3	1	5	1	1	2	2
4	4	2	4	1	3	1	3	2	2	3	3	1	3	1	3	4	2
4	3	4	3	1	3	2	3	5	4	2	4	2	4	2	3	3	4
3	3	2	3	2	3	1	3	5	5	1	4	2	5	1	4	4	5
4	3	4	2	2	3	2	2	4	3	2	3	2	4	2	3	3	4
2	2	3	4	2	4	1	3	2	2	3	4	2	4	1	3	2	2
2	2	4	2	2	2	4	2	5	5	4	5	5	5	4	5	1	2
3	4	1	4	1	5	2	3	3	5	1	4	1	4	3	3	4	4
3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	2	2
2	2	3	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2
2	1	4	2	1	2	1	2	3	1	4	5	1	3	1	2	2	2
1	1	2	1	1	2	1	1	1	1	1	3	1	3	1	3	3	1
4	3	2	3	2	4	2	4	4	3	4	4	2	4	2	4	4	3
1	1	4	2	1	2	1	5	3	2	2	3	1	3	1	3	1	1
1	1	1	1	1	1	1	3	3	2	1	2	1	1	1	1	1	2
5	5	3	4	3	3	3	2	2	3	3	3	3	3	3	2	4	2
3	4	2	2	3	3	2	2	4	2	4	4	3	3	2	3	3	4
2	3	4	4	1	3	1	4	4	4	3	4	1	3	1	3	2	3
1	1	3	1	1	1	1	5	1	1	1	2	1	2	1	5	1	1
2	1	3	5	1	5	1	2	2	1	3	3	1	3	2	2	4	3
3	3	1	4	1	4	1	1	3	3	1	5	1	5	1	1	2	2
2	1	3	2	1	2	3	2	3	3	2	4	1	4	1	2	1	2
3	3	2	3	1	3	1	2	2	2	2	3	1	3	1	3	2	1
3	3	4	4	1	5	1	3	4	4	2	3	1	5	2	3	1	1
1	1	2	3	1	3	1	3	1	1	1	4	1	3	1	3	2	3
1	1	4	2	1	2	1	4	1	1	4	1	1	1	1	4	1	1
2	2	4	4	1	2	1	4	4	3	2	5	1	4	1	2	2	4
3	1	3	4	3	1	2	3	4	5	2	4	1	3	2	2	4	5
2	1	2	4	1	4	1	4	2	2	1	5	1	4	1	3	2	3
1	1	5	1	1	1	1	5	1	1	5	1	1	1	1	5	1	1
3	3	2	4	1	4	1	2	4	3	1	3	1	3	1	2	3	3
3	3	2	3	1	3	1	3	4	3	2	3	1	4	1	3	3	4
3	3	2	4	1	4	1	3	4	3	2	4	1	4	1	3	2	3
4	4	2	4	2	2	4	4	2	2	4	2	3	2	2	5	2	2
1	1	1	3	1	3	1	1	1	1	2	2	1	2	1	4	4	3
1	1	2	3	1	2	1	3	1	1	3	2	1	1	1	3	3	3

Appendix D.3 Raw data for hue advertisement #1

Q14#1_1	Q14#1_2	Q14#1_3	Q14#1_4	Q14#1_5	Q14#1_6	Q14#1_7	Q14#1_8	Q14#2_1	Q14#2_2	Q14#2_3	Q14#2_4	Q14#2_5	Q14#2_6	Q14#2_7	Q14#2_8	Q16#1_1	Q16#2_1
Amazed (High)	Powerful (High)	Bored (High)	Comfortable (High)	Hateful (High)	Calm (High)	Upset (High)	Indifferent (High)	Amazed (Low)	Powerful (Low)	Bored (Low)	Comfortable (Low)	Hateful (Low)	Calm (Low)	Upset (Low)	Indifferent (Low)	Purchase possibility (High)	Purchase possibility (Low)
2	1	1	3	1	3	1	2	2	1	2	3	1	3	1	2	3	3
4	4	2	1	2	1	2	3	2	1	4	3	1	4	1	2	4	2
5	4	2	2	3	2	2	4	2	2	4	3	1	5	1	2	2	4
4	5	2	1	2	2	1	5	2	3	4	3	4	3	4	4	3	1
2	4	2	2	1	2	3	4	2	3	4	3	1	4	1	2	1	3
3	3	3	4	1	2	1	1	5	5	1	3	1	3	1	1	3	4
2	2	2	3	2	2	2	2	4	3	3	4	2	2	2	3	2	3

3	2	1	3	1	2	1	3	4	2	1	3	1	2	1	2	3	4
2	2	2	2	2	2	2	5	2	2	2	2	2	2	2	5	2	3
4	5	4	5	1	5	1	2	4	5	1	3	1	3	1	3	5	4
3	3	2	4	1	3	1	3	4	4	1	3	1	1	1	3	2	2
2	2	3	4	1	3	1	3	4	4	2	2	1	2	1	2	2	4
3	3	4	4	1	3	1	3	3	4	3	4	1	2	1	3	3	3
2	2	3	4	1	3	1	3	4	4	2	4	1	3	1	2	1	3
3	2	3	3	1	3	1	3	3	3	2	3	1	4	1	2	2	3
3	3	4	4	4	4	3	4	3	3	3	4	3	4	3	4	4	4
1	1	1	1	1	2	1	4	2	3	1	2	1	1	1	1	1	2
3	1	4	2	1	3	1	2	3	1	2	2	1	3	1	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1
3	1	1	3	1	3	1	1	3	1	1	2	1	2	1	2	1	1
4	4	3	3	4	4	3	3	4	4	4	5	4	4	4	3	3	4
4	4	2	5	2	5	2	1	4	5	2	3	2	3	2	1	5	4
3	2	4	1	1	3	1	1	5	5	1	3	1	1	1	1	1	3
2	3	3	3	3	3	4	4	4	4	2	3	3	4	2	4	3	3
2	1	2	2	1	2	1	4	2	1	2	2	1	2	1	2	2	2
2	1	1	4	1	4	1	4	3	4	3	4	1	1	1	1	3	4
1	1	4	1	1	1	2	1	4	4	1	3	1	4	1	1	1	4
3	3	1	4	1	3	1	3	3	4	1	3	1	3	1	3	1	1
3	2	3	3	3	3	4	2	4	4	2	4	2	3	2	3	3	4
5	5	2	5	1	4	1	3	4	4	1	4	1	4	1	3	5	4
2	2	3	1	1	3	1	3	4	4	2	1	1	3	1	3	2	3
1	1	4	1	1	2	1	3	1	1	3	2	1	2	1	3	1	2
2	2	5	4	1	5	2	2	5	5	2	3	1	1	1	2	2	2
3	3	2	3	1	4	1	1	2	2	2	3	1	3	1	1	3	3
1	1	1	2	1	2	1	3	2	1	1	1	1	1	1	2	2	2
3	4	1	4	1	4	1	3	3	4	1	4	1	4	1	3	3	3
3	3	2	4	1	3	1	3	4	4	1	4	1	3	1	2	3	4
3	4	2	4	1	5	1	3	5	4	1	4	1	3	1	1	3	4
3	3	2	3	1	3	1	4	3	3	2	3	1	3	1	4	1	1
4	4	1	3	1	3	1	3	3	4	1	3	1	3	1	3	1	1
3	2	3	4	1	4	2	1	4	4	2	4	1	3	1	1	2	3
2	2	4	3	2	3	2	4	2	2	3	3	2	3	1	4	1	1
5	4	1	3	1	4	1	3	4	3	2	3	1	3	1	3	1	1
3	3	3	4	1	3	1	3	5	5	1	4	1	2	1	1	2	4
2	1	4	2	1	3	1	1	3	1	3	3	1	3	1	1	1	1
3	3	2	4	1	4	1	2	3	4	1	4	2	3	2	1	3	4
3	2	1	2	1	1	1	3	4	3	1	3	1	1	1	2	2	3
3	3	4	4	1	4	1	3	3	3	3	4	1	4	1	3	3	3
3	3	4	3	1	3	1	4	2	3	3	3	1	3	1	5	1	1
3	3	2	3	1	3	1	1	3	3	2	3	1	3	1	1	1	1
3	3	1	3	1	3	1	1	4	5	1	4	1	3	1	1	4	5
2	2	3	3	1	3	3	4	4	3	1	4	1	1	1	1	1	4
2	2	4	4	1	5	2	4	5	5	1	3	1	1	1	2	3	5
5	4	1	4	1	3	1	1	3	3	1	3	1	3	1	1	4	3
4	4	2	4	1	2	1	3	4	4	2	4	1	2	1	3	3	3
3	2	3	4	2	4	2	4	4	3	2	2	3	1	3	3	2	4
2	2	2	2	1	1	1	3	4	4	1	3	1	1	1	2	2	3
3	2	1	3	1	3	1	3	3	3	1	3	1	3	1	3	3	3
3	3	2	2	1	4	1	1	3	4	1	4	1	2	1	1	4	5
3	4	2	3	1	2	1	3	4	4	1	4	1	3	1	3	4	4
2	3	5	5	2	4	1	5	5	4	2	3	3	2	2	5	2	4
1	1	1	3	1	3	1	1	1	1	1	3	1	3	1	2	1	1
1	2	2	2	1	3	1	2	4	5	1	3	1	2	1	3	2	4
5	3	1	4	1	3	1	1	5	3	1	5	1	4	1	1	4	4
2	2	3	2	2	4	2	3	3	4	2	3	1	2	1	2	2	4

4	4	1	4	1	4	1	3	2	2	1	2	2	2	1	2	4	2
1	1	5	3	3	1	4	4	5	5	1	5	1	5	1	1	2	4
5	4	1	5	1	5	1	1	4	3	1	4	1	3	1	2	5	3
3	3	2	4	1	4	1	3	2	2	3	3	1	2	2	3	2	1
5	4	1	4	1	4	1	5	5	5	1	4	1	4	1	5	5	4
1	1	5	1	1	1	1	1	1	1	5	3	1	1	1	1	1	1
2	2	4	3	1	3	1	3	4	4	2	3	1	2	1	2	2	3
4	2	3	4	2	4	2	4	4	2	3	4	2	3	2	4	4	3
4	3	4	5	1	5	3	3	3	5	2	4	1	2	2	3	4	5
1	1	4	3	1	3	4	1	5	5	1	1	1	2	1	3	1	5
3	2	3	4	1	4	1	1	4	4	2	4	1	4	1	2	2	4
1	2	3	2	1	2	1	3	2	2	2	3	1	3	1	3	2	3
2	2	2	3	2	3	2	2	2	2	2	3	2	3	2	2	1	1
2	1	2	3	1	3	1	2	3	2	1	3	1	3	1	2	1	1
2	2	3	4	2	4	2	3	3	3	2	3	2	2	2	1	2	3
2	2	5	2	1	1	1	4	4	4	2	3	1	3	1	4	1	4
5	3	1	3	1	2	4	5	3	1	3	5	3	1	3	2	1	4
3	3	4	5	1	4	2	1	5	4	2	2	1	2	1	1	3	2
1	1	4	3	1	4	1	4	1	1	3	3	1	4	1	4	1	1
2	2	3	1	1	4	1	3	1	2	5	2	3	4	1	3	3	2
2	2	4	4	1	3	1	2	4	3	2	3	1	5	1	2	3	4
1	1	2	3	1	2	1	5	2	2	1	1	1	1	1	5	1	3
2	2	2	2	3	3	1	1	4	4	1	4	1	3	4	4	2	4
2	2	3	1	1	2	1	4	4	4	1	4	1	3	1	2	2	4
1	2	3	3	1	3	1	4	1	3	2	3	1	2	1	3	1	1
1	2	3	2	2	3	2	2	2	2	2	3	2	3	2	2	3	3
1	1	4	3	1	3	1	5	1	1	3	3	1	2	1	4	1	1
4	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	1	2
2	2	4	2	3	2	3	3	4	4	2	4	2	4	2	2	2	4
3	3	2	4	1	3	1	3	2	2	3	3	1	3	1	3	2	2
3	3	1	4	1	4	1	1	2	2	1	2	1	3	1	1	3	1
3	2	4	3	3	2	2	3	5	4	2	4	1	3	1	4	2	4
3	3	2	4	1	4	1	2	2	2	1	1	1	1	2	4	2	1
1	1	5	1	3	1	3	3	3	3	1	2	1	2	1	1	1	1
4	3	2	1	1	2	1	3	3	3	2	1	1	3	1	3	1	1
1	1	4	1	1	1	1	1	4	4	3	1	1	1	1	1	2	2
5	5	2	3	2	5	3	3	1	2	4	3	4	2	3	3	5	2
3	3	2	3	2	3	3	4	4	4	2	4	2	2	1	4	2	5
4	3	2	4	1	3	1	2	3	4	2	4	1	4	1	2	4	4
2	2	4	3	2	3	2	2	1	5	1	5	1	3	1	1	2	5
1	3	1	3	1	3	1	3	1	5	1	3	1	3	1	3	3	3
3	3	2	4	3	4	2	1	4	4	1	3	3	2	3	1	3	2
1	1	5	4	3	1	5	5	5	5	1	5	1	4	1	1	1	2
1	1	5	3	1	1	1	5	5	5	1	5	1	3	1	1	2	4
3	2	3	4	3	4	1	3	4	3	3	4	1	2	1	3	4	4
4	3	1	4	1	4	1	3	4	4	1	3	1	2	1	3	2	2
1	1	3	1	1	3	1	3	1	1	3	1	1	3	1	3	3	3
3	3	2	4	1	4	1	2	4	4	1	5	1	5	1	3	1	3
2	2	3	4	1	3	1	4	4	4	1	3	1	2	1	3	2	3
2	3	5	3	1	4	1	4	2	3	5	3	1	4	1	4	1	1
2	2	1	1	1	1	1	3	5	5	2	3	1	1	1	3	3	4
3	3	1	3	1	4	1	1	3	2	4	4	1	2	1	4	4	2
5	4	2	3	4	3	2	2	2	2	4	3	2	3	4	4	4	2
3	3	1	4	1	4	2	3	4	4	2	4	1	5	1	2	1	2
3	4	4	3	4	3	3	4	2	3	2	3	3	2	3	2	4	2
3	4	1	4	1	4	1	1	4	4	1	4	1	2	1	1	4	4
4	4	3	3	3	3	3	3	4	4	3	3	3	3	3	3	3	3
4	3	2	4	2	3	2	3	4	4	3	3	2	3	2	2	3	4

