

UNIVERSITÀ DELLA CALABRIA



UNIVERSITA' DELLA CALABRIA

Dipartimento di Economia, Statistica e Finanza

Dipartimento di Scienze Aziendali e Giuridiche

Dottorato di Ricerca in
Scienze Economiche e Aziendali

CICLO

XXIX

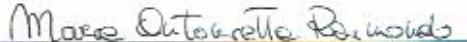
CAN PACKAGING COLOR INFLUENCE CONSUMERS' WILLINGNESS TO PAY?
EVIDENCES OF THE *AU NATUREL*-COLORED PACKAGING EFFECT

Settore Scientifico Disciplinare 13/B2

Coordinatore: Ch.mo Prof. Franco Ernesto Rubino

Firma 

Supervisore: Ch.mo Prof.ssa Maria Antonietta Raimondo

Firma 

Dottorando: Dott.ssa Veronica Marozzo

Firma 

To my father Giuseppe...
Great example of life and strength.

ACKNOWLEDGEMENTS

Undertaking this PhD has been a truly life-changing experience for me and it would not have been possible to do without the support and guidance that I received from many people.

Firstly, I would like to express my sincere gratitude to my supervisor Prof. Maria Antonietta Raimondo for the continuous support of my PhD study and related research, for her patience, motivation, and knowledge. Her guidance helped me in all the time of research and writing of this thesis.

My sincere thanks also goes to Prof. Gaetano Nino Miceli for his helpful comments and suggestions.

I greatly appreciate the support received by Dr. Irene Scopelliti during my first visiting period at Cass Business School, and the support received by Prof. Simona Botti during my second visiting period at London Business School. Both have been wonderful experiences that have allowed me to grow under professional and personal point of view.

Last but not the least, a special thanks to my family. Thanks for always believing in me. Thanks to supporting me for everything. Thanks for encouraging me to follow my dreams like this PhD experience.

CONTENTS

ABSTRACT

INTRODUCTION

CHAPTER 1 - LITERATURE REVIEW AND THEORETICAL BACKGROUND

1.1 Sensory Marketing and Visual Sensation

1.2 Visual Sensation: Color as Marketing Stimulus

1.3 The Role of Colors in Marketing and Consumer Behavior

CHAPTER 2 - CONCEPTUAL FRAMEWORK

2.1 Aim of the Research

2.2 Research Questions and Hypotheses

2.3 Overview of Experimental Studies

CHAPTER 3 – INVESTIGATING THE CHARACTERISTICS OF THE *AU NATUREL* COLOR: PRELIMINARY RESEARCH STEPS

3.1 Qualitative Interviews

3.2 Quantitative studies

3.2.1 Study A

3.2.1.1 Design

3.2.1.2 Results

3.2.2 Study B

3.2.2.1 Design

3.2.2.2 Results

**CHAPTER 4 - THE EFFECT OF *AU NATUREL*-COLORED PACKAGING:
EVIDENCES FROM FOUR EXPERIMENTAL STUDIES**

4.1 Study 1: The influence of *au naturel*-colored packaging on consumers' willingness to pay and the emotions-based explanation

4.1.1 Procedure and measures

4.1.2 Results

4.1.3 Discussion

4.2 Study 2: The moderating effect of product category on the relationship between packaging color and consumers' willingness to pay

4.2.1 Procedure and measures

4.2.2 Results

4.2.3 Discussion

4.3 Study 3: The moderating effect of cognitive load on the relationship between packaging color and willingness to pay

4.3.1 Procedure and measures

4.3.2 Cognitive load manipulation check

4.3.3 Results

4.3.4 Discussion

4.4 Study 4: Ruling out an alternative explanation of the relationship between packaging color and willingness to pay

4.4.1 Procedure and measures

4.4.2 Results

4.4.3 Discussion

CHAPTER 5 - GENERAL DISCUSSION

5.1 Theoretical contributions

5.2 Managerial Implications

5.3 Limitations and Further Research

APPENDIX A - *Interview Outline*

APPENDIX B - *Means-end chain*

APPENDIX C - *Some examples of pre-test stimuli*

Can Packaging Color Affect Consumers' Willingness To Pay?

Evidences of the *Au Naturel*-Colored Packaging Effect.

Veronica Marozzo - PhD student at University of Calabria

ABSTRACT

Color is omnipresent in marketing activities as stimulus to influence consumers' responses. Indeed, it is an important source of information to evaluate and choose products. A great deal of research has looked at color and perceptual, emotional, attitudinal, dispositional, and behavioral consumers' responses. This research aims to analyze the relationship between packaging color and consumers' willingness to pay. Specifically, this research introduces the concept of *Au naturel colors* and propose a set of hypotheses concerning the effect of *au naturel*-colored packaging on consumers' willingness to pay. This is an important area to look at and has received little attention in prior works. Results of four experimental studies show that packaging featuring *au naturel* colors (*vs.* other colors) will increase consumers' willingness to pay through an emotions-based mechanism and that product category (in terms of perceived dangerousness for consumer's health) and cognitive load moderate this relationship. This research may contribute to advance the understanding of the role of packaging colors in consumer's product experience and to support firms and policy makers in defining marketing strategies and consumer protection systems.

INTRODUCTION

Colors play an important role in affecting human perceptions. They are omnipresent in our daily lives influencing our interactions with other individuals and with objects, and are ubiquitous in marketing activities and in consumer contexts. For example, the same products are frequently sold in different colors or with different colors of packaging.

A great deal of research has looked at color and perceptual, emotional, attitudinal, dispositional, and behavioral consumers' responses. Previous studies on the effects of color on consumer behavior focused on analysing different hue of color, like red, yellow, blue, green, white or on comparing two different types of color such as red *vs.* blue, cool *vs.* warm, or light *vs.* dark, showing that color affects perceptions (e.g., Chebat & Morrin, 2007; Huang & Lu, 2013), attitudes (e.g., Meyers-Levy & Peracchio, 1995; Gorn, Chattopadhyaya, Yi & Dahl, 1997), and dispositions toward the product (e.g., Kaltcheva & Weitz, 2006; Bagchi & Cheema, 2013). The role of packaging is focal in determining consumers' expectations and impressions of the product. Indeed, packaging design, shape, materials and colors act as communication tools and can create an additional value in the consumer's mind (Chandon, 2013). The color primes can be easily implemented on the packaging and may affect consumers' responses. Color selection is a significant packaging design matter, which do not serve only aesthetic purposes (Bloch, Brunel & Arnold, 2003), but may attract consumer attention (Grimes & Doole, 1998), be used as stimulus-based information (Garber, Burke & Jones, 2000), may influence consumers perceptions (Garber et al., 2000; Gorn et al., 1997), and may affect consumers dispositions (Bagchi & Cheema, 2013).

Despite the extensive research on color in marketing and consumer behavior, previous studies have devoted little attention to the effect of *au naturel*-colored packaging on consumers' willingness to pay. Specifically, *au naturel* color is a color that brings to mind something that comes from the soil, is a not dyed or not artificial color, untreated or unprocessed, and expresses authenticity, that is something as genuine and not altered. Shades of beige (e.g., cream, sandy beiges, and mellow browns) are hues of color that could be included in this color domain. The little attention on these shades of color and on their effects on consumer's willingness to pay highlights a gap that appears to be critical if one consider the increasing use of these shades of color on different product categories in the marketplace.

This research aims to test whether *au naturel*-colored packaging can affect consumers' willingness to pay. Indeed, *au naturel*-colored packaging, by reflecting the characteristics which fall within the proposed definition of *au naturel* color (e.g., something that is genuine and not altered and that expresses authenticity), may trigger emotional associations in terms of tranquillity and serenity in the mind of consumers, which in turn influence consumers' willingness to pay. Therefore, it is possible to hypothesize that these shades of color on product packaging could positively affect consumers' willingness to pay through an emotions-based mechanism. Moreover, this research aims to test the moderating role of product category (in terms of perceived dangerousness for consumers' health) and cognitive load on the relationship between *au naturel*-colored packaging and consumers' willingness to pay. Across four experimental studies, this research supports the hypothesized relationships, thus providing evidences of the *au naturel*-colored packaging effect on consumers' willingness to pay.

This research contributes to marketing literature in the domain of packaging color design and color emotions, by highlighting the use of color such a heuristic in the evaluation process of a product. Moreover, this research may support firms and policy makers in defining marketing strategies and consumer protection systems, respectively. Indeed, color can be easily implemented on the packaging. For this reason, public policy makers could regulate the use of colors on product packaging to prevent abuses by companies and protect consumers; firms may use the *au naturel* color system to faster communicate the value and the difference of their products from the competitors.

This research is organized as follows. The first chapter will briefly introduce the concept of "sensory marketing" and will present a review of extant color research in marketing and consumer behavior. The second chapter will introduce the conceptual framework, by describing the research questions and their formalization in terms of hypotheses. The third chapter will report the results of a series of studies that were designed to validate the proposed definition of *au naturel* color. The fourth chapter will present the design, methodology and results of four experimental studies aimed at testing the hypotheses formalized in the conceptual framework. Finally, theoretical and managerial implications of the results will be discussed, by emphasizing limitations and directions for future research.

CHAPTER 1 - LITERATURE REVIEW AND THEORETICAL BACKGROUND

In this chapter, the Krishna's theory (2012) on sensory marketing will be presented. Colors as important aspects of visual sensation will be then emphasized. Finally, a literature review on the role of colors in marketing and consumer behavior will be illustrated.

1.1 Sensory Marketing and Visual Sensation

According to Krishna (2012), “*sensory marketing*” is defined as “marketing that engages the consumers' senses and affects their *perception, judgment and behavior*”. From a managerial viewpoint, sensory marketing can be used to produce unconscious triggers that influence consumer perceptions, for example, of abstract notions of the product like its sophistication, elegance, and quality. It can also be used to affect the perceived quality of an intangible attribute like its color, shape, taste, or smell. From a research viewpoint, sensory marketing implies an understanding of *sensation* and *perception* as it applies to consumer behavior.

Krishna (2012) defines sensation and perception as two sequential stages of the same process: the processing of the senses. Sensation is defined as the stage in which “the stimulus impinges upon the receptor cells of a sensory organ”, and perception as the stage in which there is “the awareness or understanding of sensory information” (Krishna, 2012). Therefore, sensory marketing is an application of the understanding of sensation and perception to the field of marketing (e.g., to consumer perception, cognition, emotion, learning, preference, choice, or evaluation).

According to Krishna (2012), the sensations that trigger the process of perception are picked up by the five senses: haptics, olfaction, audition, taste and vision. In a hierarchy, haptics or touch sensation is on top of pyramid, and the other senses (olfaction, audition, taste and vision) increase the intensity of the touch sensation. The importance of touch sensation has been shown in many studies. For example, Peck and Childers (2003) have developed the Need-for-Touch scale and have demonstrated that high-NFT people were more positive and less demoralized about their product

evaluations when they could touch the product, while there were no differences for low-NFT people.

With regard to olfaction sense, some studies have shown that smell can influence memory. For instance, researchers have provided evidence that ambient odours result in memories and affect processing on product information and choice (Mitchell, Kahn & Knasko, 1995), and that ambient smell increases recall and identification of previously brands seen (Morrin & Ratneshwar, 2003).

Concerning the audition, past research has reported findings in terms of sound symbolism and ambient music. With regard to sound symbolism, Zampini and Spence (2005) have empirically demonstrated that the sound emitted from the food when it is bitten can have an effect on perceived freshness as well as on quality for certain foodstuff (e.g., potato chips, crackers). With regard to ambient music, Yalch and Spangenberg (2000) have provided evidence that when consumers like the background music, they have the feeling of having spent less time (compared to the actual amount of time) inside the store.

Studies on taste sensation have provided evidence that taste is susceptible to external influences (e.g., physical attributes, brand name, product information). In terms of brand names, for example, Allison and Uhl (1964) have shown that brand name can affect beer perceptions between heavy beer drinkers.

Finally, with regard to vision sensation, for instance, some studies have shown that product proportions can influence the consumer aesthetic judgments (Raghubir & Greenleaf, 2006), and that visual aspects of products and spaces, like as spatial configurations, can affect the information elaboration (Meyers-Levy & Zhu, 2007). One

of the most important stimulus able to trigger visual sensation is the color, which is the focus of this paper.

1.2 Visual Sensation: Color as Marketing Stimulus

Colors are present everywhere in our daily lives (Bagchi & Cheema, 2013); colors are “a fundamental aspect of human perception” (Mehta & Zhu, 2008); and every person, object, or environment we daily face include color information (Elliot & Maier, 2007). Color is considered to be the most salient and “resonant and meaningful” visual characteristic of those seen in early vision (Sacks, 1995). Cheskin (1957) has defined color as a “vivid, affect-loaded and memorable visual element”, and this makes color an important visual cue for persuasive communications purposes, and an important marketing communications tool. Color carries important symbolic and associative information about the product category and specific brands (Hine, 1995), making it a powerful visual cue for conferring meaning, contrast, identity or novelty to an object or idea (Garber, Burke & Jones, 2000; Garber & Hyatt, 2003). Thus, marketers should be sensitive to the vital role that color plays in marketing communications.

As a consequence, supported by technological advances, a variety of disciplines such as neuroscience, biology, and visual cognition, are to some extent involved in studying the complexity of colors perception. In particular, these disciplines use new populations and/or new methods such as neuro-imaging (e.g., fMRI, ERP, MEG), eye-tracking, or new mathematical modelling (Shevell & Kingdom, 2008) to gain new insights in understanding the complexity of colors perception.

In seeking to understand the role of color for persuasive communications purposes, it would be helpful to understand what color is, in general. However, color is

still not completely understood (Marr, 1982). There is a very old debate concerning whether color is primarily a physical phenomenon (endowed in the object that is being viewed), or a result of the lengths of the reflected light waves that strike the retina (Marr, 1982), or a subjective phenomenon (that is endowed in the observer), making it a product of subject's sensory apparatus and/or of the processing and understanding that takes place in the brain (Goethe, 1988). With regard to the last point (i.e., color is the product of the brain's interpretation of the visual sensory information that it receives), Scott (1994) and Garber and Hyatt (2003) pointed out that the color, which is one of several visual elements that the mind integrates to create recognizable items and images, acquires connotation through learned contexts and schemas that are ethnically and traditionally based.

Color is such a pervasive part of our everyday life that one tends to take it for granted. However, differential effects (both physiological and psychological) for various colors have been found repeatedly across decades of research in psychology. Since many forms of marketing communication, such as packaging, products, brands, logos, advertisements, and store environments, include color information, the color effects are bound to be operative in a variety of consumer behavior contexts. For example, with regard to colors and brands, Tutssel (2000) has stated that colors evoke brands. Whether it is Heineken's distinct green label, Coca-cola's red, or Shell's yellow, all have different color values to different consumers. The high importance placed on color is an acknowledgment of manufacturers' understanding that color has strong emotional loading, able to prompt a swifter response to packaging than either the written work or imagery. Indeed, color can be an important, controllable marketing variable for managing image standardization because a product's color can function not

only as an immediate identifier of its brand but also of its quality and price. In store environments context, for example, red is a popular color choice among fast-food restaurants (because the red color stimulates appetites); the yellow color is also employed by fast-food moguls to hijack customers' interests – they gain customers' attention, increase their appetite, and encourage them to eat. This is the best way for fast-food companies to generate sales. By contrast, formal restaurants use blue color to calm and relax their customers. This comforting state is expected to increase the likelihood of the customers lingering longer. Longer stays may correspond to larger meals, more wine, coffee, or desserts, and, therefore, more sales. This is an important strategy for formal restaurants to increase their sales. In terms of product packaging, for example, color can drastically affect sales. The choice of colors for products should be largely conducted before launching a product, because a wrong color choice can have negative impact on the image of the product itself and on the company's image.

In general, managers should recognize the importance of color like marketing stimuli and, by recognizing the different meanings associated with specific colors, they may facilitate the recognition of marketing opportunities. Therefore, if marketers consider that colors are a source of information for the consumers, a prudent use of colors in the different communication tools can contribute to differentiate their offer from competitors.

1.3 The Role of Colors in Marketing and Consumer Behavior

Consistent with the pivotal role of color in marketing and consumer behavior, a great deal of research has addressed this topic.