4	4	1	4	2	3	2	3	5	5	1	4	1	3	1	3	3	4
4	4	4	5	1	4	1	4	3	3	5	4	2	3	2	4	3	3
1	1	3	3	1	3	1	3	1	4	1	3	1	2	1	2	2	4
3	4	1	4	1	3	1	2	3	3	2	3	1	2	1	4	3	3
3	3	3	3	1	4	1	1	4	4	2	3	1	2	1	1	3	3
1	2	5	2	2	4	2	5	4	4	2	3	1	2	1	3	2	4
2	2	3	2	1	3	1	2	4	3	2	3	1	2	1	2	2	3
4	3	1	4	1	4	1	1	3	2	1	3	1	2	1	2	4	2
2	2	3	2	1	3	1	4	3	1	3	3	1	3	1	3	1	1
3	3	2	3	1	2	1	3	4	4	2	3	1	2	1	3	2	2
3	3	3	4	1	3	1	3	4	4	3	3	1	3	1	3	3	4
1	2	3	3	1	4	1	3	2	2	2	3	1	4	1	3	2	2
2	2	5	3	1	3	1	4	4	3	5	4	1	3	1	3	1	1
3	3	2	3	1	2	1	1	5	5	2	4	1	2	1	1	3	4
4	3	3	3	2	3	2	3	5	4	4	4	1	4	2	4	2	3
2	3	3	2	1	4	1	2	4	3	3	4	1	4	1	2	2	2
3	5	3	5	3	1	1	4	1	2	3	3	3	3	2	2	3	3
1	1	4	1	1	1	3	5	1	1	2	3	1	2	1	3	1	2
2	2	4	2	1	3	1	3	4	4	1	4	1	4	1	4	3	5
4	4	3	4	2	4	2	2	4	4	3	4	2	4	2	2	4	4
4	4	2	4	1	2	1	1	5	5	1	4	1	2	1	1	4	5
3	3	2	3	2	2	2	1	4	4	4	3	1	2	1	1	3	3
2	2	5	3	3	3	3	5	3	4	2	3	3	4	3	2	1	2
3	4	2	4	1	2	1	3	3	4	1	3	1	1	1	3	1	1
4	3	2	4	1	4	1	3	5	4	2	4	1	4	1	4	3	3
2	2	2	3	1	4	1	4	3	3	2	3	1	3	1	3	4	4
4	3	1	3	1	3	1	1	4	3	1	3	1	3	1	1	1	1
3	3	2	4	1	5	1	2	4	3	2	3	1	2	1	2	4	3
4	4	2	5	1	3	1	5	2	2	4	4	1	3	1	5	1	1
2	2	3	3	2	3	1	3	4	4	2	4	2	4	1	2	2	4
3	2	3	3	2	3	1	2	4	4	1	5	1	4	1	1	2	4
3	4	1	4	1	4	1	4	4	5	1	4	1	3	1	2	2	2
1	1	3	2	1	2	1	4	2	2	1	4	1	4	1	3	3	4
3	3	1	4	1	4	1	3	3	3	1	3	1	3	1	2	3	4
3	3	1	4	1	4	1	2	3	3	1	3	1	3	1	2	4	4
2	1	2	4	1	4	1	2	2	1	1	4	1	3	1	1	3	3
1	1	4	4	1	2	1	4	1	2	2	3	1	3	1	4	1	1
3	2	3	4	1	4	2	4	5	4	2	2	1	2	3	3	2	3
3	3	4	3	1	4	1	1	4	4	2	3	1	2	1	2	2	3
3	2	1	3	1	3	1	3	4	2	1	3	1	3	1	3	2	3
4	3	1	2	1	3	1	1	4	3	1	3	1	3	1	1	2	2
3	3	5	4	1	5	1	3	5	5	1	4	1	3	1	1	1	3
3	3	3	4	2	3	2	4	4	5	2	3	2	2	1	3	2	3
3	4	3	4	1	4	1	1	2	3	2	3	1	2	1	1	2	2
2	1	3	2	1	3	1	5	2	1	3	2	1	3	1	5	1	1
2	1	1	2	1	3	1	3	3	2	1	2	1	3	1	3	1	2
3	4	2	4	1	4	1	2	2	4	2	3	2	2	2	3	3	3
4	3	1	3	1	3	1	3	3	3	1	4	1	4	1	3	3	3
1	1	3	1	1	1	1	1	3	3	1	2	1	2	1	1	1	2
2	3	3	3	3	3	3	2	5	4	4	5	4	4	4	5	3	4
1	1	5	1	1	1	1	5	3	1	3	2	1	1	1	4	1	3
4	4	2	4	2	4	2	3	4	4	2	4	2	4	2	3	1	1
4	3	3	3	1	4	1	3	4	4	2	3	1	3	1	3	2	3
5	4	1	5	1	4	1	1	4	3	1	3	1	3	1	1	4	3
3	3	3	4	1	3	1	2	3	4	3	3	1	4	1	2	4	4
3	4	3	3	1	3	2	3	5	5	1	3	1	2	2	3	4	4
4	4	2	4	2	2	2	3	5	5	1	5	1	1	1	5	4	5
3	3	3	4	2	3	2	2	4	3	2	3	1	3	1	3	2	4

2	2	2	3	1	3	1	3	4	3	1	4	1	2	1	2	3	4
2	2	3	2	2	2	3	2	4	4	2	4	4	4	2	4	1	2
4	4	1	3	1	3	1	3	4	5	1	4	1	4	1	3	4	5
3	3	3	3	3	4	3	3	3	3	2	3	2	3	2	2	3	3
2	2	4	2	2	2	2	2	4	4	2	4	4	4	4	4	2	2
3	2	3	5	1	4	1	5	4	4	2	3	1	3	2	5	4	3
1	1	1	2	1	2	1	1	1	1	1	3	1	3	1	1	3	3
4	3	3	3	3	2	2	4	4	4	2	5	2	2	2	4	4	5
1	1	4	2	1	2	1	4	1	1	4	2	1	2	1	4	1	1
2	2	1	1	1	1	1	1	3	2	1	2	1	1	1	1	2	3
2	3	3	3	2	3	2	3	4	4	3	3	2	3	2	4	3	4
2	2	3	3	3	3	2	2	4	4	2	4	3	4	1	4	4	3
2	2	4	3	1	4	1	4	4	4	2	4	1	4	1	3	2	4
2	1	2	1	1	1	1	4	2	1	2	1	1	1	1	3	1	2
1	3	3	4	1	2	1	4	1	3	2	4	1	2	1	4	1	1
3	3	1	4	1	4	3	1	4	4	1	3	1	3	1	1	4	5
3	2	3	3	1	2	1	2	4	3	1	3	1	4	1	2	2	4
1	1	2	3	1	2	1	2	3	2	2	3	1	2	1	1	1	1
3	2	5	3	1	5	1	3	4	3	1	4	1	5	1	2	2	3
1	1	3	2	1	3	1	3	2	1	2	2	1	2	1	2	2	3
2	2	1	3	1	4	1	3	2	2	1	2	1	2	1	3	1	1
3	3	3	4	1	4	1	3	4	3	3	2	1	2	2	2	4	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
2	3	1	4	1	4	1	2	3	2	1	3	1	3	1	3	4	4
3	1	3	3	1	3	1	3	3	1	3	3	1	3	1	3	1	1
3	3	1	4	1	3	1	2	3	4	1	3	1	4	1	2	3	3
4	4	2	4	1	4	1	3	4	4	2	4	1	4	1	3	4	4
4	4	1	4	1	4	1	2	5	4	1	5	1	4	1	1	4	5
4	4	2	4	2	4	2	2	4	4	2	4	2	4	2	2	1	1
2	1	1	3	1	2	1	3	2	1	1	3	1	1	1	3	4	3
1	1	2	3	1	3	1	3	1	1	2	3	1	3	1	3	4	4

Appendix D.4 Raw data for value advertisement #2

Q17#1_1	Q17#1_2	Q17#1_3	Q17#1_4	Q17#1_5	Q17#1_6	Q17#1_7	Q17#1_8	Q17#2_1	Q17#2_2	Q17#2_3	Q17#2_4	Q17#2_5	Q17#2_6	Q17#2_7	Q17#2_8	Q19#1_1	Q19#2_1
Amazed (Low)	Powerful (Low)	Bored (Low)	Comfortable (Low)	Hateful (Low)	Calm (Low)	Upset (Low)	Indifferent (Low)	Amazed (High)	Powerful (High)	Bored (High)	Comfortable (High)	Hateful (High)	Calm (High)	Upset (High)	Indifferent (High)	Purchase possibility (Low)	Purchase possibility (High)
2	1	3	2	1	2	1	3	3	1	1	3	1	3	1	2	2	3
2	3	5	2	3	4	2	2	4	5	3	4	2	2	1	2	4	5
2	3	4	2	2	4	2	4	5	5	1	3	1	3	1	3	3	4
4	5	3	4	2	3	1	4	5	3	3	3	1	2	1	4	3	3
2	3	5	2	2	3	2	4	5	5	3	1	1	2	1	2	4	5
3	1	1	1	1	1	1	1	5	5	1	1	1	1	1	1	1	3
2	2	2	3	2	2	2	2	3	3	3	3	1	2	1	4	2	2
1	1	3	1	1	1	1	5	1	1	3	1	1	1	1	5	1	1
2	2	2	2	2	2	2	5	2	2	2	2	2	2	2	5	1	3
3	2	4	1	1	1	1	5	4	4	2	4	1	3	1	3	2	4
3	3	2	2	1	1	1	1	4	3	1	3	1	1	1	1	3	4
2	1	4	4	1	4	1	4	1	1	4	2	2	2	1	4	2	1
2	2	3	2	1	2	1	4	3	4	3	4	1	4	1	2	1	3
2	2	3	3	1	4	1	4	3	2	2	3	1	4	1	2	1	3
1	1	5	3	1	3	1	5	1	1	4	3	1	3	1	4	1	2
3	2	4	4	3	4	4	4	4	4	4	3	4	4	4	4	4	4
1	3	1	1	1	2	1	3	3	3	1	3	1	1	1	1	3	3
1	1	3	1	2	2	3	2	2	1	3	4	1	3	1	2	1	1

1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	2	2	1	3	1	2	2	1	2	3	1	2	1	2	1	1
4	4	3	3	2	3	3	3	4	4	3	4	4	4	4	3	3	4
3	2	4	3	2	3	3	1	5	4	2	3	2	3	1	1	3	5
1	1	4	1	1	2	1	1	3	4	1	4	1	3	4	1	1	3
2	2	4	3	4	3	2	5	4	4	2	4	2	4	3	2	2	4
3	1	1	1	1	2	1	3	3	1	1	1	1	2	1	3	1	1
1	1	4	5	2	1	1	4	1	3	2	5	1	3	1	1	1	3
1	1	4	1	1	1	2	2	3	3	1	4	1	3	1	1	1	1
2	3	2	3	1	4	1	3	2	3	2	3	1	4	1	3	1	1
4	4	2	4	3	3	2	3	2	3	4	2	2	2	4	3	3	4
3	3	2	3	1	4	1	3	5	5	1	5	1	4	1	3	3	4
2	3	2	2	1	2	1	3	4	5	1	4	1	3	2	2	1	3
1	2	2	2	1	1	1	3	1	1	1	1	1	1	2	4	1	1
1	1	5	2	1	5	1	5	5	5	1	5	1	1	1	2	2	2
3	2	2	2	2	2	3	2	3	3	2	3	2	3	2	1	2	3
1	1	2	1	1	1	1	3	1	1	1	2	1	1	1	2	1	2
3	3	5	3	1	2	1	3	5	4	3	4	1	2	1	3	2	4
2	3	3	4	1	3	1	4	2	3	3	4	1	3	1	3	2	2
3	3	2	3	1	3	1	1	4	4	1	3	1	3	1	1	2	2
2	3	2	3	1	3	1	5	3	4	3	3	1	3	1	5	1	1
4	4	2	3	1	4	1	4	2	2	5	3	1	4	1	4	1	1
3	3	2	4	2	4	1	1	3	4	2	4	2	3	1	1	4	3
1	1	4	3	3	2	2	4	2	1	3	4	2	4	1	3	1	2
1	1	5	2	4	2	4	1	4	3	1	4	2	4	2	4	1	1
1	1	4	3	1	4	1	3	5	5	1	3	1	3	1	1	2	4
1	1	3	2	1	2	1	1	3	1	2	3	1	3	1	1	1	1
3	3	2	3	1	3	1	3	4	5	1	4	2	2	1	1	2	3
3	3	1	3	1	2	1	1	4	4	1	4	1	3	1	1	3	4
3	3	2	3	1	3	1	3	3	4	2	3	1	4	1	2	3	4
1	2	5	4	1	4	1	5	1	3	5	4	1	4	1	5	1	1
1	1	4	2	1	1	1	1	2	1	3	2	1	1	1	1	1	1
1	1	2	1	4	1	4	1	3	2	2	2	2	2	3	2	1	2
3	1	1	4	1	4	1	3	4	2	1	5	1	5	1	1	1	2
1	3	2	1	1	3	1	2	3	3	2	3	1	2	1	2	3	4
5	4	1	3	1	3	1	1	5	4	1	4	1	2	1	1	4	4
2	3	4	3	1	4	1	4	4	3	2	3	1	3	1	3	2	4
3	2	4	2	3	2	3	4	5	4	2	3	1	3	1	3	3	4
2	2	4	5	1	2	4	1	3	3	1	1	1	1	1	1	3	4
1	1	4	1	1	1	1	4	4	4	2	3	1	2	1	3	1	3
1	1	5	1	1	1	5	5	5	5	1	5	1	5	1	1	1	5
1	1	4	1	1	1	1	3	4	4	2	5	1	4	1	3	3	4
2	2	5	2	3	2	2	5	3	5	3	3	1	4	1	3	3	5
1	1	1	2	1	3	1	1	1	1	3	1	1	2	1	3	1	1
1	2	1	2	1	3	1	2	2	4	1	2	1	5	1	4	2	5
5	1	1	4	1	2	1	1	5	1	1	4	1	3	1	1	2	2
2	2	3	2	2	3	3	5	3	4	2	3	1	2	1	1	2	3
2	2	4	2	4	2	4	2	4	4	1	4	1	3	1	1	2	4
1	1	5	1	5	1	5	5	5	5	1	5	1	5	1	1	1	5
3	2	2	2	1	3	1	3	4	3	1	4	1	3	1	2	3	4
1	1	3	1	2	1	2	3	3	3	2	3	2	3	2	3	1	2
4	4	4	2	1	3	1	4	5	4	1	4	1	4	1	3	4	5
1	1	2	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1
2	1	4	2	1	1	1	4	4	4	1	4	1	3	1	2	1	3
3	3	3	4	2	4	2	3	5	5	5	4	2	4	2	3	4	5
3	3	4	4	4	2	4	4	5	5	2	3	2	4	2	4	4	5
3	3	1	1	5	1	5	1	5	5	1	4	1	4	1	1	1	3
2	1	4	3	1	3	1	4	4	4	4	4	1	4	1	2	1	4

2	2	3	4	1	3	1	2	2	2	3	3	1	2	1	2	3	2
2	2	3	3	1	3	2	3	2	3	2	3	1	4	2	2	2	2
1	1	3	2	2	2	2	4	1	1	3	2	2	2	2	3	1	1
1	1	5	1	2	2	2	3	2	3	4	3	1	1	1	3	1	1
3	1	3	1	1	1	1	5	5	5	2	5	1	3	1	1	1	4
2	3	2	1	3	2	1	1	5	4	4	5	5	4	5	3	2	4
1	1	4	1	3	2	3	2	4	3	2	4	1	2	1	1	2	4
1	1	4	3	1	4	1	4	1	1	4	3	1	3	1	4	1	1
3	4	4	5	5	4	4	4	5	2	5	4	5	3	2	4	4	3
2	2	1	3	1	2	1	1	4	3	1	4	1	4	1	1	2	3
2	1	1	3	1	3	1	5	3	1	1	2	1	2	1	5	3	3
2	3	3	3	2	3	2	2	4	4	3	3	2	3	2	3	3	4
1	1	1	1	3	1	3	2	4	4	1	4	1	4	1	1	1	4
1	2	2	5	1	4	1	3	1	4	2	3	1	2	1	2	2	3
3	2	2	3	2	3	2	3	2	2	3	2	3	3	3	2	3	3
1	1	4	2	1	2	1	5	1	1	3	4	1	3	1	3	1	2
1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	1
2	2	3	3	4	2	3	3	4	4	2	4	2	4	2	2	2	4
2	2	3	3	1	4	1	3	3	4	2	4	1	4	1	3	2	3
3	3	1	4	1	4	1	1	1	1	4	1	1	2	1	1	3	1
2	2	3	2	2	3	3	4	5	5	1	4	1	4	1	3	3	5
1	1	4	2	1	1	3	3	3	4	2	5	1	4	1	2	1	3
1	1	3	2	3	2	3	2	3	4	2	4	1	4	1	3	1	3
1	2	1	2	1	2	1	2	2	2	2	2	1	3	1	2	1	2
2	1	4	1	1	2	1	1	3	1	2	4	1	4	1	1	2	3
2	2	5	3	3	1	3	3	4	4	4	3	2	5	3	3	3	3
2	2	3	2	4	3	2	3	5	5	1	5	1	2	1	3	2	5
1	2	4	1	3	2	3	1	4	4	2	4	1	4	1	4	1	4
2	1	5	2	1	3	1	1	1	3	1	4	1	3	1	1	2	3
2	4	1	3	1	1	1	1	2	4	1	3	1	1	1	1	4	4
4	2	1	3	1	4	2	2	4	2	1	3	1	2	2	2	2	4
1	1	5	1	2	2	3	5	5	5	1	5	2	3	1	2	2	5
1	1	5	4	1	3	1	5	5	5	1	5	1	5	1	1	2	5
3	3	4	3	2	3	2	3	4	4	2	3	1	3	2	3	2	1
2	1	1	2	1	2	1	3	3	4	1	4	1	3	1	3	2	2
1	1	1	1	1	3	1	1	1	1	1	1	1	3	1	1	3	3
1	1	5	3	4	1	5	5	3	3	4	3	2	3	2	3	1	2
2	2	4	2	1	3	1	4	4	3	3	4	1	4	1	3	2	4
1	2	5	1	1	3	1	5	1	1	5	1	1	3	1	5	1	1
2	2	2	4	1	3	1	3	5	5	2	3	1	1	1	3	2	4
1	1	5	1	1	1	1	5	3	3	1	3	1	3	1	1	1	1
1	1	5	1	5	1	5	5	5	5	1	5	1	5	1	1	1	5
2	2	3	1	2	2	4	2	4	4	2	4	1	5	1	2	1	3
2	3	2	3	3	2	3	3	3	4	2	3	4	3	3	3	2	4
4	3	1	4	1	4	1	1	2	4	1	4	1	2	1	1	2	2
3	3	2	3	3	3	3	3	4	4	4	3	3	3	3	3	3	3
3	3	2	4	2	2	2	2	4	4	2	4	2	4	2	2	3	4
2	3	2	3	2	2	3	3	3	4	2	4	2	3	2	3	1	1
2	2	3	2	3	2	2	4	3	2	4	3	3	3	2	4	2	2
1	1	4	1	1	2	1	3	1	1	2	2	1	2	1	3	1	3
2	2	4	3	1	2	1	3	3	3	2	4	1	3	1	2	1	4
2	2	3	4	2	3	1	3	4	4	2	4	1	2	1	3	3	3
2	3	5	2	2	2	2	3	5	5	2	3	1	3	1	4	2	5
2	2	3	2	1	2	1	2	3	3	1	3	1	3	1	2	1	3
2	2	1	2	1	3	1	1	4	3	1	4	1	4	1	1	2	4
2	2	1	3	1	3	1	2	4	4	1	3	1	3	1	2	2	3
2	2	3	3	1	4	1	2	4	4	2	4	1	4	1	2	2	2
3	2	2	3	1	4	1	3	4	3	2	4	1	3	1	3	2	4

1	1	4	2	1	2	2	4	4	5	1	5	1	5	1	1	2	4
1	2	5	4	1	3	1	1	1	3	5	3	1	3	1	2	1	1
3	3	3	2	1	4	1	2	4	5	2	4	1	3	1	2	4	5
4	4	2	3	2	2	2	3	3	2	3	3	2	2	2	3	4	2
3	4	4	4	1	3	1	3	3	4	2	4	1	3	1	2	3	4
4	4	4	4	4	4	4	4	2	2	2	2	2	2	1	2	3	3
1	1	3	1	1	1	1	5	1	1	1	1	1	1	1	5	1	1
1	1	3	1	1	1	1	1	3	3	2	4	1	4	1	3	2	4
4	4	3	4	2	4	2	2	4	4	4	4	2	4	2	2	3	4
4	4	4	3	1	4	1	5	5	5	2	3	1	4	1	5	3	4
2	2	4	2	2	1	2	1	3	4	2	4	1	4	1	1	3	3
3	1	3	3	3	4	1	5	4	1	3	3	3	4	1	5	1	1
1	4	2	4	1	3	1	3	1	4	3	1	1	4	1	3	2	1
2	2	4	2	1	2	1	3	5	4	2	4	1	4	1	2	3	4
2	1	4	4	1	4	1	3	3	2	3	2	1	2	1	3	2	2
2	3	1	3	1	3	1	1	4	4	1	4	1	3	1	1	1	2
3	2	2	2	1	2	1	2	3	4	3	3	1	3	1	3	1	3
1	1	1	1	1	2	1	4	3	2	3	3	2	4	1	4	1	1
3	3	3	3	1	3	1	3	4	2	2	3	1	2	1	2	1	1
2	1	5	1	4	1	4	5	4	3	1	4	1	4	1	1	1	4
3	3	1	1	1	1	1	3	4	5	1	1	1	1	1	1	2	4
1	2	3	3	1	3	1	3	1	2	2	3	1	2	1	3	3	4
3	2	1	3	1	2	1	4	3	2	1	3	1	4	1	3	1	3
3	3	1	4	1	4	1	2	4	4	1	3	1	3	1	1	3	4
1	1	4	1	1	2	1	4	1	1	2	3	1	3	1	3	1	2
1	1	4	3	1	3	1	2	1	1	3	4	1	3	1	3	2	4
2	2	4	2	1	3	2	3	4	4	2	3	1	2	1	3	2	4
2	2	3	3	1	3	1	3	3	3	3	3	1	3	1	3	1	1
3	2	1	2	1	3	1	3	3	2	1	2	1	3	1	3	1	1
2	1	2	1	1	2	1	4	4	4	1	4	1	4	1	1	1	2
1	1	5	3	1	1	1	5	4	4	1	4	1	3	1	1	1	1
2	2	3	4	2	4	2	4	2	3	3	4	2	3	2	4	3	3
2	3	2	2	1	2	1	1	2	3	1	3	1	3	1	1	2	2
2	2	2	4	1	4	1	3	2	2	3	3	1	2	1	4	1	1
1	1	3	2	2	3	2	3	2	1	2	3	1	4	1	3	1	2
2	2	3	3	2	3	2	4	3	2	2	4	2	4	2	3	1	1
2	2	3	2	1	3	1	2	3	3	2	3	1	3	1	2	2	2
1	1	3	2	4	2	1	1	2	2	2	2	3	3	1	1	1	2
3	3	2	3	2	3	3	3	4	4	4	4	3	3	4	4	3	5
1	1	5	1	1	1	1	5	2	2	3	1	1	1	1	5	1	1
3	3	4	3	3	3	3	5	4	4	2	4	2	4	2	2	2	4
3	2	2	3	1	3	1	4	4	2	2	4	1	4	1	2	2	2
3	3	1	3	1	5	1	1	4	4	1	4	1	3	1	1	2	3
2	2	3	3	1	3	1	1	4	4	2	3	1	3	1	3	1	3
1	1	1	1	3	1	5	3	3	4	3	3	3	4	1	3	2	5
4	4	3	2	3	1	2	1	3	2	3	2	3	1	2	1	3	3
5	4	2	3	2	3	2	2	3	3	2	3	2	3	2	2	3	2
4	4	1	3	1	3	1	2	3	2	2	3	1	4	1	4	4	2
3	3	4	3	3	4	3	3	5	5	4	5	5	5	4	5	1	2
4	4	2	3	1	4	4	3	4	5	2	3	1	4	4	3	4	5
3	3	2	4	2	4	2	3	4	4	2	3	2	3	2	3	3	4
2	2	4	2	2	2	2	2	5	5	1	5	5	5	5	5	1	3
1	2	4	2	2	3	1	1	4	4	4	5	1	4	1	1	2	4
1	1	1	2	1	2	1	1	1	1	1	2	1	1	1	1	3	3
1	2	4	2	4	2	3	4	5	4	2	4	2	4	1	2	3	5
3	3	3	2	1	3	1	3	2	2	4	1	1	2	1	4	1	1
1	1	1	1	1	1	1	1	3	2	1	2	1	2	1	1	1	2
2	4	1	4	1	3	2	4	5	5	1	4	1	3	2	4	4	4

2	2	4	4	3	3	4	2	3	3	3	2	3	3	2	4	3	3
2	2	4	2	1	3	1	4	3	4	2	4	1	3	1	2	1	2
1	1	3	1	1	1	1	4	2	1	1	2	1	1	1	2	1	3
1	1	4	3	1	2	4	3	1	1	3	5	1	5	1	4	1	2
3	3	2	3	1	4	1	1	4	5	1	4	1	2	1	1	3	5
1	1	4	1	2	1	3	2	3	3	3	4	2	3	1	2	1	3
2	2	3	2	1	2	1	2	4	3	2	2	1	2	1	3	1	2
2	3	3	3	1	5	4	4	4	3	2	5	1	5	1	2	1	1
1	2	1	2	1	2	1	3	1	1	2	3	1	3	1	3	2	2
1	1	3	2	1	2	1	3	3	2	2	3	1	3	1	2	1	3
2	3	4	3	1	4	1	3	4	4	2	2	1	3	1	2	2	3
5	5	1	3	2	5	1	1	3	3	3	2	2	3	3	3	3	3
1	1	4	2	2	3	2	3	2	1	2	2	1	1	2	3	1	1
1	1	5	1	1	1	1	5	1	1	3	1	1	1	1	5	1	1
3	2	3	3	1	3	1	2	4	4	2	3	1	3	1	2	3	4
3	3	2	4	1	3	1	3	4	3	2	4	1	3	1	3	3	4
3	2	3	4	1	4	1	3	3	3	2	4	1	4	1	3	2	2
4	2	4	3	3	3	3	3	4	4	3	3	3	3	3	3	1	1
1	1	1	2	1	2	1	3	2	1	1	2	1	2	1	1	3	5
1	1	1	2	1	3	2	2	1	1	1	3	1	3	1	2	2	3