This section synthesizes key marketing studies concerning the use of colors in different marketing applications and their roles in determining consumer perceptions and influencing emotional, attitudinal, dispositional and behavioral responses.

Marketers tend to use color in different areas of application as color has the potential to impact several consumer behavior outcomes. Summarizing some of the main studies on colors in marketing literature, it is possible to identify the following areas: *advertising* (e.g., Meyers-Levy & Peracchio, 1995; Gorn et al., 1997; Lohse & Rosen, 2001; Mehta & Zhu, 2009); *store atmospherics* (e.g., Bellizzi, Crowley & Hasty, 1983; Bellizzi & Hite, 1992; Crowley, 1993; Babin, Hardesty & Suter, 2003; Chebat & Morrin, 2007; Lee, Noble & Biswas, 2016); *product design* (e.g., Garber, Hyatt & Starr, 2000; Alfnes, Guttormsen, Steine & Kolstad, 2006; Hoegg & Alba, 2007; Madzharov, Ramanathan & Block, 2012; Szocs & Biswas, 2013; Hagtvedt, 2014); *logo design* (e.g., Bottomley & Doyle 2006; Labrecque & Milne, 2012); *packaging design* (e.g., Garber, Burke & Jones, 2000; Rouillet & Droulers, 2005; Huang & Lu, 2013; Mai, Symmank & Seeberg-Elverfeldt, 2016); *product color naming* (e.g., Miller & Kahn, 2005; Skorinko et al., 2006); and *internet* (e.g., Gorn, Chattopadhyay, Sengupta & Tripathi, 2004; Kaltcheva & Weitz, 2006; Bagchi & Cheema, 2013). Therefore, color is clearly an important issue across various areas of marketing making crucial a detailed understanding of its effects on perception and on emotional, attitudinal, dispositional, and behavioral consumers' responses.

With reference to the *advertising* area, in terms of attitude toward the product and considering color versus noncolor advertising, Meyers-Levy and Peracchio (1995) have found that color can be an influential heuristic for less-motivated consumers and that effectiveness for highly motivated consumers depends on demand and accessibility of

processing resources. Specifically, the authors have found that when consumers lack motivation to process an advertising effort fully, it appears that the use of full or partial color in the advertising spawns more favorable product attitudes than when an exclusively black-and-white advertising is employed. Gorn et al. (1997) have found that advertisements with higher saturation color induced feeling of excitement and, in turn, increased likability. The authors have also found a positive effect of high value colors (i.e., the degree of darkness or lightness of the color relative to a neutral scale that extends from pure black to pure white) on liking for the brand, which was mediated by feelings of relaxation. With the aim of studying the quality, credibility and attitude toward the advertising, Lohse and Rosen (2001) have found that color can be a signal of quality on products and services attracting reader attention. They have also shown that there are differences across product categories (i.e., restaurant, computer, and photo developing). Mehta and Zhu (2009) have found that the background color of advertisements have an effect on memory and product evaluations. They have showed that red activated an avoidance motivation (that in case of prevention-focused ads results in increased attention, memory, and positive evaluations), while blue activated a motivation approach, leading to positive evaluations of ads that highlighted positive product benefits.

Concerning *store atmospherics*¹, experimental research generally suggests that cool-colored store environments are preferable to warm-colored environments (e.g., Bellizzi & Hite 1992; Crowley, 1993; Babin, Hardesty & Suter, 2003; Chebat & Morrin, 2007). With the aim to study if hue color (i.e., red, yellow, green, blue and white) affect

¹ Kotler (1973) defines atmospherics as the conscious designing of space to create specific effects in buyers. The author further describes it as an effort to design buying environments to produce certain emotional effects in the consumer that enhance purchase probability.

approach orientation, physical attraction, and perceptions of store environment and products, Bellizzi et al., (1983) have found that color can physically attract shoppers toward a retail display and have certain perceptual qualities influencing store and merchandise image. Interestingly, the authors have shown that, regardless of color preference, subjects may be physically drawn to warm colors, but feel that warm-color environments are generally unpleasant. Moreover, the authors have found that subjects actually sat closer to red and yellow walls than to blue and green walls. Yet, when questioned about store environments and merchandise, subjects perceived red and other warm environments as negative and tense. In addition, while these environments were bright and colourful, subjects also considered them to be less attractive and less pleasant than cool-color environments. In sum, Bellizzi et al. (1983) have shown that warm colors were rated as higher on an activity factor but lower or unfavourable on an evaluative factor. Moreover, Bellizzi and Hite (1992) have tested the effects of red and blue, having opposite color properties, in a shopping-related context. Prior color research has shown that red is perceived as negative and tense as well as physically arousing (Cahoon, 1969), while blue has been identified as calm, cool, and positive (Sharpe, 1974). Previous research findings reported in the psychology and marketing literature have shown the positive effect of blue and the negative impact of red attitude and decision making. Specifically, the distraction-arousal effects and the evaluative effects of red vs. blue lead to favor blue as opposed to red as a positive color in a consumer decision-making context. If red creates distraction, causes anxiety, produces judgmental errors, and is associated with negative perceptions in certain retail environments, the color is clearly inappropriate for situations in which the opposite effects are desired. Bellizzi and Hite (1992) have corroborated the differential effects of

red and blue suggested by prior research, showing the importance of the emotional component of color. Starting by previous literature, the authors have found that blue (vs. red) resulted in more simulated purchases, fewer purchase postponements, and a stronger inclination to shop and browse around in the store. Crowley (1993) provided evidence about the existence of a two-dimensional impact of color on shopping, by demonstrating that color effect shows different patterns depending on the type of response examined. The results have shown that evaluative effects are most positive at the short wavelength (blue) end of the visible spectrum, while the activation response engendered by color exhibits a U-shaped pattern across wavelengths. In particular, the author have shown that the colors with more extreme wavelengths (closer to red) are the most activating, offering much potential in explaining a pattern of activation responses to color. Moreover, the author has shown that color can affect perceptions of the merchandise within the store environment and, in particular, that red color may increase impulse buying for its activating effects. In the same context, considering wall color (orange vs. blue) and store lighting (soft vs. bright), Babin et al. (2003) have shown that the interaction of color and light can influence purchase intentions and price fairness. They have found that, in case of fashion-oriented stores, blue interiors are related with more positive evaluations, marginally better enthusiasm, higher store patronage intentions (i.e., the likelihood of shopping in a store), and higher purchase intentions (i.e., the likelihood of purchasing an item) than orange interiors. However, these results change significantly when the effect of lighting in combination with color is considered. Indeed, the authors have shown that the use of soft lights with an orange interior generally deletes the ill effects of orange and produces the maximum level of perceived price fairness while controlling for price. Specifically, they have found that for a blue

store interior, bright lights resulted in higher price fairness perceptions than did soft lights; while for the orange store interior, soft lights resulted in higher price fairness perceptions than did bright lights. Moreover, the authors have found that the effects of color, lights, and price on behavioral intentions are mediated by the cognitive and affective reactions they create. Specifically, all direct effects on either patronage or purchase intentions vanished when subjects' perceived excitement, evaluation, and price fairness perceptions were introduced as predictors. This finding suggests that although color, lighting, and price are linked to shopping intentions, the effect is indirect and other factors that also influence affect and price fairness must be considered in understanding their effects more fully. Chebat and Morrin (2007) have provided evidence that color affects perceptions of quality showing the existence of cultural differences. Specifically, the authors have analyzed the effects of warm *vs.* cool color mall décors on shopper perceptions by subculture, showing that the décor schemes affected consumers' perceptions of the quality of the mall environment which, in turn, affected perceptions of the quality of the products sold in that environment. With regard to cultural differences, they provided evidence that French-Canadians had higher perceptions of product quality when the mall exhibited a warm color décor. Conversely, Anglo-Canadians had higher perceptions of product quality when the mall exhibited a cool color décor. In addition, their analysis indicates that the perceptual enhancements were mediated largely by cognitive rather than affective mechanisms. Lastly, in service and restaurant atmospherics context, Lee et al. (2016) have provided evidence that gold-related color in atmospherics affects customer tipping behavior at restaurants. Building on the referential meaning of color framework (i.e., the effects of the meanings associated with a given color), the authors have provided evidence that consumers

activate gold–status (color–meaning) associations when they encounter the color gold. Specifically, across five studies, the authors have shown that the color gold (as opposed to black, white and orange) in a service atmosphere positively influences consumer tipping. Their findings suggest an activation of the gold–status association that enhances consumers’ subsequent status perception and, in turn, enhances tipping behavior. For example, in a field experiment, they have shown that restaurant customers who encountered a gold-colored (*vs.* black-colored) service's object (i.e., bill folder) left larger tips; moreover, with the aim to understand the mechanisms underlying this relationship, the authors have provided evidence that customers increased their tip amounts (%) through enhancement of restaurant status and self-status perception (in that sequence) when they encountered a gold-colored (*vs.* black-colored) service's object.

In the *product design* domain, with regard to food products, some studies have provided evidence that color can affect identification, flavor perception, taste perceptions, and willingness to pay the product. Garber et al. (2002) have investigated the role of food color in conferring identity, meaning and liking to those foods and beverages that assume many flavor varieties. They have used the fruit beverages as stimuli, and have considered three level of beverage color (orange as characteristic color, purple as uncharacteristic color, and clear as base level) and three levels of labelling (orange drink represents correct information, grape drink represents incorrect information, fruit drink is the base level). The authors have tested if food color affects the taste and flavor perceptions in presence of label (congruent *vs.* incongruent) information. Results indicate that food color affects the consumer's ability to correctly identify flavor, and to form distinct flavor profiles and preferences, and dominates other flavor information sources, including labelling and taste. These results have provided

support to the notion that food color is inextricably linked to expected flavor in the minds of consumers (independently by congruent or incongruent label), making the selection of uncharacteristic food color problematical. Alfnes et al. (2006) conducted a real choice experiment with the main aim to investigate consumers' willingness to pay for salmon with various degrees of flesh redness, and to investigate whether information on the origin of the color influences consumers' willingness to pay. Specifically, the authors have created 5 color categories with differences in terms of redness (i.e., R21, R23, R25, R27 and R29) using an internationally recognized method for color measurement for salmon (that is the SalmoFan). Results of their research have provided evidence that most of the increase in willingness to pay for color is before R25, and that salmon with color below R23 on the SalmoFan are difficult to sell at any price. Moreover, they have shown that informing consumers about the origin of the color does not affect the willingness to pay for pale and normal red fillets. However, this information does influence the willingness to pay for above-normal red fillets, which decreases significantly. These results indicate that color-added labeling would have little effect on the demand for the most common color categories of farmed salmon. Assuming that perceptual discrimination is fundamental to rational choice in many product categories, Hoegg and Alba (2007) have found that color cues can even dominate taste cues such that color matches exaggerated homogenization, and therefore causes greater perceived differences for same-taste pairs of different colors than for mixed-taste pairs of the same color. The authors have used orange juice (i.e., Tropicana pure, pulp-free orange juice) as stimulus and have manipulated, as predictors, the color (natural² orange juice color vs. darker orange juice color), the taste in term of sweetness

² That is, the "real" color of Tropicana pure, pulp-free orange juice really sold in the market.

(i.e., 1) low sweet, which was the pure orange juice, 2) medium sweet, which was a mixture of 2 grams of Equal Sweetener per 800 millilitres of pure orange juice, and 3) high sweet, which was a mixture of 6 grams of Equal Sweetener per 800 millilitres of pure orange juice), and the region (Florida vs. California). The authors have examined the influence of color differences against two benchmarks, that is: 1) a same-color control condition, and 2) a verbal-label condition that should prompt expectations of a taste difference between two samples with different labels. In addition, they have considered the region of origin (California vs. Florida) to examine how meaningful labels affect taste discrimination. Their findings have shown that the visual cue dominated the taste cue. Specifically, in the control condition, participants appropriately perceived less similarity in pairs with different tastes than pairs with identical tastes. In contrast, the color condition exhibited a pattern opposite to that of the control condition, such that participants perceived a significantly greater difference in the taste of two identical samples than in the taste of two different samples. Participants in the region condition perceived equal degrees of similarity, regardless of the true taste difference between samples within a pair. Still related to food marketing, and assuming that lighter vs. darker colors evoke more positive affect and carry more positive meaning, and that people automatically perceive light objects positively and dark objects negatively (Meier et al., 2004), Madzharov et al. (2012) have proposed that color brightness of the food will serve as an implicit perceptual and affective cue that ultimately affect food consumption. Across five studies and for hedonic food, the authors have demonstrated that the lightness of the color serves as an automatic evaluative cue about taste and healthiness of product itself and, in turn, serves as an input to in-the-moment emotions that ultimately bias the volume of food consumed. In particular, they have provided

evidence that light-colored foods are seen as both healthier and tastier, and are consumed more than dark-colored snacks. In addition, they have shown that the increased consumption of light-colored foods is due to a heterogeneous emotional response, with some people doing so due to increasing positive emotions and others due to decreasing negative emotions. With regard to food temperature, Szocs, Courtney and Biswas (2013) have focused their attention on how incidental exposure to non-diagnostic red or blue color cues (i.e., the color of the cup of beverage) may influence product temperature perceptions. Their findings suggest that visual cues are integrated into temperature perceptions leading to a color-temperature effect. This color-temperature effect subsequently influences downstream behavioral outcomes such as consumption volume and food preparation behaviors. The integration of visual cues (i.e., color) into temperature perceptions is driven by the fact that visual cues to temperature can be obtained with less product proximity than haptic cues to temperature making visual cues less costly. Lastly, concerning the *product design* in terms of product attributes, Hagtvedt (2014) demonstrated that consumer perceptions of product attributes, such as durability and convenience, are flexible and can be influenced by the shade of color applied to the product's surface. Darker shades enhance the perception of durability, but lighter shades enhance the perception of convenience.

With regard to the *logo design*, Bottomley and Doyle (2006) have explored the role that color can have in building brand meanings. Across two studies, the authors have demonstrated that an appropriate choice of color for a brand name (logo) can bring inherent and immediate value to a brand. Specifically, they have provided evidence in terms of color appropriateness (i.e., the notion of color-product congruity) that it is more appropriate for functional (vs. sensory-social) products/brands to be presented in

functional (*vs.* sensory-social) colors rather than sensory-social (*vs.* functional) colors. Moreover, the authors have shown that red is more appropriate than blue for sensory-social products, the converse being so for functional products, that means that the effect of red and blue on brands of products that can be classified as both functional and sensory-social, and the ability of color to enhance a brand's desired image. With the aim to understand the effect of logo shape and color (in terms of hue, saturation and value) on brand personality, purchase intentions, likability and familiarity of the brand, Labrecque and Milne (2012) have found that all three color components influenced brand personality. Moreover, they have also found that logo color and shape influenced brand likability, and that matching of package color and brand personality profile increased purchase intentions. Specifically, across four studies, the authors have provided strong support for the relationship between color and brand personality, driven by color's referential meaning. In the first study, they have shown that there is a link between hue and brand personality (e.g., the perceived sophistication of a brand is positively affected by the presence of black, purple, and pink hues); in the second study, the authors have found that saturation and value also affect brand personality (e.g., high levels of saturation have a positive relationship with the excitement dimension of brand personality; value has a negative relationship with the ruggedness dimension of brand personality); in the third study, they have replicated these findings, extending them to the area of packaging design and showing that color influenced brand personality and, as result, the matching between color packaging and brand personality profile can affect purchase intent; in the last study they have found the incremental value of color in logo design, confirm that color is an important driver of brand personality, and have provided

evidence that the combination of logo shape and color influences likability and familiarity (both familiarity and likability increase with the addition of the logo shape).

Concerning the area of *packaging design*, Garber et al., (2000) have investigated how the color of a product's packaging affects consumer choice, using a computerized grocery store simulation. The authors have predicted that the shopper's likelihood of picking up and purchasing a product depends, in part, on his or her ability to identify the brand, on the meaning communicated by the packaging, and on the packaging's novelty and contrast - all of which are affected by packaging color. For this reason, to evaluate brand consideration and purchase intention of consumers, the authors have used color similarity of the target brand revised packaging with its original packaging and the consistency of the target brand's revised packaging with the meaning conveyed by its original packaging. Specifically, to create the various levels of packaging similarity and consistency, they manipulated the color of the target brand's packaging. For example, one of several category selected was flour and, starting from the original packaging, they have created four other packages: Beige bag (i.e., very similar visual type), Light Blue bag (i.e., moderately dissimilar), Green bag (i.e., very dissimilar and consistent), and Black bag (i.e., very dissimilar and inconsistent). Garber et al. (2000) have showed that, for consumers who are not loyal to a particular brand, a change in package color can improve brand consideration, while for loyal consumers large changes may reduce brand identification and confuse existing customers, suggesting to preserve the original packaging for brands with a large base of loyal customers. Such research has also revealed that a change in packaging color can increase the total amount of search in the category. In the domain of pharmaceutical products, in assessing the effect of the color of a drug packaging on subjective evaluations pertaining to that drug, Rouillet and

Droulers (2005) have shown that color can alter pharmaceutical drug expectations. In their study, the authors have analyzed the effect of color packaging (in terms of hue and brightness) on drugs expectations and on the attribution of them in various therapeutic classes (e.g., cardiac, analgesics, antipyretics). In addition to color hue and brightness, the authors have considered mood, gender and general beliefs about medicines as independent variables. Concerning the hues of color, they have used 7 different colors distinguishing them in terms of brightness: orange, green, yellow, and grey (this last used as neutral condition) for the light category; and blue, red, and brown for the dark category. Their results have indicated that packaging color does have an effect –in a European context– on some expectancy items related to a given drug (strength, safety measures and price) and especially on the “potency” construct. For example, the authors have shown that brown and red drugs packaging are perceived as more powerful than those with the yellow or green packaging. Analyzed the effect of packaging color on consumer’s perception and behavioral intention of food, Huang and Lu (2013) considering that food producers often present labels to make general nutrition claims that sometimes can result ambiguous (i.e., “light” is used to imply the healthiness in comparison with “regular” foods), and considering that consumers tend to search for additional information to confirm their expectation and reduce ambiguity (Hoch & Ha, 1986) when they are exposed to ambiguous information, Huang and Lu (2013) have hypothesized that the packaging color can serve as “additional information”. The authors have provided evidence that products in blue packaging were perceived to be healthier than in red packaging. Considering also different product categories (utilitarian vs. hedonic) and product labelling (light vs. regular), they have shown that the interaction between color and product category produced a significant effect for

utilitarian but not for hedonic products. Specifically, their result have shown that the difference between regular- and light-labeled products was observed in congruent condition (blue-light vs. red-regular), but not in incongruent condition (blue-regular vs. red-light). In addition, the difference between regular- and light-labeled products was observed in congruent condition (blue-light vs. red-regular) but not in incongruent condition (blue-regular vs. red-light). In terms of purchase intention, Huang and Lu (2013) have reported higher intention to purchase for blue- than red-packaged products. Lastly, by extending the concept of color lightness on product packaging, Mai, Symmank, and Seeberg-Elverfeldt (2016) have found that light-colored packaging evoke two opposing effects: on the one hand, light colors on product packaging stimulate favorable health impressions (health effect) and, on the other hand, they activate detrimental taste inferences (taste effect) which jointly guide the purchase decision. Moreover, their results have provide evidence of the moderating role of consumers' goal. In particular, the authors have demonstrated that the color lightness of product packaging has ambivalent meanings depending on the consumption goal, that is products with light-colored packaging were preferred when the health goal is salient, whereas they were avoided when an indulgence goal was active.

In the *product color naming* area, Miller and Kahn (2005) have provided evidence that, when consumers encountered an atypical name (e.g., Cookie Monster Blue vs. Bright Blue), they engaged in additional elaboration in order to understand the connection between the name and the product. The type of elaboration will depend on how the name violates expectations. If the name is uninformative in a exact sense, consumers will engage in a Gricean process (i.e., additional positive attributions should then lead to a higher opinion of the product and an increased likelihood of purchase) to

determine the meaning of the communication; if the name is uninformative because it is atypical, consumers will search for the reason why the particular adjective was selected. Therefore, as result of this additional elaboration in the case in which consumers encountered an atypical name, the authors have found an increase of satisfaction with the product. Moreover, the authors have reported results with regard to the effect of the order of presentation of the picture (i.e., color picture presented before/after color name). Their results have revealed that, consistent with the Gricean hypothesis, viewing the picture first significantly reduced satisfaction for the ambiguous names, but not for any of the other name types. Skorinko et al., (2006) have examined the extent to which different naming strategies (e.g., strategies for making a product recognizable to the public, for persuading consumers to buy the product, or for enhancing recall of the product) have an impact on consumer behavior. The naming strategy used in their study consisted of using different name colors on product (fancy name color vs. generic name color). The authors have conducted a within- and between-subjects experiment design in which each subject has seen only one color (they have used three different hues of color, that is brown, blue, and green) of the product (i.e., bath towel) but they have viewed two shades of the color of the product (e.g., the light and dark blue towels). One towel was given the generic color name below it (e.g., blue, brown, or green), and the other towel was given the fancy color name below it (e.g., mocha, ocean, or sage). Their results have revealed that fancy color names influence consumers' preferences, such that product with fancy names colors (e.g., mocha) are rated more positively than product with generic names colors (e.g., brown). The fancy-name effect also influences purchasing decisions, and willingness to pay.

With respect to *electronic retailing contexts*, Gorn et al. (2004), have investigated the link between the color of a Web page's background screen while the page is downloading and the perceived quickness of the download. In particular, building upon research that supports the links between color, feelings of relaxation and time perception, the authors have predicted that the background screen color influences how quickly a page is perceived to download and that feelings of relaxation mediate this influence. In a series of experiments, they have manipulated the hue, value, and chroma dimensions of the color to induce more or less relaxed feeling states. Their findings suggest that, for each dimension, colors that induce more relaxed feeling states lead to greater perceived quickness. In addition, they have provided evidence that not only color affects perceived download quickness but has also consequences for users' evaluations of the Web site and their likelihood of recommending it to others. Past research suggests that the most effective and desirable Web sites are those that are challenging to consumers and heighten their arousal level (Novak et al., 2000). With the goal to test the effect of arousal (warm vs. cool color, saturation, and complexity), and motivation (goal oriented vs. recreational) on pleasantness and purchase intention, Kaltcheva and Weitz, (2006) have found that color is a central component of the arousal manipulation. Specifically, considering this important role of the color as visual element of the shopping environment, the authors have manipulated the arousal considering varying three visual elements of the stimulus shopping environment: the complexity (i.e., the number of non-redundant elements in an environment; the color warmth (i.e., the warmth–coolness color continuum identified as red, yellow, green, and blue; and the color saturation (the subjective experience of a wavelength's spectral purity). This means that higher complexity, warmer colors, and higher color saturation all increase

arousal. The authors have provided evidence that, when consumers have a recreational motivational orientation, high arousal has a positive effect on pleasantness, but when consumers have a goal-oriented motivational orientation, high arousal decreases pleasantness. In addition, high arousal increases consumer intentions to visit and increase purchases in on-line store for recreationally oriented consumers, but it has a negative impact on shopping behavior for task-oriented consumers. They have also shown that pleasantness mediates the effect of arousal on shopping behavior. Still in *internet* contest, Bagchi and Cheema (2013) investigated the effect of red (vs. blue) backgrounds on willingness to pay in auctions and negotiations. More specifically, using data from eBay plus data from a laboratory study, the authors have provided evidence that a red (vs. blue) background elicits higher offer jumps. By contrast, red (vs. blue) backgrounds decrease price offers in negotiations. Moreover, the authors have demonstrated that red increases aggression relative to blue. Exposure to red (vs. blue) increases arousal, which affects aggression and, in turn, aggression mediates the effect of color on willingness to pay.

Table 1.1 shows a summary review of the studies on colors research in marketing literature with reference to the their impact on perceptual, emotional, attitudinal, dispositional, and behavioral consumers' responses.

Table 1.1: Summary Review of Major Marketing Research on Colors and perceptual, emotional, attitudinal, dispositional, and behavioral consumers' responses.
(Adaptation to Labrecque et al., 2013)

Authors (Year)	Area	Independent Variables	Mediating (<i>Me</i>) and Dependent Variables	Methodology	Major findings
Meyers-Levy and Peracchio (1995)	Advertising	Ad color (full color, relevant claims highlighted, black and white), resource demands (high vs. low), and type of claim (functional vs. image)	Attitude toward the product, positive/negative thoughts, and recall	Experiment; print ads	Color can be a persuasive heuristic processing cue for less-motivated consumers; effectiveness for highly motivated consumers depends on demand and availability of processing resources.
Gorn, Chattopadhyaya, Yi, and Dahl (1997)	Advertising	Hue (red vs. blue), chroma (saturation), and value (dark vs. light)	Attitude toward the ad, attitude toward the brand, excitement (<i>Me</i>), and relaxation (<i>Me</i>)	Experiment; print ads	Ads with higher saturation induced feelings of excitement and in turn increased likability. High value produced greater liking for the brand, which was mediated by feelings of relaxation. Findings for hue failed to reach statistical significance.
Lohse and Rosen (2001)	Advertising	Color (full color vs. black), graphics (photograph or line art), ad size, and order	Quality, credibility, attitude toward the ad, and attitude toward the advertiser	Experiment; print ads	Color can attract reader attention and signal quality. Differences occurred across product categories.
Mehta and Zhu (2009)	Advertising	Hue (red vs. blue)	Reaction time, preference, recall, creativity score, and motivation (accuracy vs. speed) (<i>Me</i>)	Experiment; computer displays with HSL (Hue-Saturation-Lightness) color space	Red activated an avoidance motivation, which increased attention, memory, and evaluations of prevention-focused ads. Alternatively, based on the activation of an approach motivation, blue led to favorable evaluations of ads that highlighted positive product benefits.

Table 1.1 Continued

Authors (Year)	Area	Independent Variables	Mediating (<i>Me</i>) and Dependent Variables	Methodology	Major findings
Bellizzi, Crowley, and Hasty (1983)	Store Atmospherics	Hue (red, yellow, green, blue, white)	Approach orientation, physical attraction, and perceptions of store environment and products	Experiment; fabric-covered wall panels	Color physically attract shoppers towards a retail display (i.e., warm colors increased physical attraction). In term of store environment, the warm interior was judged more negative than the cool interior.
Bellizzi and Hite (1992)	Store Atmospherics	Hue (red vs. blue)	Purchase rates, shopping time, and feelings (pleasure, dominance, arousal) (<i>Me</i>)	Experiment; color slides projected on a wall	Blue (vs. red) resulted in more simulated purchases, fewer purchases postponements, and a stronger inclination to shop and browse.
Crowley (1993)	Store Atmospherics	Hue (red, yellow, green, blue)	Environment and merchandise quality	Experiment; color slides projected on a wall	Results point to a two-dimensional response to color. Overall, longer wavelengths (closer to red) are more arousing (activation dimension) and shorter wavelengths (closer to blue) are viewed as more pleasant (evaluation dimension).
Babin, Hardesty, and Suter (2003)	Store Atmospherics	Wall color (orange vs. blue) lighting (bright vs. soft), and item price	Affective evaluation (<i>Me</i>), excitement (<i>Me</i>), fairness, store patronage, and purchase intentions	Scenario-based experiment; description of store wall color	Interaction of color (orange vs. blue) and light (bright vs. soft) affected purchase intentions and price fairness. Blue (vs. orange) interiors are related with more positive evaluations, higher store patronage intentions, and higher purchase intentions. However, combining orange with soft lights produced reactions that were much more comparable to blue condition.
Chebat and Morrin (2007)	Store Atmospherics	Hue (cool vs. warm) and culture (French, Anglo)	Environmental quality, product quality, hedonic vs. utilitarian shopping value, and mood (pleasure and arousal) (<i>Me</i>),	Field study; visual mall décor elements	Color affected perceptions of quality, but not mood. The effects of atmospheric décor are mediated by cognitive, rather than or in addition to affective, routes.
Lee, Noble, and Biswas (2016)	Store Atmospherics	Gold	Tipping (\$), status perception (<i>Me</i>)	Field experiment	Gold in restaurant atmospherics increases customer's tipping through activation of referential meanings and status perception.

Table 1.1 Continued

Authors (Year)	Area	Independent Variables	Mediating (<i>Me</i>) and Dependent Variables	Methodology	Major findings
Garber, Hyatt, and Starr (2002)	Product design	Color (characteristic, uncharacteristic, clear) and labelling (correct, incorrect, ambiguous)	Taste perception (refreshing, tart, sweet), flavor, costly, and overall preference	Experiment; sampling fruit-flavored beverages	Color affected identification and flavor perceptions of both congruently and incongruently colored beverages.
Alfnes, Guttormsen, Steine and Kolstad (2006)	Product design	Five salmon color categories: R21, R23, R25, R27 and R29	Willingness to pay	Real choice experiment	Consumers' willingness to pay is affected by the degree of redness of salmon. The most increase of willingness to pay for color is before R25 category of color reference.
Hoegg and Alba (2007)	Product design	Color (natural vs. darker), taste (sweetness level), region (Florida vs. California)	Taste of stimuli (different vs. same) and preference	Experiment; sampling orange juice	Color cues dominated taste cues. Participants perceived a significantly greater difference in the taste of two identical samples with different color than two different samples with the same color.
Madzharov, Ramanathan, and Block (2012)	Product design	Hue (light vs. dark)	Healthiness perception, food consumption, emotional response (<i>Me</i>)	Experiment; sampling food	Light-colored foods are seen as both healthier and tastier, and are consumed more than dark-colored snacks. The increased consumption of light-colored foods is due to a heterogeneous emotional response.
Szocs and Biswas (2013)	Product design	Hue (visual cue: red vs. blue)	Temperature perceptions	Experiment; sampling beverage	Color-temperature associations influence food preparation behaviours. Participants exposed to blue (vs. red) color cues reported longer heating times for foods.
Hagtvedt (2014)	Product design	Hue (light vs. dark)	Perception of density, heaviness, convenience, and durability	Experiment; product images	The perception of usage-relevant attributes depends on product color (e.g., dark is durable, light is convenient).

Table 1.1 Continued

Authors (Year)	Area	Independent Variables	Mediating (<i>Me</i>) and Dependent Variables	Methodology	Major findings
Bottomley and Doyle (2006)	Logo design	Hue (red vs. blue) and product type (functional vs. social-sensory)	Perception of brand color appropriateness, and functional vs. social-sensory product	Experiment; printed stimuli	Perception of brand color appropriateness increased when color hue matched the product type.
Labrecque and Milne (2012)	Logo design	Hue, saturation, and value, logo shape	Brand personality, purchase intent, likability, familiarity	Experiment; Web-based stimuli with hue-saturation-lightness color space, and calibrated monitors	All three color components influenced brand personality. Logo color and shape influenced brand likability. Matching of package color and brand personality profile increased purchase intentions.
Garber, Burke, and Jones (2000)	Packaging design	Color similarity of the target brand, and brand meanings' consistency between new and original package	Brand consideration, likelihood of purchase, time spent examining brand, and time spent shopping	Experiment; computer simulated shopping environment	Package color novelty (i.e., very dissimilar and inconsistent compared with original package) increased purchase consideration. Differences were found by product category and for shoppers who were not brand loyal.
Roulet and Droulers (2005)	Packaging design	Hue (red, yellow, green, blue, orange, brown and gray) and brightness (light vs. dark), mood, gender and general beliefs towards medicines	Perception of drug potency; mood and general drug attitude	Experiment; drug packaging	Color hue and darkness influence perceived drug potency. Brown and Red hues on drugs packaging are perceived as more powerful as opposed to green and yellow hues which are more associated to limited effects.
Huang and Lu (2013)	Packaging design	Hue (red vs. blue), labelling (light vs. regular), product category (utilitarian vs. hedonic)	Healthiness perception, purchase intention	Experiment; food packaging	Products in red packages are perceived as less healthy than in blue ones. The difference between regular- and light-labelled products was observed in congruent condition (blue-light vs. red-regular, but not in incongruent condition (blue-regular vs. red-light). Higher intention to purchase blue- than red-packaged products.