Appendix D.5 Raw data for hue advertisement #2

Q20#1_1	Q20#1_2	Q20#1_3	Q20#1_4	Q20#1_5	Q20#1_6	Q20#1_7	Q20#1_8	Q20#2_1	Q20#2_2	Q20#2_3	Q20#2_4	Q20#2_5	Q20#2_6	Q20#2_7	Q20#2_8	Q22#1_1	Q22#2_1
Amazed (Low)	Powerful (Low)	Bored (Low)	Comfortable (Low)	Hateful (Low)	Calm (Low)	Upset (Low)	Indifferent (Low)	Amazed (High)	Powerful (High)	Bored (High)	Comfortable (High)	Hateful (High)	Calm (High)	Upset (High)	Indifferent (High)	Purchase possibility (Low)	Purchase possibility (High)
2	1	3	2	1	3	1	3	3	1	2	3	1	3	1	2	2	3
3	4	2	3	1	5	1	2	2	2	1	1	2	2	3	2	4	2
3	5	2	3	1	4	1	3	2	2	1	1	3	2	4	4	4	1
2	5	2	4	1	4	1	4	1	3	4	1	2	2	2	3	3	2
4	5	2	4	1	4	1	3	2	2	1	1	3	2	3	2	5	2
1	1	2	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1
2	2	2	2	3	3	2	2	3	3	2	3	3	4	3	2	2	2
1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	5	1	1
2	2	2	2	2	2	2	5	2	2	2	2	2	2	2	5	1	2
4	4	3	3	1	2	1	1	2	2	4	3	1	2	3	1	4	1
4	5	3	1	1	1	1	3	3	2	5	1	1	1	1	3	1	1
4	4	3	3	1	4	1	2	3	3	4	4	1	4	1	3	4	3
4	4	1	3	1	4	1	1	3	3	2	4	1	4	1	2	4	4
1	1	4	2	1	4	1	5	2	1	4	2	1	3	1	4	1	1
1	1	3	4	1	3	1	4	1	1	4	4	1	3	1	5	1	1
2	2	5	3	2	2	3	5	4	4	4	5	4	3	5	4	4	4
1	1	1	1	1	1	1	4	1	1	1	1	1	1	3	4	1	1
2	3	4	3	1	3	1	2	2	3	4	3	1	3	1	2	3	3
4	4	4	2	2	2	1	1	2	2	2	2	2	1	1	1	1	1
1	1	2	2	1	2	1	2	1	1	3	2	1	2	1	2	1	1
4	4	4	3	3	3	3	3	3	4	3	3	3	3	4	3	3	4
4	4	2	2	2	3	2	1	3	3	3	2	2	3	2	1	4	3
1	4	1	3	1	5	1	1	3	4	1	3	1	1	4	1	1	1
4	4	2	4	3	4	2	2	3	3	4	3	4	2	4	4	4	2
2	2	1	1	1	2	1	2	2	2	1	1	1	2	1	2	2	2
4	5	2	1	1	1	1	1	1	2	5	1	1	1	1	3	4	1
4	4	1	1	1	3	1	1	1	1	3	1	1	1	1	1	1	1
1	4	1	3	1	3	1	3	1	3	1	4	1	3	1	3	1	1
4	4	2	3	2	3	2	3	2	2	4	3	4	3	4	3	4	3

4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	1	1
4	3	3	3	4	2	4	3	3	3	4	2	3	2	2	4	1	1
1	2	1	3	1	3	1	2	1	2	1	2	1	3	1	2	2	1
5	5	1	4	1	1	1	1	2	3	5	2	2	5	2	5	2	2
3	3	1	2	1	2	1	1	3	3	1	3	1	4	1	1	3	3
1	2	1	2	1	1	1	2	1	1	2	2	1	1	1	3	1	1
4	4	2	3	1	3	1	3	4	4	2	3	1	3	1	3	1	1
4	3	3	4	1	2	1	2	3	3	4	4	1	3	1	3	4	3
3	3	2	3	1	3	1	4	3	4	2	3	1	5	1	2	4	4
4	4	1	3	1	2	1	3	3	3	2	3	1	2	1	3	4	3
4	4	2	3	1	3	1	3	2	2	4	2	1	3	1	3	1	1
3	3	2	3	2	4	1	1	2	2	3	1	4	2	2	1	1	1
1	3	4	4	1	3	1	5	1	3	4	4	1	3	1	5	1	1
4	2	4	3	2	3	2	1	1	1	4	2	3	2	4	1	1	1
4	3	3	4	1	3	1	2	1	1	5	1	1	2	1	4	1	1
1	1	5	2	1	3	1	1	1	1	5	2	1	3	1	1	1	1
2	3	1	4	1	2	1	3	4	4	1	4	1	4	1	2	1	1
2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	4	4	3	1	3	1	4	3	3	3	4	1	3	1	3	2	2
1	1	5	3	1	3	1	5	1	1	5	3	1	3	1	5	1	1
3	3	2	3	1	1	1	1	3	2	2	3	1	1	1	1	1	1
3	3	2	3	3	3	3	2	2	2	1	2	2	2	2	1	2	2
4	5	2	5	1	3	1	1	1	2	4	2	1	4	4	4	5	2
4	4	2	2	1	1	1	3	2	3	3	4	1	3	1	3	4	5
3	3	3	2	1	2	1	3	3	3	3	2	1	3	1	3	1	1
1	1	4	3	1	3	1	5	1	1	4	3	1	3	1	5	1	1
2	1	2	1	4	2	3	4	3	4	3	4	2	4	1	3	2	4
4	4	2	2	1	1	1	1	2	2	3	1	1	1	1	2	4	3
3	2	1	3	1	2	1	3	1	1	2	1	1	1	1	3	2	1
1	3	2	3	4	2	4	1	5	4	3	1	4	2	3	2	5	3
4	4	2	3	1	1	1	3	2	2	4	1	1	1	1	3	3	2
2	2	5	1	3	2	3	4	5	5	3	3	1	4	1	5	2	4
1	1	3	2	1	3	1	3	1	1	3	2	1	2	1	3	1	1
2	4	1	3	1	4	1	1	1	2	4	2	1	2	1	2	3	2
3	5	3	4	1	2	1	1	3	5	3	4	1	2	1	1	4	4
3	2	2	4	1	4	3	4	3	3	3	3	1	3	3	4	3	2
1	1	4	1	3	1	4	1	1	1	4	1	3	1	4	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	5	2	3	1	4	1	1	3	4	2	3	1	3	1	1	4	3
3	3	2	2	1	3	1	3	2	2	3	2	2	2	2	3	2	1
5	5	1	4	1	3	1	4	2	3	5	3	2	3	2	3	5	3
1	1	1	1	5	1	5	1	1	1	1	1	5	1	5	1	1	1
2	2	2	2	1	2	1	3	3	3	2	2	1	3	1	2	2	3
2	4	2	3	3	3	3	3	2	4	2	3	3	3	3	3	2	2
5	5	2	3	2	3	2	3	4	3	5	3	2	4	2	3	5	5
1	1	4	3	1	5	2	1	1	1	5	3	1	5	4	1	1	1
4	2	1	2	1	2	1	1	4	3	3	4	1	3	1	1	3	3
2	3	2	2	1	3	1	3	2	3	2	2	1	3	1	3	2	2
3	4	2	3	1	4	1	3	3	3	2	3	1	3	1	3	2	2
2	2	2	2	1	2	1	3	1	1	1	2	1	2	1	4	1	1
3	4	4	2	2	2	2	2	2	2	5	1	3	1	2	2	2	1
5	5	1	5	1	4	1	1	3	3	2	2	1	2	1	2	5	3
1	2	3	4	5	4	3	2	2	3	4	5	3	4	3	2	3	3
4	5	1	2	1	2	2	1	4	3	2	4	1	3	3	1	4	3
1	1	4	3	1	3	1	4	1	1	4	3	1	3	1	4	2	2
1	2	2	2	3	2	3	4	2	2	3	3	2	2	4	4	4	3
4	5	1	3	1	4	1	2	2	2	1	4	1	3	1	2	4	3
1	1	1	2	1	2	1	5	1	1	2	1	1	1	1	5	1	1

4	4	2	4	2	4	4	4	3	2	2	3	2	3	2	2	4	4
2	3	2	2	4	2	2	2	1	1	2	2	2	2	2	2	4	1
1	1	5	1	1	1	1	5	1	1	5	2	1	1	1	5	1	1
3	3	3	2	4	3	2	3	3	3	3	3	3	4	3	3	3	4
1	1	4	1	1	2	1	5	1	1	4	1	1	1	1	5	1	1
4	4	4	4	2	4	2	3	2	2	2	2	4	3	3	2	4	2
4	4	2	4	2	4	2	2	2	2	3	2	3	2	3	3	4	2
1	2	3	2	1	2	1	2	1	1	4	2	1	3	1	2	1	1
2	2	4	2	1	2	1	1	3	3	1	4	1	4	1	1	2	4
2	1	2	1	3	2	4	4	3	4	4	4	1	4	1	3	3	5
4	5	3	4	1	4	1	1	2	2	4	2	1	2	2	2	2	1
1	2	1	1	3	1	3	4	2	3	2	3	1	3	1	3	1	1
2	1	3	2	1	2	1	2	2	1	1	2	1	2	1	2	3	2
3	1	4	1	1	3	3	1	3	1	4	1	1	3	3	1	1	1
1	2	5	3	2	1	3	2	5	5	2	3	4	5	3	3	3	3
2	3	2	2	2	3	3	4	4	4	3	4	2	3	3	2	3	4
3	4	2	3	2	3	1	4	2	2	4	2	3	2	2	2	4	2
1	3	2	2	1	3	2	1	2	1	4	1	1	1	2	1	3	3
1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	1	3	3
3	2	4	2	2	4	2	4	3	2	4	2	2	4	2	5	1	1
1	1	5	1	5	2	5	5	5	5	1	5	1	5	1	2	1	5
5	5	1	5	1	5	1	1	1	1	5	1	1	1	1	1	4	2
4	4	1	3	1	3	2	3	2	3	4	3	1	2	2	3	1	1
3	3	1	2	1	3	1	3	3	3	1	2	1	2	1	3	2	2
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3
4	5	4	3	1	3	1	5	3	3	5	2	1	3	1	5	3	2
2	1	3	2	1	2	1	2	1	1	4	1	1	1	1	5	3	1
3	3	4	3	1	3	1	5	3	3	4	3	1	3	1	5	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1
4	4	4	3	3	1	1	5	1	1	5	2	4	4	4	5	1	1
5	5	1	3	1	3	4	3	1	1	5	3	5	3	2	3	3	3
5	4	2	4	1	4	1	3	3	3	4	3	2	3	4	2	4	2
2	1	2	2	3	1	2	1	1	1	2	3	3	1	2	3	2	2
4	4	1	4	1	3	1	1	2	2	2	3	1	4	1	1	3	2
2	2	4	2	3	3	3	3	4	4	2	4	3	3	3	3	2	4
3	3	2	3	2	2	2	2	4	3	2	3	2	2	2	2	3	3
4	4	2	4	1	4	1	3	3	3	2	3	2	3	2	3	2	2
2	1	4	2	2	4	4	5	2	1	4	2	2	4	4	5	1	1
1	1	3	2	1	4	1	3	1	1	3	2	1	2	1	3	4	3
2	3	2	3	1	3	1	3	2	2	4	2	1	2	1	2	3	2
3	3	3	4	1	4	1	1	4	4	3	4	1	2	1	1	3	3
2	2	4	2	3	2	3	2	5	5	1	4	1	4	1	3	2	4
3	3	2	4	1	4	1	2	2	2	3	2	1	1	2	2	3	1
4	3	1	4	1	4	1	3	3	2	1	3	1	3	1	2	3	3
2	1	3	3	1	3	1	3	2	1	3	3	1	3	1	3	1	1
4	3	3	3	1	3	1	3	4	3	3	3	1	3	1	3	2	2
3	4	3	4	1	4	1	2	3	3	3	4	1	4	1	2	3	3
4	4	1	4	1	3	1	1	2	2	3	2	1	2	2	3	4	2
3	3	5	1	1	2	3	3	1	1	5	1	1	1	4	4	1	1
5	4	1	4	1	5	1	1	3	3	5	2	1	2	1	1	4	1
4	3	2	3	2	3	2	3	4	4	1	4	2	2	2	4	3	4
4	2	3	4	1	3	1	3	2	2	3	4	1	4	1	3	2	2
4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	4	3
1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	5	1	1
4	4	2	3	1	3	1	2	1	1	4	2	2	2	2	2	4	2
4	4	2	3	2	4	2	3	3	2	4	3	1	3	3	3	4	3
5	5	1	4	1	3	1	2	4	4	5	3	1	3	1	5	2	4
4	4	1	3	1	2	1	1	3	4	3	3	2	2	2	1	4	2