Table 1.1 Continued

Authors (Year)	Area	Independent Variables	Mediating (<i>Me</i>) and Dependent Variables	Methodology	Major findings
Mai, Symmank, and Seeberg-Elverfeldt (2016)	Packaging design	Color intensity (light vs. regular) Hue (red, green, brown and blue)	Healthiness perception, taste perception, purchase intention	Experiment; food packaging	The intensity of the packaging color evokes opposite effects on food evaluation and purchase intention. In terms of product evaluation, products with light colors are perceived healthier than products with regular colors, whereas products with light colors are perceived as less tasty than products with regular colors. In terms of purchase intention, the effect depend on the consumption goal, that is products with light-colored packaging were preferred when pursuing an health goal, whereas they were avoided when an indulgence goal was active.
Miller and Kahn (2005)	Product color naming	Color name (typicality and specificity), and order (color picture presented before/after color name)	Satisfaction, trustworthiness of manufacturer, and likelihood to purchase	Experiment; printed color swatches	When consumers encountered an atypical name (e.g., Cookie Monster Blue vs. Bright Blue) they engaged in additional elaboration, which increased satisfaction with the product.
Skorinko, Kemmer, Hebl, and Lane (2006)	Product color naming	Fancy vs. Generic Color Name	Preference, purchase intent, and willingness to pay	Experiment; computer displays	Labelling a color with a fancy name (e.g. mocha) vs. a generic name (e.g., brown) increased liking, purchase intention, and willingness to pay.
Gorn, Chattopadhyay, Sengupta, and Tripathi (2004)	Internet	Hue (red, yellow, blue), chroma (saturation), value, and number of exposures (1 vs. 2)	Perceived download speed, attitude toward the Web site, likelihood to recommend, and relaxation (<i>Me</i>),	Experiment; Web-based stimuli with HSB (hue, saturation, brightness) color space	Background color of a Web site affected perceived loading time. For each dimension (i.e., hue, value, and chroma), color affected relaxation, which led to a change in perceived quickness. Perceived quickness affected user evaluations and likelihood to recommend to others.

Table 1.1 Continued

Authors (Year)	Area	Independent Variables	Mediating (<i>Me</i>) and Dependent Variables	Methodology	Major findings
Kaltcheva and Weitz (2006)	Internet	Arousal (warm vs. cool color, saturation, and complexity), and motivation (goal oriented or recreational)	Purchase intention, and pleasantness (<i>Me</i>)	Experiment; computer Displays	Hue and saturation of color are a central component of the arousal manipulation. Arousal and motivational orientation had an interactive effect on shopping behavior, which was mediated by pleasantness.
Bagchi and Cheema (2013)	Internet	Hue (red vs. blue)	Willingness to pay, arousal, and aggression (<i>Me</i>)	Data from eBay; Experiment	Background color affect willingness to pay. A red (vs. blue) background elicits higher offer jumps. By contrast, red (vs. blue) backgrounds decrease price offers in negotiations. Exposure to red (vs. blue) increases arousal, which affects aggression and, in turn, aggression mediates the effect of color on willingness to pay.

CHAPTER 2 - CONCEPTUAL FRAMEWORK

This chapter will present the main goals of this research and will introduce the definition of *au naturel* color. Moreover, the research questions and their formalization in terms of hypotheses will be presented. Finally, an overview of all the experimental studies conducted to test the hypotheses will be provided.

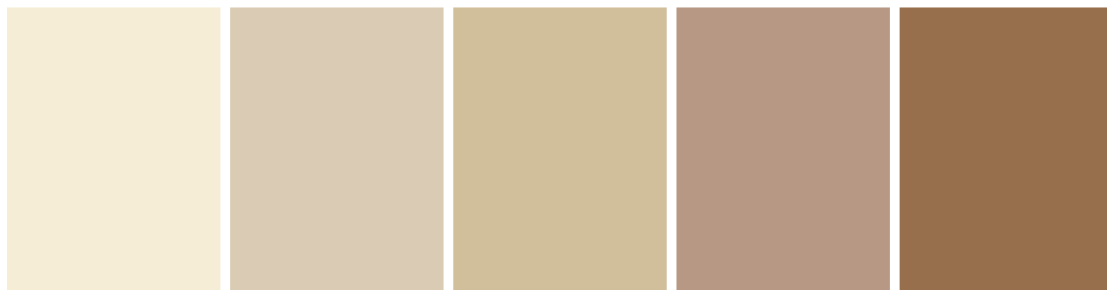
2.1 Aim of the Research

Summing up the presented literature review on the influence of colors on consumer behavior, it is possible to synthesize that much of consumer behavior is the result of exposure to subtle cues in the environment that activate cognitive and affective processes without awareness or intent (Bargh 2002; Sela & Shiv, 2009). Specifically, previous research has established that visual cues in the consumer environment are particularly important in shaping perceptions and triggering behavior (Wedel & Pieters, 2012). This is not surprising because, as mentioned in the previous chapter, visual perception is a form of sensory reasoning that provides people with the ability to interpret the world around them almost immediately (Grady 1993). Importantly, every visual stimulus processed by the human perceptual system contains color information (Elliot & Maier 2007). For this reason it is possible to affirm that color itself can be a powerful marketing stimulus aimed at attracting attention, distracting, and influencing consumers emotions, perceptions, attitudes (e.g., causing a person to like an advertisement more), dispositions and shopping behavior.

Despite the huge literature on the influence of colors on consumer behavior, little attention has been devoted to the hues of color that include predominantly the shades of

beige and to their effects on consumers' willingness to pay. The present research aims at studying the influence of these shades of color used on product packaging on consumers' willingness to pay, which is an important disposition of the consumer toward a product. In spite of its importance, the evidence concerning the effect of color on willingness to pay is still scarce and limited to specific hues of colors such as red vs. blue (e.g., Bagchi and Cheema, 2013). Specifically, I define these shades of color as *au naturel* colors and posit that they have specific features. *Au naturel* color is a color that brings to mind something that comes from the soil, it is not an artificial color nor it is dyed, untreated or unprocessed, and it expresses authenticity, that is something genuine and not altered. Figure 2.1 shows some examples of hues of color that could be included in this color domain.

Figure 2.1: Shades of *au naturel* colors



The choice of this type of color stems from both managerial and theoretical considerations. From a theoretical point of view, *au naturel* colors may convey associations such as simplicity, genuinity, safety, and positive sensations. Indeed, Clarke and Costall (2008), by conducting a qualitative investigation on emotional connotations of color, have provided evidence that brown color is linked to associations

such as seriousness and earthiness. Furthermore, browsing many sites of color theory³, it is very easy to find associations between beige or brown colors and genuineness, because these hues of color are linked to the concept of simplicity and elementary. They are colors that lead back to the land, to something that is native, to a more simple and genuine life. Thanks to their soothing qualities, these color tones are associated with loyalty and reliability, arousing tranquillity and serenity in the mind of individuals.

Therefore, if the use *au naturel* colors on product packaging can trigger emotional associations in terms of tranquillity and serenity in the mind of individuals, as a result, these reassuring emotions could increase the consumer's willingness to pay for *au naturel*-colored packaging product. Following this direction, one might expect that *au naturel* color, activating this kind of emotional associations, and working like a heuristic in the evaluation process of the product, can increase the consumer's willingness to pay.

From a managerial point of view, looking around in current market place, one may notice that increasingly different types of products (e.g., food, tobacco, body care products) use these color tones on their packaging associated with labels such as "natural" or "organic" (see Figure 2.2 for some examples of products with *au naturel*-colored packaging currently available in the market place).

³ E.g., <http://www.color-meanings.com>; <http://www.bourncreative.com>

Figure 2.2: Some examples of products with *au naturel*-colored packaging



The analysis of the relationship between *au naturel*-colored packaging and willingness to pay could be a way to advance the understanding of the use of color like a heuristic in the consumer behavior, to contribute to the marketing literature on colors and emotional and behavioral consumers' responses, and to better understand the role of one of the main visual elements of the product (i.e., the color of the packaging) during the evaluation of the product itself. Moreover, the study of this relationship may support firms and policy makers in defining marketing strategies and consumer protection systems, respectively.

Starting from these premises, the main goal of this research is to present and test a set of hypotheses concerning the effect of *au naturel*-colored packaging on consumers' willingness to pay. The next sections will present the research questions and hypotheses, as well as an overview of the experimental studies.

2.2 Research Questions and Hypotheses

As Elliot and Maier (2007) argue, colors "can carry specific meanings and communicate specific information" (p.251). As proposed in their conceptual model of color and psychological functioning, the meanings that people associate with different colors can be born either after repeated pairings of colors on special messages, concepts or experiences; both at the biological level (i.e., natural propensity to respond to certain colors, in certain ways and in certain situations). Moreover, the authors argue that the simple perception of color evokes evaluative processes that, in turn, produce a motivated behavior; that is, in general, color stimuli that take a positive meaning produce approach responses, while those that carry a negative meaning produce avoidance responses (Elliot & Maier, 2007). Different colors are presumed to have

different associations, and viewing a color is thought to trigger psychological responses consistent with these associations. For example, Frank and Gilovich (1988) posited that black is associated with evil and death and, therefore, leads to aggressive behavior. Likewise, Soldat, Sinclair, and Mark (1997) proposed that red and blue are associated with happiness and sadness, respectively, and therefore lead to cognitive processing and behavior consistent with those emotions.

Overall, considering that a) every visual stimulus processed by the human perceptual system contains color information, b) different colors are associated with different meanings, c) these meanings are transmitted to the products in terms of attributes and benefits, d) color can influence the consumers responses, one might ask how the shades of beige color (that I define *au naturel* color) used on the product packaging can affect the consumer's willingness to pay for the product and which is the underlying process.

In order to investigate this relationship, it is possible to refer to the theories which explain the evaluative process of consumers on the basis of a dual approach. The dual-process models suggest that people are capable of (and engage in) both analytic and heuristic processing (Boyer, 2006; Sloman, 1996; Stanovich, 2004). The Elaboration Likelihood Model (i.e., ELM; Petty & Cacioppo, 1981, Petty & Cacioppo, 1984) and the Heuristic-Systematic Model (i.e., HSM, Bohner et al., 1995; Chaiken, 1987) are the most know examples of these dual-process approaches. The dual-process models are based on two routes: central routes to persuasion and peripheral routes to persuasion. The first route (i.e., central) is a careful process of preparing and accurate reflection on the arguments and on the information contained in a message. In particular, this process requires some amount of cognitive resources such as pay

attention, understand, relate and integrate new information with those that the subject already has about the same object, to develop new assessments. The second route (i.e., peripheral) concerns a process of change based on elements that are not directly relevant to the topic but are rather more background or peripheral signals, and includes a variety of less effortful mechanisms such as conditioning and the use of heuristics (Bohner & Wanke, 2002).

Basically, heuristics are any sort of mental shortcut that the individual uses to simplify decisions. They are simple rules of inference that ease the individual cognitive load in a decision making situation. The heuristic processing is influential especially in situations when a person has little motivation or ability to engage in more extensive forms of processing.

The first research question concerns the influence of *au naturel*-colored packaging on consumers' willingness to pay and may be formalized as follows:

RQ.1: Can *au naturel*-colored packaging product affect consumers' willingness to pay?

According to the described dual process method, one might argue that consumers use the color of the product packaging (as well as other elements of the product, for example, the size, the shape etc.) as a heuristic in the peripheral route of processing information.

As I will better explain later, the use of feelings may further be subsumed under the category of heuristic processing (Chen & Chaiken, 1999). Following the literature that provides evidence that colors are able to arouse feelings and emotions, one might argue that *au naturel* color on product packaging is used as a heuristic to associate to

the product positive feelings, which are characterized by reassuring sensations. In turn, these positive feelings evocated by *au naturel* color may lead consumers to pay a premium price for an *au naturel*-colored packaging product.

Therefore, one might hypothesize that an *au naturel*-colored packaging (vs. other-colored packaging) works as a heuristic and, by evoking reassuring sensations in the mind of the consumer, will increase consumers' willingness to pay for the product.

Formally:

H1: *A packaging featuring au naturel colors (vs. other colors) will increase consumers' willingness to pay for the product.*

A second research question may concern the mechanism/process underlying the effect of *au naturel*-colored packaging on consumers' willingness to pay for the product which implies a mediation analysis to explain how and why this effect occurs.

Mediation is said to occur when a causal effect of some variable X on an outcome Y is explained by some intervening variable Me . A mediator variable (Me) accounts for the effect of the antecedent variable (X) on the dependent variable (Y), either in part or fully (Baron & Kenny, 1986). As a result, mediators represent the process or mechanism (how and why) through which X has an effect on Y , thus, the theoretical contribution offered by mediation as a research strategy is to open the 'black box' and to explain the process linking X to Y .

The second research question can be formulated as follows:

RQ.2: How *au naturel*-colored packaging influence consumers' willingness to pay for the product?

Consistent with the models proposing the use of heuristics in the evaluative process (Bohner & Wanke, 2002), one might consider the role of emotions to explain the effect of *au naturel*-colored packaging on consumers' willingness to pay.

Colors have a strong impact on our emotions and feelings (Hemphill, 1996; Lang, 1993; Mahnke, 1996). For example, red has been associated with excitement, orange has been perceived as upsetting and distressing, purple as dignified and stately, yellow as cheerful, and blue has been associated with comfort and security (Ballast, 2002; Wexner, 1982). Moreover, some colors may be associated with different emotions and some emotions are associated with more than one color (Linton, 1999, Saito, 1996). For instance, red, symbolically known as a dominant and dynamic color, has an exciting and stimulating hue effect. It has both positive and negative impressions such as active, strong, passionate, warm, but also aggressive, bloody, raging and intense.

As previously mentioned, the use of feelings falls in the category of heuristic processing (Chen & Chaiken, 1999) usually activated in the peripheral route of processing information. This is also consistent with the literature on "mood as information" or "feeling as information". Schwarz and Clore (1988) have described the use of one's mood as information as to a "how do I feel about it?" heuristic. According to the dual-process approach these feelings could influence consumers' dispositions (e.g., purchase intention or willingness to pay) based on the feeling-as-information model through the peripheral route processing.

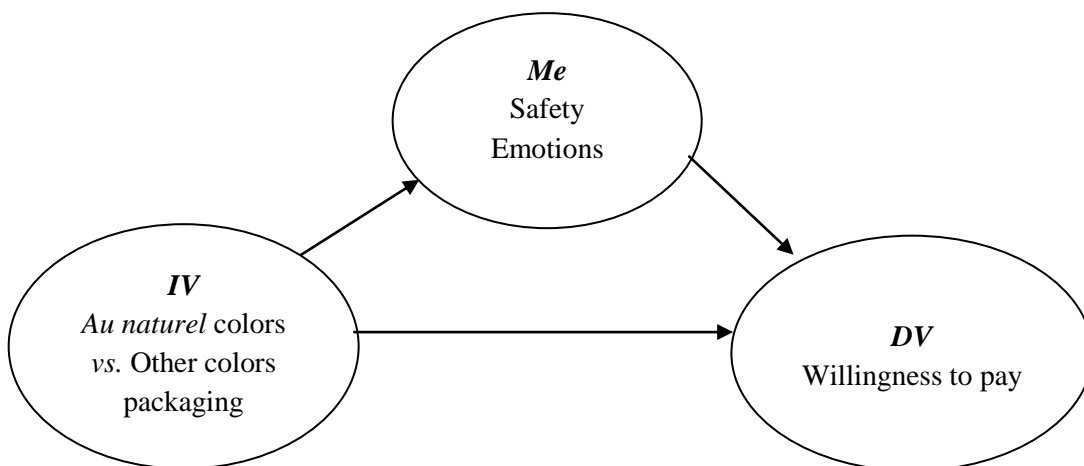
The analysis of the role of emotions as the mechanism underlying the relationship between *au naturel-colored* packaging and consumers' willingness to pay is based on the properties of these color tones and on the evidence of color-emotion literature (e.g., Wilson, 1966; Crowley, 1993). Specifically, considering these *au naturel* color's properties (e.g., natural, organic, unprocessed, and not altered) and consistent with the literature that provided support to the link between colors and human emotions, it is possible to predict that *au naturel* color may evoke low arousal related to reassurance and safety. In a previous study, Clarke and Costall (2008) have found that brown evokes seriousness, and earthiness. Furthermore, several websites on color's theories report associations between beige or brown colors and genuineness, simplicity, loyalty, reliability, tranquillity and serenity. Therefore, considering the *au naturel* color's properties of being organic, natural and authentic, it follows an expected association between *au naturel* color and reassuring sensations.

With reference to the consumption of food products, overall, these emotions can be called "*Safety Emotions*" expressing sensations of reliability and reassurance from the product and, falling in the category of heuristic processing (Chen & Chaiken, 1999), may affect the consumers' willingness to pay for the product. As a result, I propose that if the *au naturel* hues of color activate Safety Emotions, the use of these shades of color on product packaging may extend these low arousal and positive feelings to the product itself. In turn, these emotions will increase the consumers' willingness to pay for the product. Formally:

H2: Packagings featuring *au naturel* colors (vs. other colors) will evoke Safety Emotions extending these feelings to the product itself. In turn, these emotions will increase consumers' willingness to pay for the product.

Figure 2.3 shows a graphic representation of the hypothesized mediation mechanism.

Figure 2.3: The hypothesized mediation mechanism underlying the relationship between *au naturel*-colored packaging and consumers' willingness to pay.



With the aim of further exploring the relationship between the *au naturel*-colored packaging and consumers' willingness to pay, a third research question may concern the identification of potential moderation variables of this relationship. Moderators (*Mo*) are typically sought when the relationship between *X* and *Y* is unexpectedly weak or inconsistent, or is expected to vary in different sub-groups. Moderation allows the relationship to have different strength or direction in different contexts. The theoretical

contribution of moderation is to identify contingencies or boundary conditions of the effect of *X* on *Y*.

The third research question can be formalized as follow:

RQ.3: When the effect of *au naturel*-colored packaging on consumers' willingness to pay may change?

Similarly to the previous research question, I suppose that the potential moderators of this relationship could emerge starting from the general theory of dual-process models. Specifically, according to the dual-process approach, when a person is motivated and capable of processing the information content of a communication, the possible change of dispositions is the outcome of the central processing route. Conversely, when the subject is not motivated or is not able to allocate a certain effort cognitive to the topic in question, any changes in dispositions are the result of a peripheral path. In the first case it assumes utmost importance argumentation quality, according with the theory of cognitive response (Greenwald, 1968). In the second case, the importance of the arguments quality diminishes and the importance of peripheral signals increases. The latter include the status of the source, the vividness of the message, and other heuristics and peripheral cues, such as the color. Building upon these basic concepts, there are reasons to believe that in the absence of individual's motivation and cognitive skills required, the consumer activates the peripheral path of the dual-process model, in which the color of the packaging could be used as a heuristic consumer to evaluate the product itself, thus affecting the willingness to pay.

For these reasons, I propose that a first moderating variable of the relationship between *au naturel*-colored packaging and consumers' willingness to pay could be product category, by distinguishing the category in terms of potential dangerousness for consumers' health.

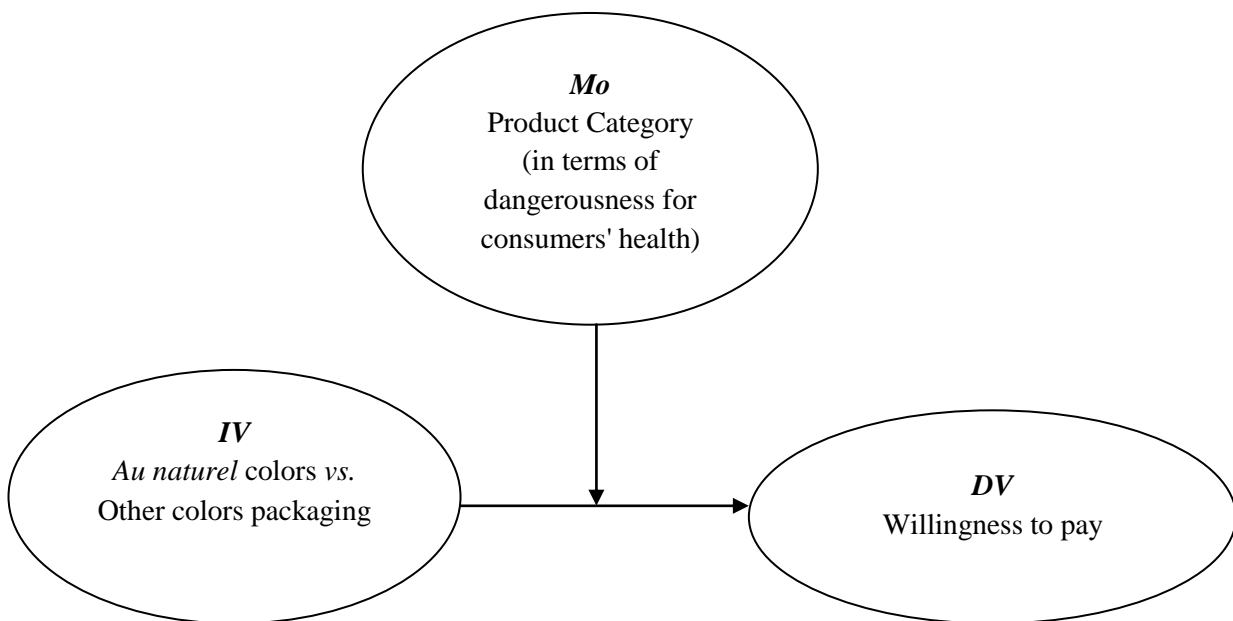
Specifically, I propose that the impact of *au naturel*-colored packaging on consumers' willingness to pay depends on the product category, in particular whether the product is perceived as potentially dangerous for consumer's health or whether the product is perceived as potentially not dangerous for consumer's health. Indeed, evaluating a product that belongs to a category of potentially dangerous products for consumer's health implies the activation of the central route during the evaluation of the product itself, because consumers are more interested and motivated to evaluate the product. Instead, evaluating a product that belongs to a category of not potentially dangerous products for consumer's health implies the activation of the peripheral path of the dual process model, because consumers are less interested and motivated to evaluate the product which is more healthful per se. In such condition, consumers may use the color of the packaging like a heuristic to evaluate the product itself and show higher willingness to pay for *au naturel*-colored packaging than other colors packaging. Formally:

H3: *Product category (in terms of perceived dangerousness for consumer's health) may moderate the effect of au naturel-colored packaging on the consumers' willingness to pay. Specifically, the positive effect of au naturel color on consumers' willingness to pay holds for potentially not dangerous*

products for consumer's health, while for potentially dangerous products for consumer's health it disappears.

Figure 2.4 shows a graphic representation of the hypothesized moderation of product category.

Figure 2.4. The hypothesized moderation of the perception of dangerousness of product category on the relationship between *au naturel*-colored packaging and consumers' willingness to pay



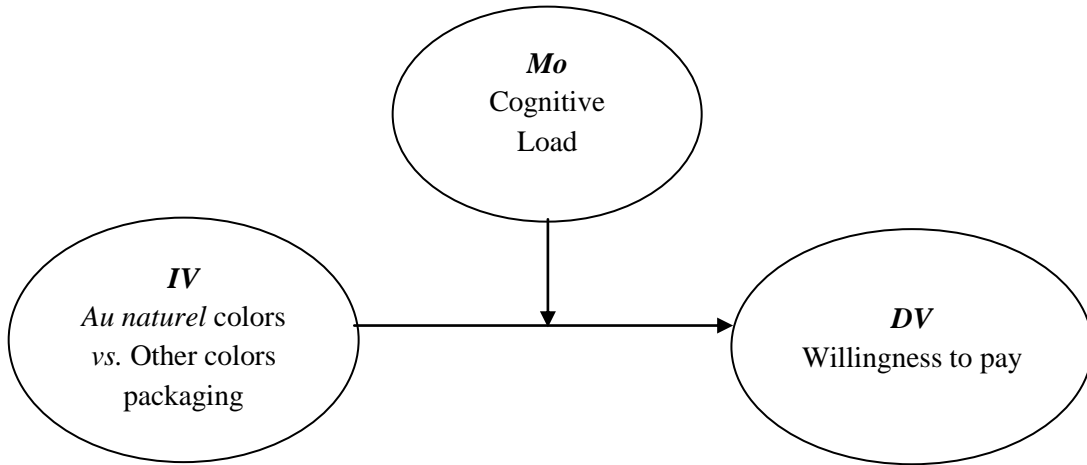
Focusing only on the product category which is potentially not dangerous products for consumer's health, in which I expect to found the effect of *au naturel* color on consumers' willingness to pay, a second moderating variable that could affect this relationship could be the level of individual cognitive load. One might consider that the

accessibility of processing resources (e.g., cognitive load) may influence this relationship. Specifically, as mentioned, color can be an influential heuristic for less-motivated and less-able consumers and the effectiveness for highly motivated consumers depends on demand and accessibility of processing resources (Meyers-Levy and Peracchio,1995). Therefore, it is possible that under conditions of high cognitive load – e.g., the case in which an individual has fewer cognitive resources available to evaluate a product, it is more likely that consumer activate a peripheral route of dual-process model and therefore their evaluations will be affected by heuristics such as the colors. For that reason, I expect that the positive effect of *au naturel*-colored packaging (vs. other-colored packaging) on consumers' willingness to pay is more salient and stronger under conditions of high individual cognitive load than to under conditions of low cognitive load. Formally:

H4: *Cognitive load may moderate the effect of au naturel-colored packaging on the consumers' willingness to pay. Specifically, under conditions of high cognitive load, the effect of au naturel-colored packaging on the consumers' willingness to pay is stronger than under the conditions of low cognitive load.*

Figure 2.5 shows a graphic representation of the hypothesized moderation of cognitive load.

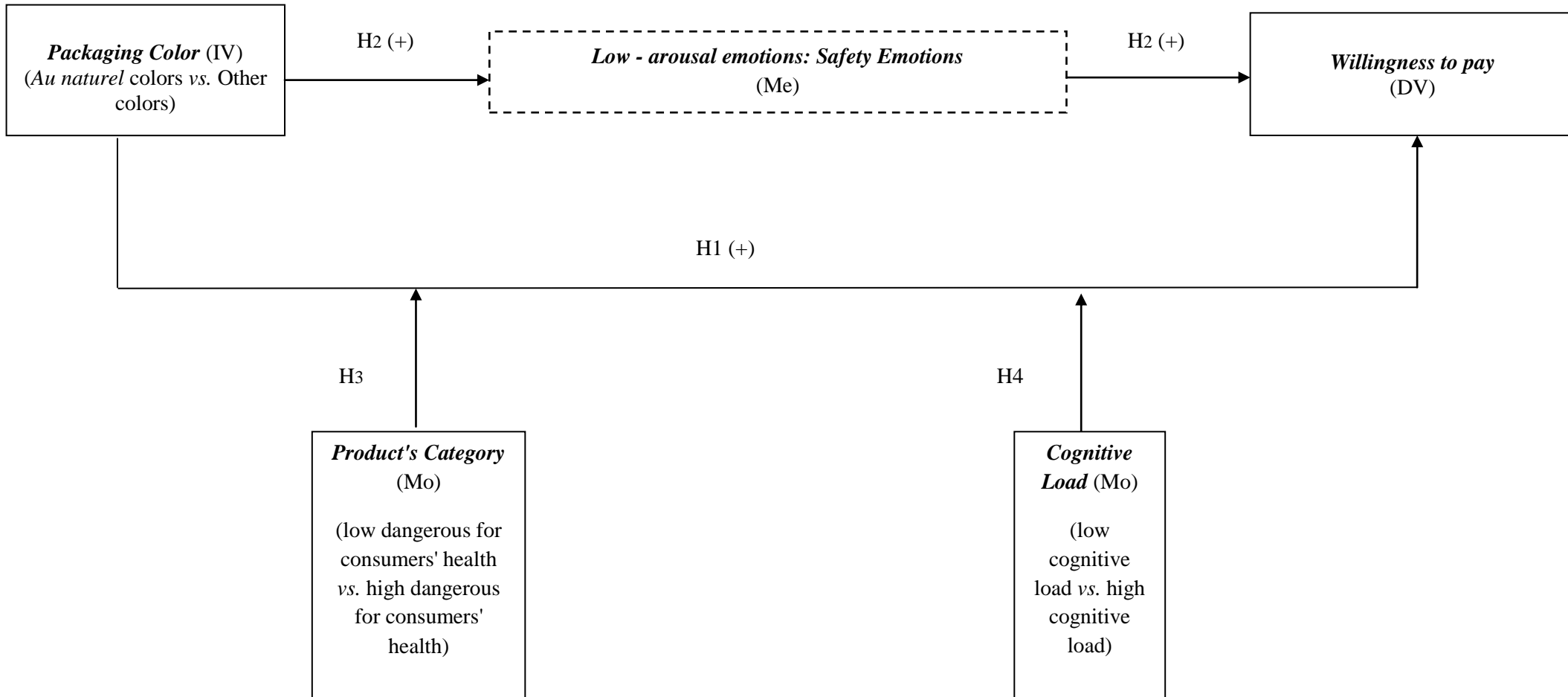
Figure 2.5. The hypothesized moderation of cognitive load on the relationship between *au naturel*-colored packaging and consumers' willingness to pay.



The full conceptual framework of the hypothesized relationships between *au naturel*-colored packaging and consumers' willingness to pay is presented in Figure 2.6.

Even if not formalized in the conceptual framework, I also consider the criticism that the effect of the *au naturel* color on the consumer's willingness to pay for the product may be due to the fit between the color of the package and the color of the product itself. In other words, considering that the product categories used as stimulus in the experimental studies (i.e., rice) could remind by themselves *au naturel* colors (i.e., beige), one might argue that the effect of the *au naturel*-colored packaging on willingness to pay could be due to the fit between the color of the product (i.e., beige-like rice) and the packaging color. In order to rule out this alternative explanation of the effect, I designed a study to analyze if the fit between color product and color packaging could influence the consumers' willingness to pay for the product.

Figure 2.6: Conceptual framework



2.3 Overview of Experimental Studies

I test the hypotheses previously formalized in the conceptual framework across four studies. Specifically, study 1 aims to test the hypotheses H₁ and H₂. The independent variable (i.e., packaging color) was manipulated by creating two different color packaging versions of the same product. The two versions were different only in terms of packaging color, while everything else remained identical. The dependent variable (i.e., consumer's willingness to pay), was operationalized as open-ended question. To examine the process underlying the relationship between *au naturel*-colored packaging and consumer's willingness to pay, a set of Safety Emotions was measured (i.e., tranquility, serenity, and relief). Study 1 finds support for the hypotheses H₁ and H₂.

The purpose of study 2 is to corroborate H₁ and H₂ and to test H₃ (that is the moderation effect of product category on the relationship between *au naturel* color on packaging and consumer's willingness to pay). The manipulation of color packaging was the same of study 1. The product category was manipulated by choosing two different product in terms of perceived dangerousness for consumers' health. Study 2 replicates the results for H₁ and H₂ and provides support for H₃. In particular, the results provides evidence that the effect of *au naturel*-colored packaging on consumers' willingness to pay holds only in the condition of product category potentially not dangerous for consumer's health.

In study 3, I focused only on the product category in which I found the effect of *au naturel*-colored packaging on consumers' willingness to pay (i.e., the product category potentially not dangerous for consumer's health). Study 3 aims to test H₄, that is the moderating effect of cognitive load on the relationship between *au naturel*-









colored packaging and consumers' willingness to pay. I have manipulated the independent variable (i.e., color packaging) using the same manipulation of studies 1 and 2, while I have manipulated the moderating variable by creating two different levels of cognitive load (i.e., high cognitive load *vs.* low cognitive load). Study 3 replicates again the results for H1 and provides support for H4. In particular, the results provides evidence that the effect of *au naturel*-colored packaging on consumers' willingness to pay is stronger in the condition of high cognitive load.

Study 4, as said before, was designed to ruling out the alternative explanation of the influence of the fit between color of the product and color of the packaging on the relationship between *au naturel* color packaging and consumer's willingness to pay. Still focusing on low dangerous product, in this study, four different experimental conditions were created by crossing color of the product (rice *vs.* carrots) and color of the packaging (*au naturel*-colored packaging *vs.* orange-colored packaging). Study 4 replicates the results for H1 and H2, and it allows to rule out an alternative explanation for the *au naturel* color effect on consumer's willingness to pay.

Across the studies, I manipulated the main independent variable (i.e., packaging color) always in the same way, that is creating one version with *au naturel*-colored packaging and the other one with a red-colored packaging, except in the study 4 in which I used a different color manipulation (i.e., orange-colored packaging), in order to rule out alternative explanation for the effects in terms of fit between color product and color packaging.