5	4	1	3	1	3	1	1	1	1	1	1	3	1	4	5	4	2
2	4	2	4	1	3	1	1	1	4	2	4	1	3	1	1	1	1
1	4	4	2	3	2	2	2	3	3	3	1	1	1	4	4	2	3
4	4	1	3	1	3	1	2	3	3	3	2	2	2	2	3	5	4
3	3	2	2	1	2	1	1	3	3	2	2	1	2	1	1	1	1
3	3	3	3	1	3	1	3	3	3	3	3	1	3	1	3	1	1
1	1	5	1	5	1	5	3	1	1	5	1	5	1	5	3	1	1
4	4	2	4	1	4	1	2	3	3	2	4	1	3	2	4	5	3
4	4	2	2	2	3	3	2	2	1	3	1	1	1	4	4	3	2
4	5	1	3	1	4	1	2	3	5	2	3	1	4	1	3	4	3
1	3	1	3	1	2	1	3	1	1	1	3	1	3	1	3	2	2
3	4	1	3	1	3	1	3	3	2	1	3	1	3	1	4	3	2
2	4	2	3	1	3	2	2	2	3	4	2	1	1	4	2	4	2
1	1	4	2	1	1	1	5	1	1	4	3	1	1	1	4	1	1
1	1	5	2	3	2	2	3	1	1	5	2	3	2	2	3	1	1
2	2	4	2	2	2	3	4	5	4	2	3	1	4	1	3	2	5
3	3	2	3	1	3	1	2	2	2	3	3	1	3	1	2	1	1
2	2	1	2	1	2	1	3	1	1	1	2	1	2	1	3	1	1
3	3	1	2	1	2	1	2	1	2	1	2	1	3	1	2	2	2
2	2	3	3	1	3	1	5	1	1	4	3	1	3	1	5	1	1
1	1	4	3	5	2	3	2	3	3	4	3	2	3	2	2	1	2
2	2	3	3	1	1	1	3	1	2	4	2	1	1	1	1	1	1
2	3	3	2	1	3	1	4	2	3	3	2	1	2	1	4	2	2
2	2	3	3	1	2	2	4	1	1	4	3	1	2	2	5	1	1
2	2	4	3	3	3	2	3	2	3	3	4	2	4	2	3	1	1
3	3	1	2	1	2	1	2	3	2	1	2	1	2	1	2	2	2
1	1	3	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1
4	5	4	4	5	5	4	5	2	2	2	2	2	2	2	2	4	2
3	1	3	1	1	1	1	5	1	1	5	2	1	1	1	5	1	2
3	2	4	2	4	2	3	5	4	3	3	4	2	4	2	2	2	3
1	1	3	1	1	1	3	3	1	1	5	1	1	1	3	3	1	1
2	2	4	2	1	1	4	1	2	2	4	2	1	1	4	1	1	1
2	1	4	3	1	3	3	5	2	1	4	3	1	3	3	5	1	1
3	2	5	3	1	4	1	3	1	1	5	3	1	3	1	3	4	2
2	2	3	3	2	2	1	4	3	3	4	3	2	2	1	4	3	4
4	4	2	3	2	3	2	2	4	3	3	2	2	3	1	1	3	2
4	4	1	3	1	4	1	2	2	2	2	3	1	4	1	3	3	2
4	4	4	4	4	4	4	4	2	2	2	2	2	2	2	2	1	1
3	4	3	3	2	3	3	3	3	4	3	3	2	3	3	3	2	2
3	3	3	3	3	3	3	2	4	3	2	4	2	4	2	2	2	3
1	1	5	1	1	1	1	1	5	5	1	5	5	5	5	5	1	3
3	4	4	2	1	2	1	1	3	2	4	3	1	4	1	1	2	3
1	1	1	1	1	1	1	5	1	1	1	1	1	2	1	5	3	3
4	3	1	2	4	3	4	4	4	3	1	1	3	3	4	3	2	2
1	1	4	2	1	2	1	4	1	1	4	2	1	2	1	3	1	1
4	3	1	3	1	3	1	1	2	1	2	1	1	1	1	3	3	4
4	5	1	3	3	3	4	2	4	2	5	3	3	3	2	2	4	2
4	4	2	3	3	3	1	4	2	2	4	3	3	2	3	2	4	2
2	3	4	2	1	2	1	4	2	4	5	3	1	4	1	3	2	3
1	1	2	1	1	1	1	4	1	1	3	1	1	1	1	5	1	1
3	4	1	4	1	3	1	2	1	2	4	4	1	3	1	3	1	1
3	4	1	4	1	3	1	1	3	2	2	3	1	3	1	2	4	3
2	1	2	1	2	1	3	4	4	4	2	4	1	3	1	1	1	3
3	3	2	2	1	3	1	2	2	3	2	2	1	3	1	2	1	1
4	5	2	3	1	5	1	4	2	3	5	4	2	4	3	2	3	4
1	2	1	2	1	1	1	2	2	1	2	3	1	3	1	2	2	3
2	2	2	3	1	3	1	3	1	1	4	1	1	2	1	1	1	1
2	3	3	3	1	4	1	2	3	5	2	4	1	3	1	2	2	4

4	4	2	5	1	3	1	2	3	4	3	4	2	4	4	3	4	3
3	1	2	4	1	4	1	3	2	1	4	2	3	3	2	3	2	1
1	1	5	1	1	1	1	5	1	1	5	1	1	1	1	5	1	1
3	3	4	3	1	3	2	2	3	3	4	3	1	4	1	2	1	1
4	4	2	4	2	3	1	3	4	4	2	4	2	3	1	3	4	4
4	4	1	4	1	4	1	2	3	3	1	4	1	4	1	2	4	3
4	4	2	3	3	4	3	2	2	2	3	3	4	3	3	2	4	4
2	1	1	2	1	2	1	1	2	1	1	2	1	2	1	1	4	4
1	1	1	3	1	2	1	4	1	1	1	3	1	3	1	4	1	1

Appendix D.6 Raw data for chroma advertisement #2

Q23#1_1	Q23#1_2	Q23#1_3	Q23#1_4	Q23#1_5	Q23#1_6	Q23#1_7	Q23#1_8	Q23#2_1	Q23#2_2	Q23#2_3	Q23#2_4	Q23#2_5	Q23#2_6	Q23#2_7	Q23#2_8	Q25#1_1	Q25#2_1
Amazed (Low)	Powerful (Low)	Bored (Low)	Comfortable (Low)	Hateful (Low)	Calm (Low)	Upset (Low)	Indifferent (Low)	Amazed (High)	Powerful (High)	Bored (High)	Comfortable (High)	Hateful (High)	Calm (High)	Upset (High)	Indifferent (High)	Purchase possibility (Low)	Purchase possibility (High)
2	1	3	2	1	2	1	3	2	1	1	3	1	3	1	1	2	3
3	2	2	3	2	2	1	3	4	5	1	4	1		1	2	4	5
3	2	2	3	2	3	1	4	5	5	1	4	1	4	1	3	3	5
2	3	4	3	1	4	1	5	5	5	2	3	1	3	1	4	4	5
2	2	4	3	1	4	1	4	5	4	3	2	1	3	1	3	3	5
3	3	4	1	1	2	1	1	5	3	2	1	1	3	1	1	3	3
2	4	2	2	3	3	3	2	4	3	3	2	1	3	3	2	4	2
1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	4	1	1
2	2	2	2	2	2	2	5	2	2	2	2	2	2	2	5	1	4
3	3	4	2	1	3	2	4	4	4	1	4	1	3	1	1	4	4
4	4	1	3	1	4	1	3	5	5	1	4	1	4	1	3	4	5
2	2	4	4	1	4	1	4	4	3	2	4	1	3	1	2	2	3
4	4	1	4	1	3	1	1	4	3	1	4	1	5	1	1	4	4
3	3	2	3	1	4	1	3	3	4	1	4	1	3	1	2	3	4
1	2	4	4	1	3	1	3	1	3	3	5	1	4	1	2	2	4
4	2	4	3	4	3	4	4	4	4	4	3	5	4	5	4	5	5	5
1	3	1	3	1	2	1	2	4	4	1	3	1	2	1	1	3	4
3	2	1	3	2	3	1	4	3	2	1	3	1	3	1	2	2	2
4	4	3	2	4	2	4	4	1	3	3	3	3	2	2	2	2	2
2	1	1	3	1	3	1	2	1	1	1	3	1	2	1	2	2	2
3	3	3	4	3	3	3	3	3	3	4	4	3	3	3	2	3	3
2	3	4	3	2	4	3	1	4	5	2	3	2	2	1	1	3	5
4	4	2	4	1	3	1	1	5	5	1	4	1	3	1	1	4	5
4	5	1	4	2	4	2	2	4	4	2	3	3	3	2	3	4	4
2	1	1	2	1	2	1	3	2	1	1	2	1	2	1	3	2	2
2	2	4	4	1	1	1	4	4	4	1	4	1	1	1	1	1	4
1	1	1	1	1	4	1	1	5	5	1	4	1	3	1	1	1	3
3	4	1	3	1	3	1	2	3	3	1	4	1	3	1	2	1	1
2	2	4	3	4	3	4	3	4	4	2	3	2	3	2	3	3	4
4	4	4	5	1	5	1	1	4	5	3	4	1	3	1	1	5	3
3	3	4	2	1	3	2	3	3	4	2	2	3	2	3	4	2	2
1	1	2	2	1	2	1	3	1	1	1	1	1	1	1	2	1	1
1	1	5	5	1	5	1	4	5	5	1	2	1	1	1	1	2	4
4	4	1	3	1	3	1	1	3	3	1	3	1	3	1	1	3	3
1	1	2	2	1	2	1	1	2	1	1	2	1	3	1	1	3	4
4	3	1	3	1	3	1	3	5	5	1	4	1	3	1	3	4	5
2	2	3	4	1	3	1	3	3	3	2	4	1	3	1	2	3	4
1	1	3	4	1	5	1	3	1	1	3	4	1	5	1	3	1	1
3	2	4	4	1	4	1	5	3	2	4	4	1	4	1	5	1	1
5	5	1	3	1	3	1	3	5	5	1	3	1	3	1	3	2	2

3	3	4	4	1	4	1	1	4	4	1	3	1	2	1	1	2	3
1	1	4	3	2	3	2	4	2	2	2	4	1	3	1	3	1	1
3	2	5	2	4	2	4	3	5	4	1	4	2	4	1	3	1	1
3	3	3	3	1	3	1	2	4	4	1	3	1	2	1	1	3	5
2	1	2	3	1	2	1	1	3	1	2	3	1	3	1	1	1	1
2	3	2	3	1	4	1	3	5	5	1	5	1	3	1	1	2	5
3	3	1	3	1	3	1	1	4	4	1	4	1	4	1	1	4	5
2	2	3	4	1	4	1	2	4	3	2	3	1	3	1	1	4	5
1	1	4	4	1	4	1	5	3	3	3	4	2	4	1	3	3	4
1	2	1	3	1	3	1	1	2	1	1	2	1	3	1	1	1	1
2	2	2	2	3	2	3	3	3	3	3	3	2	3	2	2	3	3
3	3	4	3	1	1	3	2	4	4	2	4	1	3	1	1	2	3
4	3	4	2	1	2	1	4	5	5	1	5	1	2	1	2	3	5
3	2	2	3	1	3	1	1	4	4	1	3	1	4	1	1	3	3
4	3	2	3	1	3	1	2	4	3	2	3	1	3	1	2	4	4
2	3	2	2	2	3	2	4	5	4	1	4	1	4	1	2	4	5
1	1	5	2	1	1	3	5	4	4	1	4	1	1	1	1	1	3
3	2	2	3	1	2	1	3	4	4	1	4	1	3	1	3	2	4
4	2	4	3	4	4	1	1	2	2	2	2	2	2	2	2	4	5
3	2	1	3	1	3	3	3	5	4	1	5	1	3	3	3	3	5
2	3	5	2	2	4	2	4	5	5	2	3	1	3	1	3	4	5
2	1	1	3	1	3	1	1	2	1	1	3	1	3	1	1	1	1
1	2	3	2	1	3	1	1	4	3	1	2	1	4	1	1	3	4
4	1	3	4	1	2	1	1	4	1	3	4	1	2	1	1	4	4
3	4	3	4	1	4	2	4	3	4	2	3	1	3	1	4	4	4
3	4	1	4	1	4	1	3	2	2	1	1	1	2	1	2	3	1
1	1	1	1	4	1	4	5	5	5	1	5	1	3	1	1	1	1
3	3	3	3	1	2	1	3	5	4	1	4	1	4	1	1	1	4
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
5	5	1	4	1	4	1	5	3	3	3	4	1	3	1	4	5	4
1	1	1	1	5	1	5	1	2	2	1	2	1	2	1	2	1	3
2	2	2	2	1	2	1	3	4	4	3	3	1	2	1	2	3	4
3	4	3	3	2	3	2	3	5	4	3	3	2	3	2	3	4	4
4	4	3	1	1	5	2	3	5	5	1	3	1	3	1	3	3	4
1	1	5	3	1	3	1	1	5	5	1	2	1	1	1	3	1	3
2	1	3	2	1	2	1	1	4	4	1	4	1	4	1	1	1	4
2	2	3	3	1	3	1	4	3	2	3	3	1	2	1	3	3	3
3	3	4	3	1	3	2	3	3	4	4	3	1	4	2	3	2	3
2	1	3	2	1	2	1	3	2	1	3	2	1	2	1	3	1	1
3	4	3	4	1	5	2	3	2	3	2	3	2	2	3	3	4	3
5	5	1	5	1	5	1	1	4	4	1	4	1	4	1	1	5	5
1	3	5	4	2	3	3	3	3	3	3	3	3	3	3	3	2	5
1	1	4	1	2	3	2	1	3	4	3	2	1	4	1	1	1	3
1	1	4	3	1	4	1	4	1	1	3	4	1	4	1	3	1	2
1	2	5	3	2	1	3	1	1	2	5	2	3	4	2	1	3	2
3	4	1	4	1	4	4	2	3	3	1	3	1	3	3	2	4	3
1	1	4	2	1	1	1	5	3	1	1	2	1	1	1	5	1	4
1	1	5	1	4	1	1	1	4	4	1	4	2	4	4	4	2	4
1	2	3	2	1	1	3	2	1	4	3	3	2	2	3	3	2	3
1	1	3	2	1	2	2	4	1	3	2	4	1	3	1	2	1	3
3	3	3	3	2	4	2	3	2	3	3	2	3	3	3	2	4	4
1	1	3	3	1	2	1	5	1	1	2	4	1	3	1	4	1	1
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1
2	2	4	2	3	3	4	2	4	4	2	4	2	4	2	3	3	4
2	2	4	3	1	4	1	3	3	4	3	4	1	3	1	3	2	3
2	2	4	3	1	3	1	1	2	2	2	4	2	3	1	1	1	2
3	2	4	4	1	3	2	4	5	4	2	3	1	2	1	3	4	5
2	1	3	2	1	1	3	3	4	5	2	5	1	4	1	1	2	4