Table 2.1 shows an overview of the main objectives, methodology used and the studies stimuli.

Table 2.1: The effect of packaging color on consumers' willingness to pay (WTP). Overview of the studies.

	Study 1	Study 2	Study 3	Study 4
<i>Objective</i>	The effect of packaging color on consumers' WTP (H ₁)	The positive effect of <i>au naturel</i> color on WTP holds only for non dangerous for consumers' health product (H ₃)	Dominance of the positive <i>au naturel</i> color effect on WTP under condition of high consumers' cognitive load (H ₄)	Rule out an alternative explanation of the proposed effect based on the fit between product color and packaging color.
<i>Method</i>	One way experimental design	Experimental design 2 (Packaging color) x 2 (Product category)	Experimental design 2 (Packaging color) x 2 (Cognitive load)	Experimental design 2 (Packaging color) x 2 (Product color)
<i>Au naturel-colored packaging</i>				
<i>Non au naturel-colored packaging</i>				
<i>Product(s)</i>	Rice	Rice and butter	Rice	Rice and carrots

CHAPTER 3 – INVESTIGATING THE CHARACTERISTICS OF THE *AU NATUREL* COLOR: PRELIMINARY RESEARCH STEPS

In this chapter, I present the results of a series of studies that were designed to validate the proposed definition of *au naturel* color, a concept not yet discussed in the literature and therefore yet to be explored. In fact, these studies, both qualitative and quantitative, aimed at understanding how color shades are perceived by consumers and at clarifying what are the main features that can describe the concept of *au naturel* color.

The first step of this process was a qualitative research aimed at corroborating the definition in terms of main characteristics of the *au naturel* color. This step consisted in conducting some one-to-one interviews directed at understanding what people means by *au naturel* color and if the intended colors (i.e., shades of beige) reflect the proposed definition.

The second step consisted in two studies, designed to corroborate the definition of *au naturel* color by means of quantitative analysis, and to try to create a measurement scale tapping the major features of this hue of color. Specifically, I tried to identify a set of indicators that are able to represent each facet of the construct, in terms of cognitive associations.

3.1 Qualitative Interviews

The first step of the project was a qualitative research. The main goal was to corroborate the provided definition of *au naturel* color. I conducted six in-depth interviews (2 males; 4 females; age ranging from 27 to 36 years). The interviews outline

is based on open-ended questions and is available, in its full version, in Appendix A. In the first part of the interview, participants responded to a series of questions regarding their idea of *au naturel* color (such as "how would you define the colors belonging to this label?"). Moreover, respondents were probed about their opinions with regards to the *au naturel* colors in term of features and meanings. To understand which hues respondents have in mind when they think about *au naturel* colors, a set of questions were first proposed in the form of *spontaneous recall*, followed by a set of questions proposed in the form of *prompted recall*, showing the color palette that contains the selected shades of colors. To find a good label for this kind of colors, participants were asked: "How would you define these colors?". In the final part of the interview, participants were asked to perform a task. Specifically, respondents were asked to imagine a simulated purchase of a product and to look at two images representing the same version of the product (see Figure 3.1 for some examples of the product images that were shown) with the only difference consisting in the color packaging (*Beige vs. Red color*). Participants were asked to describe the perceived differences between the two pictures, and to discuss their opinions in terms of naturalness of product, natural ingredients of product and healthiness of product. Wherever possible, laddering technique has been applied in order to trace the deeper motivations and benefits associated to *au naturel* colors and packaging. This allowed the reconstruction of the means-end chain (Gutman, 1982) as shows in the Appendix B.

Figure 3.1: Some examples of the product images shown during qualitative interviews.



The answers to the questions concerning the label associable to shades of beige show a convergence towards the label "*Au naturel*" color, but also suggest a set of labels which may be useful to describe its properties, such as "Neutral" color, "Organic" color, "Basic" color; "Wood" color, "Ground" color, and "Skin" color. Moreover, the

answers to the questions regarding the characteristics of *au naturel* colors have suggested some aspects which may be useful to describe the properties of these colors, such as not artificial colors, unprocessed colors, colors that bring to mind something that comes from the soil, and something that is genuine and not altered. Therefore, building upon the findings of this qualitative research, it was possible to get a more detailed definition of *au naturel* color, that is a color that *brings to mind something that comes from the soil, it is not an artificial color nor it is dyed, it is untreated or unprocessed, and it expresses authenticity, that is something genuine and not altered.*

3.2 Quantitative studies

The second step of this research consisted in two surveys based on a questionnaire that involved different product categories. The two studies were designed with the objectives of testing the main characteristics of the *au naturel* colors, and therefore of identifying indicators able to represent each facet of the construct. The development of a measurement scale able to express the *au naturel* color's features would allow the scoring of differently colored packagings in various product categories.

Both studies would provide valuable insights to support the manipulation of the main independent variable (i.e., packaging color) in subsequent experimental studies presented in Chapter 4.

3.2.1 Study A

The main purposes of this first study were to validate the provided definition of *au naturel* color, and to identify the stimuli (i.e., products to be manipulated in terms of color packaging) for subsequent experimental studies.

Au naturel color, as mentioned before, is a color that brings to mind something that comes from the soil, it is not an artificial color nor it is dyed, it is untreated or unprocessed, and it expresses authenticity, that is something genuine and not altered. As a result, I expect to test questionnaire items to be included in an *Au Naturel Colors Scale* (ANCS).

3.2.1.1 Design

A first issue regarded the selection of a set of appropriate product pictures. Ideally, products should provide brand names that were unfamiliar to the reference population to avoid confounds with brand familiarity (Underwood & Klein, 2002). For this reason, each selected product showed an unfamiliar brand for the reference population. Also, to ensure generalizable results, it was important to consider different product categories, such as food, drug, beverage, cosmetics and tobacco.

To cover all the above mentioned categories of product, an initial pool of 50 stimuli was created (see Appendix C for some examples of created stimuli), modifying existing packaging by means of Adobe® Photoshop®. Specifically, I imported the digital images of products found online, removed any identifying marks, and replaced the packaging colors. The stimuli were created in different color versions (*Beige vs. Other colors*). In particular, for the expected *au naturel* color version, I have used the

shades of beige present in the presented palette (i.e., cream, sandy beiges, and mellow browns); for the other color version, I have used different hues of color, such as red, light blue, purple, fuchsia, blue, silver, and white. The only visual variation between these versions was packaging color; everything else remained identical (e.g., packaging dimension, shape, size, etc.). Upon a brainstorming with two marketing experts, I selected 15 different products as stimuli for study A.

The research design of this study was a 2 (*Color: Beige vs. Other colors*) X 15 (*Product Category: pasta, popcorn, sugar, chocolate, coffee, peanuts, flour, rolling paper, tobacco, lemonade, beef, soap, peanut butter, drug - joint pain, drug2 - vitamins*) between-subjects design. Participants were randomly assigned to one of the 30 conditions, therefore each participant was exposed to one version of the product packaging for one single product category.

The items intended to tap *au naturel* facets were identified considering the revised definition and the suggestions on the potential facets emerged from qualitative interviews. Moreover, two items were identified as control variables, concerning familiarity of the product (i.e., "How familiar are you with this product?" with 7-point scale ranging from (1) 'Not familiar at all' to (7) 'Very familiar') and typicality of the color packaging for that specific product (i.e., "How typical is this packaging color for this type of product?" with 7-point scale ranging from (1) 'Not at all' to (7) 'Very much'). Table 3.1 shows the items used in study A.

Study A was conducted on a total of 304 participants recruited from Amazon's Mechanical Turk (online method of recruiting participants; Paolacci et al., 2010). Participants were randomly assigned to one of the 30 conditions set up in a online Qualtrics's survey. Qualtrics is a web-based software, which can be used to set up

surveys and experiments enabling online data collections. Considering the importance of the color in this study, six participants were excluded from the analysis because declared to be colorblind. A total of 298 participants ($N = 298$; 44.3% females; $M_{age} = 31.48$; $SD_{age} = 9.31$) were considered in the analysis.

Table 3.1: Measures used in study A.

<i># Item</i>	<i>Item</i>	<i>Type of measuring</i>
1	To what extent does the packaging of this product feature " <u>Au naturel</u> " colors?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)
2	To what extent does the packaging of this product feature " <u>Organic</u> " colors?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)
3	To what extent does the packaging of this product feature " <u>Neutral</u> " colors?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)
4	To what extent does the packaging of this product feature colors that bring to mind something <u>that comes from the soil</u> ?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)
5	To what extent does the packaging of this product feature <u>undyed</u> or <u>non artificial</u> colors?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)
6	To what extent does the packaging of this product feature <u>untreated</u> or <u>unprocessed</u> colors?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)
7	To what extent does the packaging of this product feature colors that express authenticity (i.e., something that is <u>genuine</u> and <u>not altered</u>)?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)
8	How familiar are you with this product?	7-point scale ranging from 'Not familiar at all' (1) to 'Very familiar' (7)
9	How typical is this packaging color for this type of product?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)

3.2.1.2 Results

With the aim of analyzing the reliability and dimensionality of the *au naturel* colors construct, I computed Cronbach alpha and conducted a factor analysis on the seven items of ANCS. Cronbach alpha was .93 and item-to-total correlations were larger than .60 for all of the items. A maximum likelihood exploratory factor analysis yielded a one-factor solution (cumulative explained variance of 72.20% and factor loadings higher than .75). These results suggest that indeed the seven items converged onto a common latent factor, which represents the *au naturel* color. Therefore, I averaged the seven items ratings to obtain an overall score of ANCS.

I then conducted a series of one-way ANOVAs to evaluate product categories and colors on ANCS scores.

A first one-way ANOVA shows that the perceived features of *au naturel* color measured by the overall ANCS score were significantly different between the two general levels of color ($M_{Beige} = 5.46$; $M_{Other} = 3.56$; $F(1,296) = 181.37$, $p < .001$). Overall, and considering all product categories, beige shades are more associated to features of *au naturel* color than other hues. Tables 3.2 and 3.3 show descriptive statistics and results of this first one-way ANOVA, respectively.

Table 3.2: Descriptives of the two general levels of color (study A)

Descriptives			
ANCS	N	Mean	Std. Deviation
Beige	148	5.4604	1.04830
Other colors	150	3.5562	1.36915
Total	298	4.5019	1.54722

Table 3.3: Results of one-way ANOVA considering the two general levels of color (study A)

ANOVA					
<i>Au Naturel</i> Color Scale					
	Sum of	Df	Mean	F	Sig.
	Squares		Square		
Between Groups	270.133	1	270.133	181.373	.000
Within Groups	440.856	296	1.489		
Total	710.989	297			

A second analysis was conducted to understand if the shades of beige are associated to features of *au naturel* color with a higher intensity than other specific colors used predominantly on the packagings. In particular, a variable called "Predominant Color " was created, which refers to the specific predominant color present on stimuli used in this study. The main color used was either beige (i.e., the different shades of brown present in the palette), red, light blue, purple, fuchsia, blue, silver, or white. Results of a one-way ANOVA show that the perceived features of *au naturel* color measured by the overall ANCS score were significantly different between the eight levels of color ($M_{Beige} = 5.46$; $M_{Red} = 3.39$; $M_{LightBlue} = 3.41$; $M_{Purple} = 2.99$; $M_{Fuxia} = 3.45$; $M_{Blue} = 4.13$; $M_{Silver} = 4.60$; $M_{White} = 4.67$; $F(7,290) = 31.28$, $p < .001$). Tables 3.4 and 3.5 show descriptive statistics and results of the one-way ANOVA, respectively.

Table 3.4: Descriptives of the 8 levels of color (study A)

Descriptives			
ANCS			
	N	Mean	Std. Deviation
Beige	148	5.4604	1.04830
Red	69	3.3892	1.40268
Light blue	19	3.4060	1.51879
Purple	21	2.9932	1.21258
Fuxia	11	3.4545	1.30277
Blue	10	4.1286	1.08264
Silver	10	4.6000	.52941
White	10	4.6714	.98986
Total	298	4.5019	1.54722

Table 3.5: Results of one-way ANOVA considering the eight levels of color (study A)

ANOVA					
ANCS					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	305.864	7	43.695	31.278	.000
Within Groups	405.125	290	1.397		
Total	710.989	297			

A contrast analysis considering specific colors was conducted to compare beige against each other single color (See Table 3.6 for more detail on contrast coefficients). Results of this contrast analysis show that the perceived features of *au naturel* color measured by the overall ANCS score were significantly different between beige color and each other level of color. Table 3.7 shows results of this analysis.

Table 3.6: Contrast coefficients (study A)

Contrast Coefficients								
Contrast	Color predominant on product packaging							
	Beige	Red	Light blue	Purple	Fuxia	Blue	Silver	White
1	1	-1	0	0	0	0	0	0
2	1	0	-1	0	0	0	0	0
3	1	0	0	-1	0	0	0	0
4	1	0	0	0	-1	0	0	0
5	1	0	0	0	0	-1	0	0
6	1	0	0	0	0	0	-1	0
7	1	0	0	0	0	0	0	-1

Table 3.7: Results of the planned comparison analysis (study A)

	Contrast	Value of Contrast	Std. Error	t	df	Sig. (2-tailed)
ANCS	1	2.0712	.17229	12.021	290	.000
	2	2.0544	.28804	7.132	290	.000
	3	2.4672	.27561	8.952	290	.000
	4	2.0059	.36937	5.430	290	.000
	5	1.3319	.38618	3.449	290	.001
	6	.8604	.38618	2.228	290	.027
	7	.7890	.38618	2.043	290	.042

Finally, a two-way ANOVA was conducted (see Table 3.8) to investigate the ANCS scores across colors and product categories. In this case, I considered two levels of color (i.e., beige color vs. other colors) and the 15 product categories. Results revealed a significant main effect of beige color on ANCS. Specifically, respondents show higher ANCS scores for beige ($M_{Beige} = 5.46$) than for the other colors ($M_{Other} = 3.55$, $F(1,268) = 224.23$, $p < .00$), and this effect was qualified by a significant interaction with product category ($F(14,268) = 4.47$, $p < .01$). A planned comparison

analysis, shows that, overall, beige obtained significantly higher ANCS scores than other colors for all product categories used in this study (except for lemonade and soap).

Table 3.9 shows results of planned comparison analysis.

Table 3.8: Results of the Two-Way ANOVA (study A)

Tests of Between-Subjects Effects					
Dependent Variable: ANCS					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	389.948 ^a	29	13.446	11.225	.000
Intercept	6020.729	1	6020.729	5026.018	.000
PDT	45.136	14	3.224	2.691	.001
Color	268.605	1	268.605	224.227	.000
PDT * Color	74.939	14	5.353	4.468	.000
Error	321.040	268	1.198		
Total	6750.633	298			
Corrected Total	710.989	297			

a. R Squared = ,548 (Adjusted R Squared = ,500)

Table 3.9: Results of planned comparison analysis by product categories (study A)

Pairwise Comparisons					
Dependent Variable: ANCS					
PDT	(I) Color	(J) Color	Mean Difference (I-J)	Std. Error	Sig.
Pasta	Beige	Other colors	1.800 [*]	.489	.000
	Other colors	Beige	-1.800 [*]	.489	.000
Popcorn	Beige	Other colors	2.055 [*]	.478	.000
	Other colors	Beige	-2.055 [*]	.478	.000
Sugar	Beige	Other colors	2.873 [*]	.516	.000
	Other colors	Beige	-2.873 [*]	.516	.000
Chocolate	Beige	Other colors	3.204 [*]	.478	.000
	Other colors	Beige	-3.204 [*]	.478	.000

Coffee	Beige	Other colors	3.405*	.492	.000
	Other colors	Beige	-3.405*	.492	.000
Peanuts	Beige	Other colors	2.988*	.478	.000
	Other colors	Beige	-2.988*	.478	.000
Flour	Beige	Other colors	1.986*	.489	.000
	Other colors	Beige	-1.986*	.489	.000
Rolling paper	Beige	Other colors	1.830*	.503	.000
	Other colors	Beige	-1.830*	.503	.000
Tobacco	Beige	Other colors	1.131*	.478	.019
	Other colors	Beige	-1.131*	.478	.019
Lemonade	Beige	Other colors	-.471	.489	.336
	Other colors	Beige	.471	.489	.336
Beef	Beige	Other colors	1.200*	.489	.015
	Other colors	Beige	-1.200*	.489	.015
Soap	Beige	Other colors	.471	.489	.336
	Other colors	Beige	-.471	.489	.336
Peanut butter	Beige	Other colors	2.052*	.532	.000
	Other colors	Beige	-2.052*	.532	.000
Drug 1	Beige	Other colors	1.971*	.489	.000
	Other colors	Beige	-1.971*	.489	.000
Drug 2	Beige	Other colors	2.057*	.489	.000
	Other colors	Beige	-2.057*	.489	.000
Based on estimated marginal means					
*. The mean difference is significant at the .05 level.					

In theory, I could have conducted a further analysis considering all the color levels and all product categories separately, but considering that the resultant experimental conditions would be lowly populated, I avoided to run this type of analysis.

Considering the evidence provided by this study, it is possible to conclude that beige reflects the characteristics which fall within the concept of *au naturel* color better than other colors and in a large majority of product categories. Therefore, I can conclude that beige can be used as *au naturel* color for subsequent experimental studies.

3.2.2 Study B

The main purposes of study B were to gather further support for the proposed definition of *au naturel* color and to compare beige shades with other colors with respect to *au naturel* features. I wanted to corroborate the ANCS and get further insights aimed at identifying valid stimuli for subsequent experimental studies.

3.2.2.1 Design

To avoid confounds with different levels of brand familiarity (Underwood & Klein, 2002), the selection of product packagings should provide brand names that are unfamiliar to the reference population. For this reason, each product must show an unfamiliar brand for the reference population. Moreover, to ensure generalizable results, I considered again various product categories. Specifically, ten stimuli have been realized modifying existing packagings using Adobe® Photoshop®. I imported pictures into the software, removed any identifying symbols, and replaced the packaging colors.

Building upon the proposed definition of *au naturel* color, that is, the construct that expresses something that is untreated or unprocessed, something genuine and not altered and, as consequence, something more natural, I deemed important to compare beige shades with other colors - not included in study A - that can be associated with something natural. According to Rozin (2005) and Rozin et al. (2004), the concept of consumer perceived naturalness is characterized by two aspects: one is instrumental, linked to health, the senses, and the environment; the other one is emotional, referred to an idealized or imaginary representation, because "natural" implicitly means better, more aesthetic, more moral, or simply more genuine. In terms of colors, practical

considerations by Evans et al. (2010) showed that natural could be expressed through the green color, which evokes nature and provokes an emotional reaction. For these reasons, in study B I wanted to include green as a color level. Specifically, the stimuli were created in three different color versions (*Au naturel* color vs. Green color vs. Red/Purple color). The only visual variation between the three versions was packaging color; everything else remained identical.

The research design of study B was a 3 (*Color: Au naturel* color vs. Green color vs. Red/Purple color) X 10 (*Product: butter, aspirin, tobacco, rolling paper, chips, cous-cous, green beans, rice, vitamin and yogurt*) between-subjects design. Participants were randomly assigned to one of the 30 conditions, therefore each participant was exposed to one version of the product for one single product category.

Table 3.10 shows the items used in study B, that is, the indicators of ANCS. Moreover, two items were included to control the stimuli in terms of familiarity of the product and typicality of the color packaging for that specific product category.

Study B was conducted on 301 participants recruited from Amazon's Mechanical Turk (pool online method of recruiting participants; Paolacci et al., 2010). Participants were randomly assigned to one of the 30 conditions set up in an online Qualtrics's survey. Considering the importance of the color in this study, four participants were excluded from the analysis because declared to be colorblind. A total of 297 participants (41.4% females; $M_{age} = 34.74$, $SD_{age} = 10.58$) were considered in the analysis.

Table 3.10: Measures used in study B

# Item	Item	Type of measuring
1	To what extent do you think the colors of this packaging are <i>au naturel</i> colors?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)
2	To what extent do you think the colors of this packaging bring to mind something that is <u>organic</u> (i.e., without chemical additives)?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)
3	To what extent do you think the colors of this packaging are <u>neutral</u> colors?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)
4	To what extent do you think the colors of this packaging bring to mind something that <u>comes from the soil</u> ?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)
5	To what extent do you think the colors of this packaging are <u>not artificial</u> colors?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)
6	To what extent do you think the colors of this packaging are <u>untreated</u> colors?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)
7	To what extent do you think the colors of this packaging express <u>authenticity</u> (i.e., something that is genuine)?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)
8	How familiar are you with this product?	7-point scale ranging from ‘Not familiar at all’ (1) to ‘Very familiar’ (7)
9	How typical is this packaging color for this type of product?	7-point scale ranging from ‘Not at all’ (1) to ‘Very much’ (7)

3.2.2.2 Results

I first re-checked the reliability and dimensionality of ANCS, which is supposed to synthesize the features of *au naturel* color. Cronbach alpha was .93 and item-to-total correlations were larger than .66 for all of the items. A maximum likelihood exploratory factor analysis yielded a one-factor solution (cumulative explained variance of 72.20% and factor loadings higher than .70). Therefore, reliability and dimensionality of ANCS were again supported by the data. These findings allow to confidently accept ANCS as

an effective measurement instrument of *au naturel* color features. I averaged the seven items to obtain an overall score of ANCS.

A one-way ANOVA showed that the perceived features of *au naturel* color measured by ANCS were significantly different among the three levels of color ($M_{Beige} = 5.65$; $M_{Green} = 4.07$; $M_{Red} = 3.06$; $F(2,294) = 114.67$, $p < .001$). Tables 3.11 and 3.12 summarize these results. Beige shades are again more associated to *au naturel* features than red ($t(294) = 15.02$, $p < .001$) and more important, than green ($t(294) = 9.02$, $p < .001$). Table 3.13 shows results of this planned comparison analysis. This result is particularly relevant because it allows me to conclude that only shades of beige (but not of green) are associated to *au naturel* features. Overall, I can identify confidently the *au naturel* color with beige shades.

Table 3.11: Descriptives of the three levels of color (study B)

Descriptives

ANCS

	N	Mean	Std. Deviation
Beige	102	5,6471	,87064
Green	95	4,0707	1,32002
Red	100	3,0557	1,42653
Total	297	4,2703	1,63002

Table 3.12: Results of one-way ANOVA (study B)

ANOVA

ANCS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	344,645	2	172,322	114,670	,000
Within Groups	441,815	294	1,503		
Total	786,460	296			

Table 3.13: Results of the planned contrast analysis (study B)

	Contrast	Value of Contrast	Std. Error	t	df	Sig. (2-tailed)
ANCS	Beige vs. green	1,5764	,17479	9,019	294	,000
	Beige vs. red	2,5913	,17251	15,021	294	,000

Moreover, no significant differences were found on familiarity ($M_{Beige} = 2.86$; $M_{Green} = 2.53$; $M_{Red} = 2.45$; $F(2,294) = 1.157$, $p > .30$) and typicality ($M_{Beige} = 3.15$; $M_{Green} = 3.21$; $M_{Red} = 3.27$; $F(2,294) = .159$, $p > .80$). Table 3.14 shows these results.

Table 3.14: Results of control variables (study B)

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Familiar	9,730	2	4,865	1,157	,316
	1236,513	294	4,206		
	1246,242	296			
Typical	,764	2	,382	,159	,853
	704,294	294	2,396		
	705,057	296			

Finally, I conducted a two-way ANOVA with a planned comparison analysis (see Tables 3.15 and 3.16) to test ANCS scores on colors and specific product categories. The effect of color was significant ($F(2,267) = 146.17$, $p < .00$), and this effect was qualified by a significant interaction with product category ($F(18,267) = 2.76$, $p < .01$). Planned comparison results, show that, overall, beige obtained significantly higher ANCS scores than green and red colors for all product categories used in this study (except for beans and aspirin).

Table 3.15: Results of Two-Way ANOVA (study B)

Tests of Between-Subjects Effects

Dependent Variable: ANCS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	475,927 ^a	29	16,411	14,111	,000
Intercept	5367,058	1	5367,058	4614,654	,000
Color	340,001	2	170,001	146,168	,000
PDT	76,015	9	8,446	7,262	,000
Color* PDT	57,690	18	3,205	2,756	,000
Error	310,533	267	1,163		
Total	6202,449	297			
Corrected Total	786,460	296			

a. R Squared = ,605 (Adjusted R Squared = ,562)

Table 3.16: Results of planned comparison analysis (Study B)

Pairwise Comparisons

Dependent Variable: ANCS

PDT	(I) Color	(J) Color	Mean Difference (I-J)	Std. Error	Sig.
Butter	Beige	Green	2,553 [*]	,471	,000
		Red	3,314 [*]	,482	,000
	Green	Beige	-2,553 [*]	,471	,000
		Red	,761	,471	,107
	Red	Beige	-3,314 [*]	,482	,000
		Green	-,761	,471	,107
Aspirin	Beige	Green	,628	,485	,196
		Red	1,866 [*]	,485	,000
	Green	Beige	-,628	,485	,196
		Red	1,238 [*]	,508	,016
	Red	Beige	-1,866 [*]	,485	,000
		Green	-1,238 [*]	,508	,016
Tobacco	Beige	Green	1,656 [*]	,496	,001
		Red	3,503 [*]	,471	,000
	Green	Beige	-1,656 [*]	,496	,001
		Red	1,847 [*]	,485	,000
	Red	Beige	-3,503 [*]	,471	,000
		Green	-1,847 [*]	,485	,000
Rolling Papers	Beige	Green	2,283 [*]	,496	,000
		Red	2,243 [*]	,482	,000

	Green	Beige	-2,283 ¹	,496	,000
		Red	-,040	,496	,936
	Red	Beige	-2,243 ¹	,482	,000
		Green	,040	,496	,936
Chips	Beige	Green	1,529 ¹	,482	,002
		Red	2,971 ¹	,482	,000
	Green	Beige	-1,529 ¹	,482	,002
		Red	1,443 ¹	,482	,003
	Red	Beige	-2,971 ¹	,482	,000
		Green	-1,443 ¹	,482	,003
Cous cous	Beige	Green	2,070 ¹	,471	,000
		Red	3,753 ¹	,460	,000
	Green	Beige	-2,070 ¹	,471	,000
		Red	1,683 ¹	,471	,000
	Red	Beige	-3,753 ¹	,460	,000
		Green	-1,683 ¹	,471	,000
Beans	Beige	Green	,662	,471	,161
		Red	,662	,471	,161
	Green	Beige	-,662	,471	,161
		Red	-4,441E-016	,482	1,000
	Red	Beige	-,662	,471	,161
		Green	4,441E-016	,482	1,000
Rice	Beige	Green	1,190 ¹	,508	,020
		Red	3,140 ¹	,496	,000
	Green	Beige	-1,190 ¹	,508	,020
		Red	1,949 ¹	,496	,000
	Red	Beige	-3,140 ¹	,496	,000
		Green	-1,949 ¹	,496	,000
Vitamin	Beige	Green	1,117 ¹	,485	,022
		Red	1,917 ¹	,471	,000
	Green	Beige	-1,117 ¹	,485	,022
		Red	,800	,496	,108
	Red	Beige	-1,917 ¹	,471	,000
		Green	-,800	,496	,108
Yogurt	Beige	Green	2,032 ¹	,508	,000
		Red	2,429 ¹	,508	,000
	Green	Beige	-2,032 ¹	,508	,000
		Red	,397	,508	,436
	Red	Beige	-2,429 ¹	,508	,000
		Green	-,397	,508	,436

Therefore, at this stage, it was possible to get further support for what concerns the *au naturel* color measurement scale and, in turn, it was possible to get insights to support the manipulation of packaging color in subsequent experimental studies.

To this end, I selected *rice* and *butter* packagings as suitable stimuli for experimental studies. Tables 3.17 and 3.18 show the detailed results of two one-way ANOVAs considering rice and butter, respectively.

Table 3.17. One-way ANOVA results for rice (n = 28 – study B)

Variables	Mean <i>Au Naturel</i>	Mean Green	Mean Red	F Test	P-value
" <i>Au Naturel</i> " colors	6,22 ^a	5,33 ^a	3,90 ^c	8,991	,001
"Organic" colors	6,56 ^a	5,44 ^b	3,10 ^c	19,956	,000
"Neutral" colors	6,22 ^a	5,11 ^b	2,20 ^c	39,746	,000
Something that comes from the soil	6,33 ^a	5,00 ^a	2,60 ^c	16,330	,000
Not artificial colors	6,44 ^a	4,67 ^b	3,10 ^c	16,106	,000
Untreated colors	6,11 ^a	4,33 ^b	2,90 ^c	13,956	,000
Authenticity	5,89 ^a	5,56 ^a	4,00 ^c	14,294	,000
Familiarity	3,89 ^a	4,56 ^a	4,00 ^a	,184	,833
Typicality	3,56 ^a	3,22 ^a	3,20 ^a	,144	,867
ANCS	6,25 ^a	5,06 ^b	3,11 ^c	29,30	,000

Note:

Means sharing the same superscript are not significantly different from each other (p > .10)

Means with different superscript are significantly different from each other (p < .10)

Table 3.18. One-way ANOVA results for butter (n = 31 – study B)

Variables	Mean <i>Au Naturel</i>	Mean Green	Mean Red	F Test	P-value
" <i>Au Naturel</i> " colors	6,40 ^a	4,00 ^b	2,80 ^c	17,462	,000
"Organic" colors	6,30 ^a	4,09 ^b	2,50 ^c	14,679	,000
"Neutral" colors	6,30 ^a	2,73 ^b	1,90 ^c	43,841	,000
Something that comes from the soil	5,10 ^a	3,64 ^b	2,40 ^c	9,501	,001
Not artificial colors	6,30 ^a	3,09 ^b	3,60 ^c	10,235	,000
Untreated colors	6,20 ^a	3,09 ^b	2,30 ^c	22,775	,000
Authenticity	6,00 ^a	4,09 ^b	3,90 ^c	5,176	,012
Familiarity	1,70 ^a	1,64 ^a	2,20 ^a	,388	,682
Typicality	2,70 ^a	2,09 ^a	1,80 ^a	1,170	,325
ANCS	6,08 ^a	3,53 ^b	2,77 ^c	31,25	,000

Note:

Means sharing the same superscript are not significantly different from each other (p > .10)

Means with different superscript are significantly different from each other (p < .10)

CHAPTER 4 - THE EFFECT OF *AU NATUREL*-COLORED PACKAGING: EVIDENCES FROM FOUR EXPERIMENTAL STUDIES

In the following sections I will present designs and results of four experimental aimed at testing the hypotheses formalized in the conceptual framework. I manipulated the main independent variable (i.e., color packaging) adopting a common strategy across the studies, that is contrasting an *au naturel*-colored packaging and a red-colored packaging. As an exception, in study four, I used a different color manipulation (i.e., orange-colored packaging), to rule out an alternative explanation for the proposed effect.

Specifically, in the first study, I will report evidence of the influence of *au naturel*-colored packaging vs. a non-natural packaging color on consumers' willingness to pay and of an emotions-based explanation. In the second study, I replicate the effect of *au naturel*-colored packaging on consumers' willingness to pay, and propose the moderating effect of product category (distinguishing in terms of perceived dangerousness of product for consumers' health) on the relationship between packaging color and consumers' willingness to pay. In the third study, I replicate again the effect of packaging color on consumers' willingness to pay and provide evidence of the moderating effect of cognitive load on this relationship. In the fourth study, I rule out an alternative explanation based on the fit between product color and packaging color.

4.1 Study 1: The influence of *au naturel*-colored packaging on consumers' willingness to pay and the emotions-based explanation

The purpose of this first study was to test if an *au naturel*-colored packaging can affect the consumers' willingness to pay for a product. To test empirically H₁ I manipulated *packaging color* (*au naturel* color vs. red color) in a between-subjects experimental design holding constant the product category (rice). The dependent variable was participants' willingness to pay (WTP) for the product. The manipulation of the main independent variable (i.e., packaging color) was achieved by changing only the color of the packaging (*au naturel* vs. red), keeping the other elements (i.e., logo, design, size of product) constant between conditions.