1	1	5	1	4	1	4	1	4	4	1	4	2	5	1	1	1	3
2	2	2	2	1	2	1	2	3	2	2	2	1	2	1	2	1	2
2	1	3	3	1	4	1	2	4	1	3	3	1	4	1	2	2	3
3	3	5	3	4	2	5	3	5	5	1	3	3	5	3	3	3	3
3	3	2	3	3	3	3	2	5	5	2	5	2	3	2	4	2	4
2	2	4	2	3	3	2	2	4	4	2	4	1	4	2	4	3	4
1	2	3	3	1	2	1	2	1	3	2	3	1	2	1	2	2	3
2	2	2	3	1	1	1	1	2	2	2	3	1	1	1	1	3	3
3	2	2	4	3	4	2	1	3	2	1	4	2	3	2	1	3	5
1	1	5	1	5	1	3	5	5	5	1	3	1	3	1	1	1	5
1	1	5	2	1	1	1	5	5	5	1	2	1	1	1	1	1	5
3	3	2	2	2	2	2	2	4	3	2	2	2	2	2	2	3	3
3	4	1	4	1	2	1	3	4	5	1	4	1	3	1	3	3	3
1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	3	3	3
3	4	2	4	1	3	1	3	4	5	1	5	1	4	1	3	3	4
3	2	2	4	1	4	1	3	2	2	2	3	1	3	1	3	2	4
4	3	2	4	1	3	1	1	4	3	2	4	1	3	1	1	4	4
1	1	5	1	1	1	1	1	4	4	1	4	1	1	1	3	1	3
2	2	3	3	3	2	3	3	3	3	1	3	1	4	1	1	1	1
1	1	3	3	3	3	3	3	5	5	3	3	3	3	3	3	4	4
3	3	2	4	1	4	4	3	4	5	1	4	1	3	2	2	3	4
2	3	2	2	1	3	2	3	3	4	4	3	3	4	4	3	2	4
3	3	1	4	1	4	1	1	4	4	1	3	1	3	1	1	2	4
3	3	3	3	3	3	3	3	4	4	3	3	3	3	3	3	2	2
2	2	2	3	2	2	2	2	4	4	2	3	2	3	2	2	3	4
3	3	2	3	2	3	2	3	3	4	2	4	1	3	1	3	2	2
4	4	2	3	1	3	1	2	5	4	2	4	1	5	1	2	3	4
1	2	3	3	1	3	1	3	1	4	2	4	1	2	1	3	2	4
3	3	2	3	1	4	1	3	3	4	1	2	1	2	1	2	3	4
3	3	3	3	1	3	1	2	4	4	2	4	1	4	1	1	3	3
2	3	3	3	2	2	2	3	5	5	1	4	1	3	1	2	4	5
3	2	3	3	1	2	1	2	4	4	1	4	1	3	1	1	2	4
4	4	1	4	1	4	1	1	3	3	1	4	1	4	1	1	4	3
2	3	3	4	1	3	1	3	4	3	3	4	1	3	1	3	1	1
3	4	1	4	1	4	1	2	5	4	1	4	1	4	1	2	4	4
3	3	2	4	1	3	1	2	4	5	1	2	1	3	1	2	3	3
2	1	4	2	1	2	1	3	3	3	1	5	1	4	1	1	3	5
2	3	2	3	1	3	1	1	4	4	1	4	1	4	1	2	3	4
4	4	2	4	1	3	3	3	4	4	2	4	1	3	3	3	4	4
4	4	2	4	2	4	2	3	3	2	4	2	2	4	3	2	4	2
4	4	1	4	1	4	1	1	4	4	1	4	1	4	1	1	4	5
3	2	3	3	3	3	3	3	2	2	2	2	2	2	2	2	4	3
1	1	1	1	1	1	1	5	1	1	1	1	1	1	1	5	1	1
2	2	2	2	1	2	1	2	3	3	1	3	1	3	1	3	1	3
3	3	4	3	2	4	2	3	4	4	2	4	2	4	2	3	3	4
4	2	4	4	1	3	1	4	5	5	1	4	1	3	1	4	3	5
3	3	2	4	1	4	1	1	4	4	2	4	1	4	1	1	3	3
3	1	4	3	1	3	1	5	3	1	4	3	1	3	1	5	1	1
4	4	1	3	1	3	1	1	4	4	1	3	1	3	1	1	1	1
1	1	2	3	1	2	3	3	2	2	3	2	2	3	3	2	3	3
1	1	4	3	1	4	1	4	1	1	3	4	1	4	1	3	1	2
3	3	1	2	1	2	1	1	5	4	1	4	1	4	1	1	1	3
4	3	1	2	1	3	1	2	4	3	1	4	1	3	1	2	3	4
2	1	4	3	5	2	1	4	3	1	4	3	5	2	1	4	1	1
3	3	3	3	2	3	2	4	4	4	2	4	2	4	2	2	4	4
2	3	4	2	4	2	3	3	4	4	2	4	2	3	1	1	2	3
4	4	1	3	1	4	1	3	5	5	1	3	1	3	1	1	2	5
1	1	1	3	1	3	1	4	1	1	1	4	1	3	1	4	3	3

3	2	1	3	1	3	1	4	3	3	1	3	1	3	1	3	3	3
2	3	4	3	1	3	1	1	4	3	1	3	1	4	1	1	3	4
1	1	3	2	1	3	1	5	1	1	2	3	1	3	1	3	2	3
1	1	4	2	4	2	3	1	3	3	2	4	2	4	1	2	1	4
2	2	3	4	1	3	1	2	4	4	2	3	1	4	2	3	3	5
3	3	2	3	1	3	1	2	4	4	1	3	1	3	1	2	2	3
2	1	1	2	1	2	1	3	3	1	1	3	1	2	1	3	1	1
1	1	4	3	1	1	1	1	1	1	2	3	1	1	1	1	1	1
3	3	1	3	1	5	1	3	3	3	1	3	1	4	1	2	3	2
3	3	2	3	2	4	2	2	5	5	1	2	1	3	2	2	3	4
2	2	4	3	1	3	1	1	3	4	2	4	1	3	1	1	1	2
3	3	3	4	1	4	1	4	3	3	3	2	1	3	1	4	1	1
3	1	2	3	1	2	1	3	3	2	1	3	1	3	1	3	2	2
2	2	2	2	1	3	1	4	4	4	2	3	1	2	1	2	2	3
3	3	1	3	1	3	1	3	3	3	1	4	1	4	1	3	3	3
1	1	3	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1
1	2	2	2	2	3	3	3	4	4	4	4	3	3	4	4	2	4
1	1	5	1	1	1	1	5	1	1	5	1	1	1	1	5	1	1
1	1	5	1	4	2	3	5	4	4	1	4	1	5	1	2	1	4
3	3	2	3	1	3	1	3	3	3	2	4	1	4	1	3	2	2
4	4	1	3	1	3	1	1	5	5	1	3	1	3	1	1	2	3
2	2	3	3	1	3	1	3	4	4	1	4	1	3	1	2	3	5
1	1	5	2	1	3	3	3	5	5	1	4	1	4	1	2	2	5
3	4	1	4	1	3	1	4	5	5	1	5	1	3	1	5	4	5
2	2	3	3	2	3	2	2	4	4	3	3	2	3	2	2	2	4
3	4	2	3	1	4	1	3	4	5	1	4	1	3	1	2	3	5
4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	1	2
4	4	1	3	1	3	4	3	5	5	1	4	1	4	4	3	4	5
3	3	3	3	3	3	3	3	4	3	2	4	2	3	2	3	2	3
1	1	4	1	1	1	1	1	5	5	1	5	5	5	5	5	1	3
5	5	1	5	1	4	1	1	5	5	1	4	1	4	1	1	2	3
1	1	1	1	1	3	1	3	1	1	1	1	1	2	1	3	4	3
4	3	2	2	4	3	2	5	3	3	2	2	4	3	2	5	2	2
1	1	4	2	1	3	1	3	1	1	4	1	1	2	1	3	1	1
2	1	3	1	1	1	1	3	3	3	1	2	1	3	1	1	2	4
3	1	1	2	2	3	2	2	5	5	4	4	2	3	2	2	2	4
2	2	3	4	3	3	2	2	4	4	1	2	3	3	1	4	2	4
2	4	4	2	1	3	1	4	4	4	3	4	1	4	1	3	2	4
1	1	1	2	1	1	2	5	2	1	1	2	1	1	2	4	1	1
1	1	4	3	1	4	1	4	3	1	2	4	1	5	1	2	1	1
3	3	1	4	1	5	1	1	4	4	1	4	1	3	1	1	3	5
3	3	3	4	1	4	1	5	2	2	3	3	2	3	3	3	3	1
3	2	3	3	1	2	1	2	4	3	2	3	1	2	1	2	2	3
3	2	4	2	3	5	3	3	4	3	2	4	1	5	1	2	1	1
1	1	2	3	1	2	1	3	1	1	1	3	1	3	1	3	2	2
2	1	4	2	1	2	1	4	3	3	2	3	1	3	1	2	1	3
3	2	4	4	1	3	1	3	5	5	2	4	1	4	1	1	3	5
3	3	3	3	3	3	3	3	5	5	1	4	1	4	1	1	4	4
2	3	2	3	1	4	1	2	2	2	1	4	1	5	1	4	2	2
1	1	4	4	1	1	1	5	1	1	4	4	1	1	1	5	1	1
4	4	1	3	1	4	1	2	3	4	2	3	1	3	1	2	3	3
4	3	2	4	1	4	1	3	4	3	2	4	1	4	1	3	4	4
4	4	1	5	1	5	1	1	4	4	1	5	1	5	1	1	4	4
2	1	4	2	2	3	2	4	3	3	2	3	3	2	2	4	4	4
1	1	2	1	1	2	1	5	2	1	1	3	1	2	1	1	2	4
1	1	3	3	1	3	1	2	1	1	3	4	1	3	1	3	3	3

Appendix D.7 Raw data for color ranking

Q26_1	Q26_2	Q26_3	Q27_3	Q27_1	Q27_2	Q28_2	Q28_3	Q28_5
Low hue	High hue	Middle hue	Low chroma	High chroma	Middle chroma	Low value	Middle value	High value
2	1	3	3	1	2	3	1	2
3	1	2	2	3	1	3	2	1
3	2	1	3	1	2	2	1	3
2	1	3	1	2	3	3	2	1
1	2	3	1	2	3	3	1	2
2	1	3	1	3	2	2	3	1
3	1	2	1	3	2	2	1	3
2	1	3	3	1	2	3	1	2
1	3	2	3	2	1	1	3	2
1	2	3	3	2	1	3	2	1
1	3	2	3	1	2	3	2	1
2	1	3	2	3	1	2	1	3
1	2	3	2	1	3	1	3	2
3	1	2	3	1	2	3	2	1
1	2	3	3	2	1	1	3	2
1	2	3	2	1	3	1	3	2
3	1	2	3	1	2	1	2	3
3	1	2	3	2	1	2	1	3
1	3	2	1	3	2	3	1	2
2	1	3	1	3	2	2	3	1
2	1	3	1	3	2	2	1	3
3	1	2	1	3	2	1	2	3
2	1	3	3	1	2	3	1	2
1	3	2	3	2	1	3	1	2
3	1	2	3	2	1	1	3	2
2	1	3	3	1	2	1	3	2
1	3	2	3	1	2	3	1	2
2	3	1	1	3	2	1	3	2
1	2	3	1	3	2	1	3	2
1	2	3	1	2	3	1	2	3
2	1	3	3	1	2	3	1	2
1	3	2	3	2	1	2	3	1
3	1	2	3	2	1	2	3	1
3	2	1	2	3	1	2	3	1
3	2	1	3	2	1	3	2	1
2	1	3	3	2	1	1	3	2
3	2	1	3	1	2	3	1	2
3	1	2	3	1	2	2	1	3
3	1	2	3	2	1	1	3	2
3	2	1	3	2	1	2	3	1
2	1	3	3	1	2	3	2	1
2	3	1	1	3	2	2	3	1
1	2	3	1	3	2	1	3	2
2	3	1	2	3	1	2	1	3
3	2	1	3	2	1	3	1	2
2	1	3	2	3	1	2	3	1
3	2	1	1	3	2	3	1	2
3	1	2	3	2	1	1	3	2
2	3	1	3	2	1	1	3	2
1	3	2	2	3	1	2	3	1
3	2	1	2	3	1	3	2	1
1	3	2	2	3	1	2	1	3
3	2	1	1	3	2	2	3	1
3	1	2	2	3	1	2	3	1

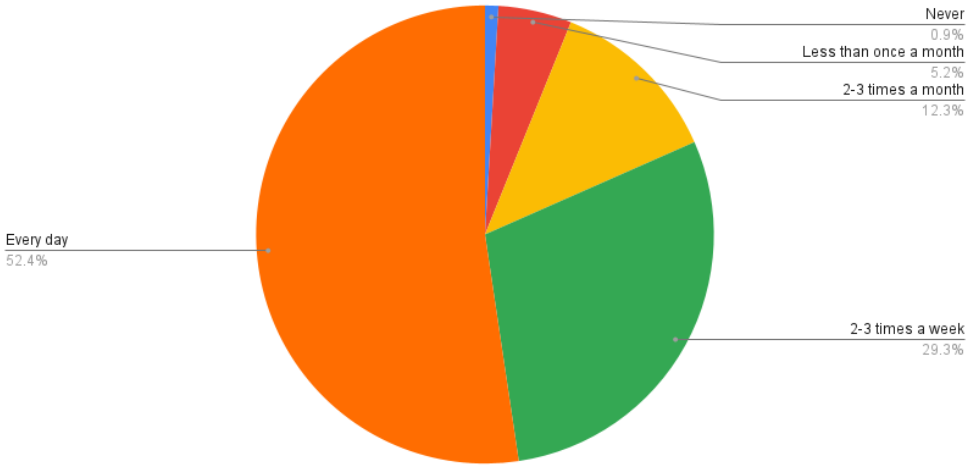
3	2	1	1	3	2	1	3	2
3	1	2	1	3	2	3	1	2
2	1	3	2	3	1	2	1	3
1	2	3	3	2	1	3	2	1
3	1	2	2	3	1	3	1	2
3	2	1	2	1	3	1	2	3
3	1	2	3	1	2	3	1	2
1	2	3	3	2	1	2	3	1
3	2	1	3	1	2	2	3	1
2	1	3	3	1	2	2	1	3
3	1	2	3	1	2	2	3	1
1	2	3	3	1	2	1	2	3
2	3	1	1	3	2	1	3	2
1	2	3	1	3	2	2	3	1
1	2	3	2	1	3	1	3	2
1	3	2	2	3	1	1	3	2
2	3	1	3	2	1	3	1	2
3	1	2	3	1	2	1	2	3
3	2	1	2	3	1	1	3	2
2	1	3	3	1	2	3	1	2
2	1	3	3	1	2	3	1	2
2	3	1	3	1	2	1	3	2
2	1	3	1	3	2	2	3	1
1	3	2	3	1	2	1	3	2
1	2	3	1	2	3	3	1	2
3	2	1	3	1	2	1	3	2
1	2	3	3	1	2	1	3	2
1	2	3	2	1	3	1	3	2
1	3	2	1	3	2	2	3	1
3	1	2	2	1	3	1	3	2
1	3	2	1	2	3	1	3	2
2	3	1	3	1	2	2	1	3
3	2	1	3	2	1	3	2	1
2	1	3	3	1	2	1	2	3
1	2	3	3	1	2	1	3	2
3	1	2	1	3	2	1	3	2
2	1	3	1	3	2	1	3	2
2	3	1	2	3	1	2	3	1
3	2	1	1	3	2	1	2	3
1	2	3	1	3	2	1	3	2
1	2	3	1	3	2	1	3	2
2	3	1	1	3	2	1	3	2
3	1	2	3	1	2	3	1	2
2	1	3	3	1	2	1	3	2
3	2	1	1	3	2	1	3	2
3	1	2	1	3	2	1	2	3
3	1	2	3	1	2	3	2	1
3	1	2	1	3	2	1	3	2
3	1	2	1	3	2	1	2	3
1	3	2	3	1	2	1	3	2
1	2	3	3	1	2	2	1	3
1	3	2	3	1	2	1	3	2
2	3	1	1	3	2	2	3	1
2	1	3	3	1	2	2	3	1
1	3	2	2	3	1	1	3	2
3	1	2	3	1	2	3	1	2
2	1	3	3	2	1	3	1	2
3	1	2	3	1	2	2	1	3

2	3	1	3	2	1	3	2	1
2	3	1	1	3	2	2	3	1
1	3	2	3	1	2	3	1	2
2	1	3	1	3	2	1	3	2
1	3	2	3	1	2	2	1	3
2	1	3	2	1	3	3	1	2
2	1	3	3	2	1	1	3	2
2	1	3	2	3	1	3	2	1
1	2	3	3	1	2	3	2	1
1	2	3	3	1	2	3	1	2
3	1	2	3	1	2	3	1	2
2	3	1	3	2	1	1	3	2
3	2	1	2	3	1	1	3	2
2	3	1	3	2	1	2	1	3
1	2	3	3	2	1	3	2	1
2	1	3	2	3	1	2	3	1
3	1	2	3	1	2	3	1	2
2	3	1	1	2	3	1	3	2
1	3	2	2	3	1	2	3	1
3	1	2	3	1	2	3	1	2
1	3	2	1	2	3	1	3	2
2	1	3	3	1	2	2	1	3
1	2	3	1	3	2	1	3	2
2	1	3	2	3	1	2	3	1
1	3	2	1	3	2	1	3	2
3	1	2	3	2	1	2	1	3
2	3	1	2	3	1	3	2	1
1	3	2	3	1	2	3	2	1
2	1	3	3	1	2	1	2	3
1	3	2	3	1	2	3	1	2
2	1	3	3	2	1	3	1	2
2	3	1	3	2	1	3	2	1
1	2	3	1	3	2	3	2	1
1	2	3	3	1	2	1	3	2
1	3	2	3	1	2	2	3	1
3	2	1	3	2	1	1	3	2
2	1	3	3	2	1	2	3	1
2	1	3	1	3	2	1	3	2
3	1	2	2	3	1	3	2	1
2	3	1	1	3	2	1	3	2
1	2	3	3	1	2	3	2	1
2	1	3	3	1	2	3	1	2
1	2	3	3	1	2	3	1	2
1	3	2	1	3	2	3	2	1
1	3	2	1	2	3	1	3	2
1	2	3	1	3	2	2	3	1
3	2	1	1	3	2	3	1	2
3	2	1	2	3	1	1	3	2
3	1	2	3	1	2	3	1	2
1	3	2	1	3	2	1	2	3
2	3	1	1	3	2	3	1	2
2	1	3	3	1	2	2	3	1
3	2	1	3	2	1	2	1	3
3	2	1	3	1	2	3	2	1
2	1	3	3	1	2	2	1	3
1	2	3	2	3	1	1	3	2
3	1	2	2	3	1	1	3	2
2	3	1	1	3	2	1	3	2

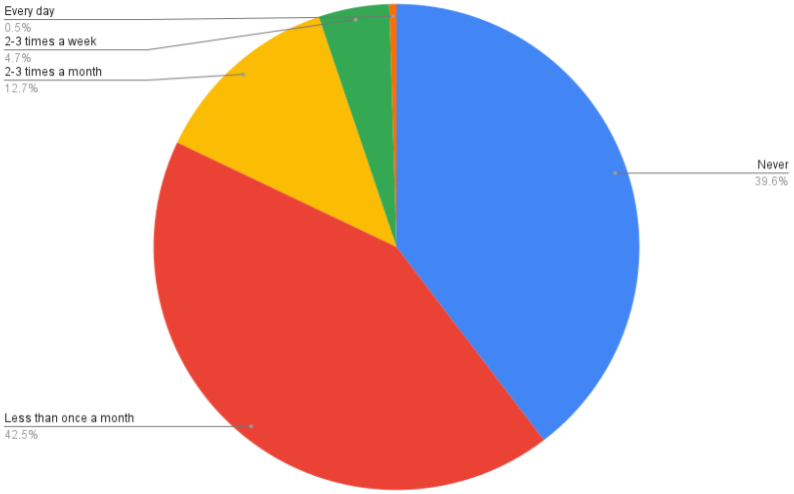
2	3	1	2	3	1	1	2	3
2	3	1	3	2	1	1	3	2
3	2	1	3	2	1	2	1	3
2	1	3	1	3	2	2	3	1
3	1	2	3	1	2	1	2	3
3	2	1	3	1	2	2	3	1
1	3	2	2	3	1	3	2	1
1	2	3	1	3	2	2	3	1
3	2	1	3	1	2	2	1	3
2	3	1	2	3	1	3	1	2
2	1	3	2	3	1	2	3	1
1	3	2	1	3	2	3	2	1
2	3	1	3	1	2	3	1	2
2	3	1	3	1	2	3	1	2
3	2	1	3	2	1	3	1	2
3	2	1	1	3	2	1	2	3
2	3	1	1	3	2	1	3	2
2	3	1	1	3	2	1	3	2
3	1	2	1	3	2	1	3	2
3	1	2	3	1	2	3	1	2
1	2	3	3	2	1	1	3	2
3	1	2	3	1	2	3	1	2
1	2	3	3	1	2	1	3	2
3	1	2	1	2	3	3	1	2
2	3	1	1	3	2	1	2	3
2	1	3	3	1	2	1	3	2
3	2	1	1	3	2	1	3	2
1	3	2	3	2	1	1	3	2
3	1	2	1	2	3	2	3	1
1	2	3	3	1	2	1	2	3
1	2	3	3	2	1	2	3	1
1	3	2	3	2	1	3	2	1
3	2	1	3	2	1	1	3	2
1	3	2	1	3	2	1	3	2
1	3	2	1	3	2	2	3	1
3	2	1	2	3	1	2	3	1
2	1	3	3	2	1	2	3	1
3	2	1	1	3	2	1	3	2
2	1	3	1	3	2	2	3	1
1	2	3	3	1	2	3	1	2
1	3	2	2	3	1	2	3	1
2	1	3	1	3	2	3	2	1

Appendix E. Figures

Appendix E.1 Frequency of seeing personalized social media advertisements



Appendix E.2 Frequency of shopping via social media



Appendix F: Statistical test results on R for Hypothesis 1

Appendix F.1 Two-sample t-test between purchase possibilities for value advertisement #1

```
> t.test(Purchase.possibility ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Purchase.possibility by Value
t = 0.81909, df = 422, p-value = 0.4132
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.1320511  0.3207304
sample estimates:
mean in group High  mean in group Low
         2.396226          2.301887
```

Appendix F.2 Two-sample t-test between purchase possibilities for chroma advertisement #1

```
> t.test(Purchase.possibility ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Purchase.possibility by Chroma
t = 8.0094, df = 422, p-value = 1.134e-14
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.6549248 1.0809243
sample estimates:
mean in group High  mean in group Low
         3.061321          2.193396
```

Appendix F.3 Two-sample t-test between purchase possibilities for hue advertisement #1

```
> t.test(Purchase.possibility ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Purchase.possibility by Wavelength
t = -4.3547, df = 422, p-value = 1.674e-05
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.7188406 -0.2717255
sample estimates:
mean in group High  mean in group Low
         2.400943          2.896226
```

Appendix F.4 Two-sample t-test between purchase possibilities for value advertisement #2

```
> t.test(Purchase.possibility ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Purchase.possibility by Value
t = 8.4522, df = 422, p-value = 4.692e-16
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.7203848 1.1569737
sample estimates:
mean in group High  mean in group Low
       2.886792          1.948113
```

Appendix F.5 Two-sample t-test between purchase possibilities for chroma advertisement #2

```
> t.test(Purchase.possibility ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Purchase.possibility by Chroma
t = 6.8171, df = 422, p-value = 3.224e-11
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.5706758 1.0330978
sample estimates:
mean in group High  mean in group Low
       3.240566          2.438679
```

Appendix F.6 Two-sample t-test between purchase possibilities for hue advertisement #2

```
> t.test(Purchase.possibility ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Purchase.possibility by Wavelength
t = -2.2186, df = 422, p-value = 0.02705
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.48928501 -0.02958292
sample estimates:
mean in group High  mean in group Low
       2.099057          2.358491
```

Appendix G: Statistical test results on R for Hypothesis 2

Appendix G.1 Two-sample t-test between emotions for value advertisement #1

```
> t.test(Amazed ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Amazed by Value
t = -0.20185, df = 422, p-value = 0.8401
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.2532551  0.2060853
sample estimates:
mean in group High  mean in group Low
       2.575472          2.599057

> t.test(Powerful ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Powerful by Value
t = 1.1294, df = 422, p-value = 0.2594
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.09777823  0.36192918
sample estimates:
mean in group High  mean in group Low
       2.533019          2.400943

> t.test(Bored ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Bored by Value
t = 0.79278, df = 422, p-value = 0.4284
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.1395640  0.3282433
sample estimates:
mean in group High  mean in group Low
       2.867925          2.773585

> t.test(Comfortable ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
```

data: Comfortable by Value
t = 0, df = 422, p-value = 1
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.1997737 0.1997737
sample estimates:
mean in group High mean in group Low
        3.136792   3.136792

> t.test(Hateful ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Hateful by Value
t = -1.5886, df = 422, p-value = 0.1129
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.29549778 0.03134683
sample estimates:
mean in group High mean in group Low
        1.386792   1.518868

> t.test(Calm ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Calm by Value
t = -2.9856, df = 422, p-value = 0.002995
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.5397463 -0.1111971
sample estimates:
mean in group High mean in group Low
        2.858491   3.183962

> t.test(Upset ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Upset by Value
t = -1.5468, df = 422, p-value = 0.1227
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.29991310 0.03576215
sample estimates:

mean in group High mean in group Low
1.438679 1.570755

> t.test(Indifferent ~ Value, data = value1, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Indifferent by Value
t = 0.34881, df = 422, p-value = 0.7274
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.1967750 0.2816807
sample estimates:
mean in group High mean in group Low
2.882075 2.839623

Appendix G.2 Two-sample t-test between emotions for chroma advertisement #1

> t.test(Amazed ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Amazed by Chroma
t = 13.026, df = 422, p-value < 2.2e-16
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
1.045361 1.416903
sample estimates:
mean in group High mean in group Low
3.471698 2.240566

> t.test(Powerful ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Powerful by Chroma
t = 8.8109, df = 422, p-value < 2.2e-16
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
0.7659184 1.2057797
sample estimates:
mean in group High mean in group Low
3.339623 2.353774

> t.test(Bored ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test

data: Bored by Chroma

t = -11.611, df = 422, p-value < 2.2e-16

alternative hypothesis: true difference in means between group High and group Low is not equal to 0

95 percent confidence interval:

-1.505739 -1.069733

sample estimates:

mean in group High mean in group Low

1.924528 3.212264

> t.test(Comfortable ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test

data: Comfortable by Chroma

t = 4.9583, df = 422, p-value = 1.032e-06

alternative hypothesis: true difference in means between group High and group Low is not equal to 0

95 percent confidence interval:

0.2847062 0.6586900

sample estimates:

mean in group High mean in group Low

3.471698 3.000000

> t.test(Hateful ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test

data: Hateful by Chroma

t = -3.8187, df = 422, p-value = 0.0001543

alternative hypothesis: true difference in means between group High and group Low is not equal to 0

95 percent confidence interval:

-0.4715685 -0.1510730

sample estimates:

mean in group High mean in group Low

1.268868 1.580189

> t.test(Calm ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test

data: Calm by Chroma

t = -5.0157, df = 422, p-value = 7.796e-07

alternative hypothesis: true difference in means between group High and group Low is not equal to 0

95 percent confidence interval:

-0.7222053 -0.3155306
sample estimates:
mean in group High mean in group Low
2.698113 3.216981

> t.test(Upset ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Upset by Chroma
t = -4.1187, df = 422, p-value = 4.586e-05
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.5644155 -0.1997354
sample estimates:
mean in group High mean in group Low
1.400943 1.783019

> t.test(Indifferent ~ Chroma, data = chroma1, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Indifferent by Chroma
t = -4.1579, df = 422, p-value = 3.891e-05
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.7363675 -0.2636325
sample estimates:
mean in group High mean in group Low
2.481132 2.981132

Appendix G.3 Two-sample t-test between emotions for hue advertisement #1

> t.test(Amazed ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Amazed by Wavelength
t = -5.6956, df = 422, p-value = 2.308e-08
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.8311776 -0.4046715
sample estimates:
mean in group High mean in group Low
2.688679 3.306604

```
> t.test(Powerful ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Powerful by Wavelength
t = -6.015, df = 422, p-value = 3.902e-09
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.8824348 -0.4477539
sample estimates:
mean in group High  mean in group Low
         2.556604          3.221698

> t.test(Bored ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Bored by Wavelength
t = 5.7179, df = 422, p-value = 2.043e-08
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.4055061 0.8303430
sample estimates:
mean in group High  mean in group Low
         2.575472          1.957547

> t.test(Comfortable ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Comfortable by Wavelength
t = -1.1562, df = 422, p-value = 0.2483
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.29293221  0.07595108
sample estimates:
mean in group High  mean in group Low
         3.113208          3.221698

> t.test(Hateful ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Hateful by Wavelength
t = 0.7724, df = 422, p-value = 0.4403
```

alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.08744072 0.20064827
sample estimates:
mean in group High mean in group Low
        1.415094   1.358491

> t.test(Calm ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Calm by Wavelength
t = 2.9802, df = 422, p-value = 0.003047
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.09956234 0.48534332
sample estimates:
mean in group High mean in group Low
        3.047170   2.754717

> t.test(Upset ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Upset by Wavelength
t = 1.5733, df = 422, p-value = 0.1164
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.02940171 0.26525076
sample estimates:
mean in group High mean in group Low
        1.471698   1.353774

> t.test(Indifferent ~ Wavelength, data = hue1, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Indifferent by Wavelength
t = 2.2343, df = 422, p-value = 0.02598
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.03006934 0.46993066
sample estimates:
mean in group High mean in group Low
        2.773585   2.523585

Appendix G.4 Two-sample t-test between emotions for value advertisement #2

```
> t.test(Amazed ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Amazed by Value
t = 10.134, df = 422, p-value < 2.2e-16
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.912498 1.351653
sample estimates:
mean in group High  mean in group Low
      3.202830          2.070755

> t.test(Powerful ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Powerful by Value
t = 9.297, df = 422, p-value < 2.2e-16
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.8406534 1.2914221
sample estimates:
mean in group High  mean in group Low
      3.122642          2.056604

> t.test(Bored ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Bored by Value
t = -7.0414, df = 422, p-value = 7.768e-12
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -1.031767 -0.581441
sample estimates:
mean in group High  mean in group Low
      2.108491          2.915094

> t.test(Comfortable ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Comfortable by Value
```

t = 7.7164, df = 422, p-value = 8.727e-14
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.5905915 0.9943141
sample estimates:
mean in group High mean in group Low
         3.245283   2.452830

> t.test(Hateful ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Hateful by Value
t = -2.9926, df = 422, p-value = 0.002929
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.43765093 -0.09065096
sample estimates:
mean in group High mean in group Low
         1.382075   1.646226

> t.test(Calm ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Calm by Value
t = 4.2772, df = 422, p-value = 2.343e-05
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.2370815 0.6402770
sample estimates:
mean in group High mean in group Low
         2.981132   2.542453

> t.test(Upset ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data: Upset by Value
t = -3.901, df = 422, p-value = 0.0001115
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.5391256 -0.1778555
sample estimates:
mean in group High mean in group Low

1.358491 1.716981

> t.test(Indifferent ~ Value, data = value2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Indifferent by Value
t = -3.5987, df = 422, p-value = 0.0003578
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.6709924 -0.1969321
sample estimates:
mean in group High mean in group Low
2.448113 2.882075

Appendix G.5 Two-sample t-test between emotions for chroma advertisement #2

> t.test(Amazed ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Amazed by Chroma
t = 8.6522, df = 422, p-value < 2.2e-16
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
0.7618837 1.2098144
sample estimates:
mean in group High mean in group Low
3.405660 2.419811

> t.test(Powerful ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Powerful by Chroma
t = 7.8702, df = 422, p-value = 3.011e-14
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
0.7077797 1.1790127
sample estimates:
mean in group High mean in group Low
3.297170 2.353774

> t.test(Bored ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

```
        Two Sample t-test
data:  Bored by Chroma
t = -7.9476, df = 422, p-value = 1.751e-14
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -1.088462 -0.656821
sample estimates:
mean in group High  mean in group Low
      1.816038          2.688679

> t.test(Comfortable ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Comfortable by Chroma
t = 4.8777, df = 422, p-value = 1.524e-06
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.2703483 0.6353121
sample estimates:
mean in group High  mean in group Low
      3.306604          2.853774

> t.test(Hateful ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Hateful by Chroma
t = -1.9042, df = 422, p-value = 0.05757
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.335515503  0.005326824
sample estimates:
mean in group High  mean in group Low
      1.372642          1.537736

> t.test(Calm ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Calm by Chroma
t = 1.7297, df = 421, p-value = 0.08442
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.02318527  0.36316560
```

sample estimates:
mean in group High mean in group Low
3.037915 2.867925

> t.test(Upset ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Upset by Chroma
t = -2.4928, df = 422, p-value = 0.01306
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.38807632 -0.04588595
sample estimates:
mean in group High mean in group Low
1.405660 1.622642

> t.test(Indifferent ~ Chroma, data = chroma2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Indifferent by Chroma
t = -3.5153, df = 422, p-value = 0.0004868
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.6398417 -0.1809130
sample estimates:
mean in group High mean in group Low
2.330189 2.740566

Appendix G.6 Two-sample t-test between emotions for hue advertisement #2

> t.test(Amazed ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Amazed by Wavelength
t = -3.8441, df = 422, p-value = 0.0001396
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.6701161 -0.2166764
sample estimates:
mean in group High mean in group Low
2.268868 2.712264

```
> t.test(Powerful ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Powerful by Wavelength
t = -4.5293, df = 422, p-value = 7.711e-06
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.7913904 -0.3123832
sample estimates:
mean in group High  mean in group Low
         2.316038          2.867925

> t.test(Bored ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Bored by Wavelength
t = 3.8965, df = 422, p-value = 0.0001135
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 0.2384239 0.7238403
sample estimates:
mean in group High  mean in group Low
         2.943396          2.462264

> t.test(Comfortable ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Comfortable by Wavelength
t = -1.3596, df = 422, p-value = 0.1747
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
 -0.33455025  0.06096534
sample estimates:
mean in group High  mean in group Low
         2.518868          2.655660

> t.test(Hateful ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

        Two Sample t-test
data:  Hateful by Wavelength
t = 0.19072, df = 422, p-value = 0.8488
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
```

95 percent confidence interval:
-0.1755898 0.2133256
sample estimates:
mean in group High mean in group Low
1.608491 1.589623

> t.test(Calm ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Calm by Wavelength
t = -1.135, df = 422, p-value = 0.257
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.32214456 0.08629551
sample estimates:
mean in group High mean in group Low
2.556604 2.674528

> t.test(Upset ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Upset by Wavelength
t = 1.7092, df = 422, p-value = 0.08814
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.02688598 0.38537654
sample estimates:
mean in group High mean in group Low
1.820755 1.641509

> t.test(Indifferent ~ Wavelength, data = hue2, var.equal = TRUE, paired = FALSE)

Two Sample t-test
data: Indifferent by Wavelength
t = 0.56624, df = 422, p-value = 0.5715
alternative hypothesis: true difference in means between group High and group Low is not equal to 0
95 percent confidence interval:
-0.1748561 0.3163655
sample estimates:
mean in group High mean in group Low
2.735849 2.665094

Appendix H. Multiple regression results for Hypothesis 3

Appendix H.1 Multiple regression model for value advertisement #1

```
> multiple.regression <- lm(Purchase.possibility ~ Amazed + Powerful + Bored + Comfortable + Hateful + Calm + Upset +
        Indifferent, data=value1)
> summary(multiple.regression)

Call:
lm(formula = Purchase.possibility ~ Amazed + Powerful + Bored +
   Comfortable + Hateful + Calm + Upset + Indifferent, data = value1)

Residuals:
    Min      1Q  Median      3Q     Max
-2.45684 -0.62147 -0.09954  0.65120  2.74022

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.98878    0.24097   4.103 4.90e-05 ***
Amazed       0.10745    0.06193   1.735   0.0835 .
Powerful     0.33354    0.05993   5.565 4.70e-08 ***
Bored       -0.18950    0.04307  -4.400 1.38e-05 ***
Comfortable  0.13025    0.05551   2.347   0.0194 *
Hateful     -0.05735    0.07220  -0.794   0.4275
Calm         0.10708    0.04614   2.321   0.0208 *
Upset        0.14694    0.06963   2.110   0.0354 *
Indifferent -0.02654    0.03978  -0.667   0.5051
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.912 on 415 degrees of freedom
Multiple R-squared:  0.4193,  Adjusted R-squared:  0.4081
F-statistic: 37.45 on 8 and 415 DF,  p-value: < 2.2e-16
```

Appendix H.2 Multiple regression model for chroma advertisement #1

```
> multiple.regression <- lm(Purchase.possibility ~ Amazed + Powerful + Bored + Comfortable + Hateful + Calm + Upset +
        Indifferent, data=chroma1)
> summary(multiple.regression)

Call:
lm(formula = Purchase.possibility ~ Amazed + Powerful + Bored +
   Comfortable + Hateful + Calm + Upset + Indifferent, data = chroma1)
```

```
Residuals:
    Min      1Q  Median      3Q     Max
-2.72661 -0.62116  0.07531  0.64767  3.01361

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  1.42680    0.26415   5.402 1.12e-07 ***
Amazed       0.15851    0.05950   2.664  0.00802 **
Powerful     0.25694    0.05207   4.935 1.16e-06 ***
Bored       -0.23343    0.04471  -5.221 2.82e-07 ***
Comfortable  0.10231    0.05704   1.793  0.07362 .
Hateful     -0.06371    0.07247  -0.879  0.37985
Calm         0.12684    0.04791   2.647  0.00842 **
Upset        0.08137    0.06484   1.255  0.21020
Indifferent -0.04725    0.03976  -1.188  0.23545
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9643 on 415 degrees of freedom
Multiple R-squared:  0.3623,  Adjusted R-squared:   0.35
F-statistic: 29.47 on 8 and 415 DF,  p-value: < 2.2e-16
```

Appendix H.3 Multiple regression model for hue advertisement #1

```
> multiple.regression <- lm(Purchase.possibility ~ Amazed + Powerful + Bored + Comfortable + Hateful + Calm + Upset +
            Indifferent, data=hue1)
> summary(multiple.regression)

Call:
lm(formula = Purchase.possibility ~ Amazed + Powerful + Bored +
    Comfortable + Hateful + Calm + Upset + Indifferent, data = hue1)

Residuals:
    Min      1Q  Median      3Q     Max
-2.43994 -0.64286  0.06832  0.70455  1.99241

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  1.20129    0.25332   4.742 2.91e-06 ***
Amazed       0.17527    0.06391   2.743 0.006360 **
Powerful     0.24669    0.06255   3.944 9.42e-05 ***
```

```
Bored       -0.14449    0.04949  -2.920 0.003696 **
Comfortable  0.21622    0.06268   3.450 0.000619 ***
Hateful      0.16679    0.09465   1.762 0.078793 .
Calm         0.00215    0.05386   0.040 0.968178
Upset       -0.08141    0.09235  -0.881 0.378589
Indifferent -0.10221    0.04373  -2.337 0.019898 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9757 on 415 degrees of freedom
Multiple R-squared:  0.3466,  Adjusted R-squared:  0.334
F-statistic: 27.52 on 8 and 415 DF,  p-value: < 2.2e-16
```

Appendix H.4 Multiple regression model for value advertisement #2

```
> multiple.regression <- lm(Purchase.possibility ~ Amazed + Powerful + Bored + Comfortable + Hateful + Calm + Upset +
            Indifferent, data=value2)
> summary(multiple.regression)

Call:
lm(formula = Purchase.possibility ~ Amazed + Powerful + Bored +
    Comfortable + Hateful + Calm + Upset + Indifferent, data = value2)

Residuals:
    Min      1Q  Median      3Q     Max
-2.5177 -0.5178 -0.0940  0.6637  3.2995

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.73215    0.19800   3.698 0.000247 ***
Amazed       0.19747    0.05690   3.470 0.000575 ***
Powerful     0.40401    0.05502   7.343 1.11e-12 ***
Bored       -0.01974    0.04464  -0.442 0.658603
Comfortable  0.09568    0.05600   1.709 0.088286 .
Hateful      0.01986    0.07293   0.272 0.785563
Calm         0.01887    0.05335   0.354 0.723832
Upset        0.02431    0.06865   0.354 0.723417
Indifferent -0.08413    0.04021  -2.092 0.037010 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9057 on 415 degrees of freedom
```

Multiple R-squared: 0.4723, Adjusted R-squared: 0.4622
F-statistic: 46.44 on 8 and 415 DF, p-value: < 2.2e-16

Appendix H.5 Multiple regression model for chroma advertisement #2

```
> multiple.regression <- lm(Purchase.possibility ~ Amazed + Powerful + Bored + Comfortable + Hateful + Calm + Upset +
            Indifferent, data=chroma2)
> summary(multiple.regression)

Call:
lm(formula = Purchase.possibility ~ Amazed + Powerful + Bored +
    Comfortable + Hateful + Calm + Upset + Indifferent, data = chroma2)

Residuals:
    Min      1Q  Median      3Q     Max
-3.3895 -0.6511  0.0286  0.7207  2.7246

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  1.11360    0.25066   4.443 1.14e-05 ***
Amazed       0.20465    0.06836   2.994  0.00292 **
Powerful     0.31805    0.06675   4.765 2.62e-06 ***
Bored       -0.09143    0.04790  -1.909  0.05700 .
Comfortable  0.14198    0.06433   2.207  0.02787 *
Hateful     -0.07984    0.07807  -1.023  0.30706
Calm         0.01818    0.05836   0.311  0.75562
Upset        0.11327    0.07750   1.461  0.14465
Indifferent -0.04396    0.04243  -1.036  0.30080
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9921 on 414 degrees of freedom
  (1 observation deleted due to missingness)
Multiple R-squared:  0.4029,  Adjusted R-squared:  0.3914
F-statistic: 34.92 on 8 and 414 DF,  p-value: < 2.2e-16
```

Appendix H.6 Multiple regression model for hue advertisement #2

```
> multiple.regression <- lm(Purchase.possibility ~ Amazed + Powerful + Bored + Comfortable + Hateful + Calm + Upset +
            Indifferent, data=hue2)
> summary(multiple.regression)

Call:
```

```
lm(formula = Purchase.possibility ~ Amazed + Powerful + Bored +
    Comfortable + Hateful + Calm + Upset + Indifferent, data = hue2)

Residuals:
     Min       1Q   Median       3Q      Max
-2.61779 -0.57042 -0.06096  0.61427  2.78181

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.89578    0.21166   4.232 2.85e-05 ***
Amazed       0.23476    0.06484   3.621  0.00033 ***
Powerful     0.20537    0.06422   3.198  0.00149 **
Bored       -0.09390    0.03974  -2.363  0.01861 *
Comfortable  0.13690    0.06654   2.057  0.04027 *
Hateful      0.09073    0.06707   1.353  0.17686
Calm         0.09510    0.05973   1.592  0.11209
Upset       -0.05998    0.06368  -0.942  0.34680
Indifferent -0.06459    0.03833  -1.685  0.09271 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9667 on 415 degrees of freedom
Multiple R-squared:  0.3733,  Adjusted R-squared:  0.3612
F-statistic:  30.9 on 8 and 415 DF,  p-value: < 2.2e-16
```