The product stimulus, a packaging of rice, was selected based on a pre-test conducted on a sample coming from the same population of the study 1. Specifically, in a preliminary study (see Study B in Chapter 3 for more detail) rice stimuli (*au naturel*-colored vs. red-colored) showed mean ratings consistent with the intended manipulation. Therefore, rice appears to be a suitable product category for testing the hypotheses.

Table 4.1 describes the structure of study 1, showing the two levels of the main independent variable *packaging color*.

Table 4.1: The design stimuli for study 1

Packaging Color	
<i>Au naturel color</i>	<i>Red color</i>
	

4.1.1 Procedure and measures

One hundred and one participants recruited by Qualtrics (online method of recruiting participants) took part in the study. Participants were randomly assigned to one of the two conditions designed by means of the Qualtrics online platform. Qualtrics is a web-based software, which can be used to set up experimental studies and online data collections. Participants were informed that the study was about the evaluation of a product from different country that may be launched in the local market. Considering the importance of color in the study, respondents were also asked to indicate if they were color blind (self-reporting item with three levels of answer: (1) Yes, (2) I don't know, (3) No). Four participants were excluded from the analysis because they declared to be colorblind. Therefore, 97 participants (55.1% females; $Mode_{Age} = 36-55$) were considered in the analysis.

Participants were exposed either to the au nature-colored packaging or to the red-colored packaging and they were asked to type how much they would be willing to pay for the product.

Three 7-point items ('Not at all' (1) to 'Very much' (7)) were used to measure the intended mediating variable, that is, *Safety Emotions*. Such variable represents the proposed mechanism of the relationship between packaging color and consumers' willingness to pay. First, an item asked "To what extent does this product makes you feel tranquillity?"; a second item asked "To what extent does this product makes you feel relief?"; a third item asked "To what extent does this product makes you feel serenity?". Finally, participants answered socio-demographic questions (gender, age, education, and job).

Table 4.2 synthesizes measures collected in study 1.

Table 4.2: Measures collected in study 1

<i># Item</i>	<i>Item</i>	<i>Type of measuring</i>	<i>Construct</i>
1	How much would you be willing to pay for this product?	Free Text Entry	<i>Willingness to pay</i>
2	To what extent does this product makes you feel tranquillity?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>
3	To what extent does this product makes you feel relief?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>
4	To what extent does this product makes you feel serenity?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>

4.1.2 Results

In order to verify H₁ (the direct effect of packaging color on consumers' willingness to pay), I conducted a one-way ANOVA. As mentioned, each respondent

was exposed to a product and was asked to indicate her/his willingness to pay for the product through an open-ended question.

A between subjects one-way ANOVA revealed a significant main effect of packaging color on consumers' willingness to pay for the product. Consistent with the proposed conceptualization, I found that an *au naturel*-colored packaging increases the consumers' willingness to pay for a product. Specifically, respondents have shown more willingness to pay for an *au naturel*-colored packaging ($M_{AuNaturel} = 9.28\$$) than for the red-colored packaging ($M_{Red} = 4.36\$, F(1,95) = 3.94, p < .05$)⁴. Tables 4.3 and 4.4 show descriptive statistics and results of the one-way ANOVA, respectively.

Table 4.3: Descriptive statistics (Study 1)

Dependent variable: Willingness to pay

	N	Mean	Std. Deviation
Red color	47	4,3645	3,75998
<i>Au naturel</i> color	50	9,2840	16,58349
Total	97	6,9003	12,37953

⁴ An analysis of WTP's frequency distribution has showed two outliers (standardized score > 5) that explain the high value of the $SD_{AuNaturel}$. For this reason, I conducted a robustness analysis using the winsorization approach on WTP. This approach (Cox et al., 1995) consists in replacing outliers with the immediately preceding value in the frequency distribution. Results after winsorising WTP show that the direct effect of color on WTP improves in terms of stability ($M_{AuNaturel} = 6.72\$$; $M_{Red} = 4.36\$, F(1,95) = 5.94, p = .017$), holding the mediation effect of *Safety Emotions* on the relationship between color and WTP (the 95% bias corrected bootstrap confidence interval (5000 trials) of the indirect effect (packaging color → safety emotions → WTP) ranges from .01 to 1.17).

Table 4.4: Results of One-Way ANOVA (Study 1)

ANOVA

Dependent variable: Willingness to pay

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	586,332	1	586,332	3,943	,050
Within Groups	14125,923	95	148,694		
Total	14712,255	96			

To test H₂ (mediation effect of *Safety Emotions* on the relationship between packaging color and willingness to pay), a mediation analysis with the bootstrap method was conducted (Preacher & Hayes, 2004). With the aim to capture this effect, as mentioned, each respondent was asked to rate three 7-point items: "To what extent does this product makes you feel tranquillity?"; "To what extent does this product makes you feel relief?"; and, "To what extent does this product makes you feel serenity?". Cronbach alpha for the items measuring *Safety Emotions* was .96, and item-to-total correlations were larger than .85 for all of the items. Therefore, responses to the three items were averaged to form a single variable called *Safety Emotions*.

To demonstrate support for safety emotions as a mediator of the relationship between packaging color (0 = red color; 1 = *au naturel* color) and willingness to pay, the 95% bootstrap confidence interval associated with the point estimate of the indirect effect (through safety emotions) of the relationship between packaging color and willingness to pay must not include zero (Mugge & Dahl, 2013; Preacher & Hayes, 2004; Zhao et al., 2010).

Table 4.5 shows complete results of the mediation analysis. A first regression analysis of packaging color on willingness to pay showed the expected (total) effect ($c = 4.92$; $t = 1.99$, $p < .05$). In a second regression analysis I found a marginally significant effect of packaging color on safety emotions ($a = .64$, $t = 1.69$, $p < .10$). Finally, in a

third regression analysis I found a significant effect of safety emotions on willingness to pay ($b = 1.32$, $t = 2.00$, $p < .05$), while the direct effect of packaging color on willingness to pay become non-significant ($c' = 4.07$, $t = 1.65$, $p > .10$). The 95% bias corrected bootstrap confidence interval (5000 trials) of the indirect effect (packaging color \rightarrow safety emotions \rightarrow willingness to pay) ranges from .08 to 4.22. Since zero is not included in the confidence interval, I conclude that the indirect effect is different from zero, and that safety emotions indeed mediate the effect of packaging color on willingness to pay.

Table 4.5. Results of mediation analysis (study 1)

Run MATRIX procedure:

Dependent, Independent, and Proposed Mediator Variables:

DV = WTP

IV = Color

MEDS = Safety Emotions

Sample size

97

IV to Mediators (a paths)

	Coeff	se	t	p
Safety Emotions	,6409	,3801	1,6859	,0951

Direct Effects of Mediators on DV (b paths)

	Coeff	se	t	p
Safety Emotions	1,3186	,6583	2,0030	,0481

Total Effect of IV on DV (c path)

	Coeff	se	t	p
Color	4,9195	2,4774	1,9858	,0499

Direct Effect of IV on DV (c' path)

	Coeff	se	t	p
Color	4,0745	2,4753	1,6461	,1031

Model Summary for DV Model

R-sq	Adj R-sq	F	df1	df2	p
,0792	,0596	4,0402	2,0000	94,0000	,0207

```

*****
BOOTSTRAP RESULTS FOR INDIRECT EFFECTS

Indirect Effects of IV on DV through Proposed Mediators (ab paths)
      Data      Boot      Bias      SE
TOTAL      ,8450      ,8475      ,0025      ,7785
Safety Emotions ,8450      ,8475      ,0025      ,7785

Bias Corrected and Accelerated Confidence Intervals
      Lower      Upper
TOTAL      ,0770      4,2207
Safety Emotions ,0770      4,2207
*****

Level of Confidence for Confidence Intervals:
  95

Number of Bootstrap Resamples:
  5000

----- END MATRIX -

```

4.1.3 Discussion

This study provides support to the idea that customers' willingness to pay for a product is influenced by color packaging. Specifically, I found consistent evidence that participants are more willing to pay for rice with an *au naturel*-colored packaging than with a red-colored packaging.

This study also offers general support to the expected mechanism driving the effect of color packaging on consumers' willingness to pay. Specifically, *Safety Emotions* were evaluated as a potential mediator of such effect. Results provide evidence that indeed *Safety Emotions* mediate the effect of packaging color on consumers' willingness to pay. Findings of a bootstrap analysis show that effect of packaging color on consumers' willingness to pay is significantly mediated by *Safety Emotions*.

4.2 Study 2: The moderating effect of product category on the relationship between packaging color and consumers' willingness to pay

The purposes of study 2 were to replicate the relationship between packaging color and consumers' willingness to pay for the product, to replicate the mediating effect of safety emotions, and to test hypothesis 3, which concerns the moderating effect of product category (distinguishing the category in terms of dangerousness for consumers' health). Based on H₃ rationale (see Chapter 2 for more details), I expect to replicate packaging color effect for non-dangerous product categories. However, I predict that the same effect disappears for dangerous product categories. Therefore, packaging color and product category should interact in determining consumers' willingness to pay.





To test empirically the moderating effect of product category, I adopted a 2 (*Packaging Color: au naturel color vs. red color*) by 2 (*Product category: rice vs. butter*) between-subjects experimental design. The dependent variable was willingness to pay (WTP) for the product. The manipulation of the main independent variable (i.e., packaging color) was achieved by changing only the color of the packaging (*au naturel vs. red*), keeping the other elements (i.e., logo, design, size of product) constant between conditions.

Based on the results of a pre-test on the perception of dangerousness of product categories (7-point scale, 1 = not at all dangerous, 7 = very dangerous; N = 62; 40.3% females), I selected rice as a non dangerous product category for consumer's health, and butter as a dangerous product category for consumer's health ($M_{Rice} = 1.95$; $M_{Butter} = 3.06$; $F(1,61) = 30.38$; $p < .000$). Rice and butter are different in terms of perceived dangerousness for consumer's health, which represents a potential moderator of the effect of packaging color on willingness to pay.

In a different preliminary study (see Study B in Chapter 3 for more detail), both rice and butter stimuli (*au naturel*-colored vs. red-colored) show mean ratings consistent with the intended manipulation.

Table 4.6 shows stimuli for study 2, consisting of the four combinations obtained crossing the two levels of the main independent variable, *packaging color*, and the two levels of the moderating variable, *product category*.

Table 4.6: The design stimuli for study 2

		Packaging Color	
		<i>Au naturel color</i>	<i>Red color</i>
Product Category	<i>Butter</i>		
	<i>Rice</i>		

4.2.1 Procedure and measures

Two hundred participants recruited from Amazon's Mechanical Turk (online method of recruiting participants) took part in the study. Participants were randomly assigned to one of four conditions set up in an online Qualtrics study. Participants were informed that the study was about the evaluation of a product from a different country that may be launched in the local market. Considering the importance of the color in this study, two participants were excluded from the analysis because declared to be colorblind. A total of 198 participants (38.9% females; $M_{age} = 34.78$; $SD_{Age} = 10.67$) were considered in the analysis.

Participants were exposed to one of the four stimuli and then asked to type their willingness to pay for the product ("How much would you be willing to pay for this product?"). Participants then answered the same 7-point items used in study 1 to measure *Safety Emotions* ("To what extent does this product makes you feel tranquillity?"; "To what extent does this product makes you feel relief?"; "To what extent does this product makes you feel serenity?").

Finally, participants answered socio-demographic questions (gender, age, education, and job). Table 4.7 shows the measures used in study 2.

Table 4.7. Measures collected in study 2

<i># Item</i>	<i>Item</i>	<i>Type of measuring</i>	<i>Construct</i>
<i>1</i>	How much would you be willing to pay for this product?	Free Text Entry	<i>Willingness to pay</i>
<i>2</i>	To what extent does this product makes you feel tranquillity?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>
<i>3</i>	To what extent does this product makes you feel relief?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>
<i>4</i>	To what extent does this product makes you feel serenity?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>

4.2.2 Results

A between subjects two-way ANOVA revealed a significant main effect of packaging color on willingness to pay for the product. Consistent with the proposed conceptualization, *au naturel*-colored packaging increases consumer's willingness to pay for a product. Specifically, respondents show more willingness to pay for an *au naturel*-colored packaging ($M_{AuNaturel} = 4.52\$$) than for a red-colored packaging ($M_{Red} = 3.21\$$, $F(1,194) = 8.73$, $p < .005$). In addition, I found a main effect of product category on willingness to pay. Consumer's willingness to pay was higher for rice ($M_{Rice} = 4.92\$$) than for butter ($M_{Butter} = 2.82\$$; $F(1,194) = 22.53$, $p < .000$). More important, and consistent with H₃, I found a significant two-way interaction between packaging color and product category on consumer's willingness to pay ($F(1,194) = 4.76$, $p < .05$). Tables 4.8 and 4.9 show descriptive statistics and results of the Two-way ANOVA,

respectively. Figure 4.1 depicts willingness to pay means as a function of packaging color and product category.

Table 4.8: Descriptive statistics (study 2)

Descriptive Statistics

Dependent Variable: Willingness to pay

Color CODE	Product CODE	Mean	Std. Deviation	N
Red color	Butter	2,6471	1,38641	49
	Rice	3,7814	3,41614	51
	Total	3,2256	2,67406	100
<i>Au naturel</i> color	Butter	2,9888	1,37946	49
	Rice	6,0535	4,81189	49
	Total	4,5211	3,84340	98
Total	Butter	2,8180	1,38646	98
	Rice	4,8947	4,29225	100
	Total	3,8668	3,35984	198

Table 4.9: Results of Two-Way ANOVA (study 2)

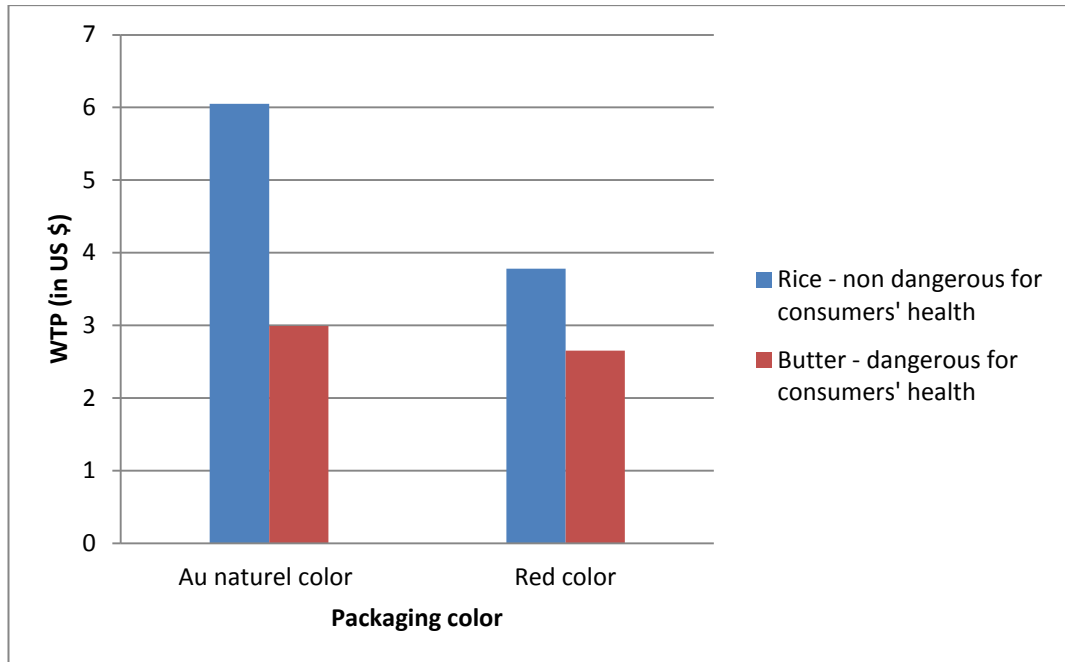
Tests of Between-Subjects Effects

Dependent Variable: Willingness to pay

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	345,333 ^a	3	115,111	11,888	,000
Intercept	2960,999	1	2960,999	305,793	,000
Color	84,515	1	84,515	8,728	,004
PDTCODE	218,118	1	218,118	22,526	,000
Color * PDTCODE	46,104	1	46,104	4,761	,030
Error	1878,506	194	9,683		
Total	5184,391	198			
Corrected Total	2223,839	197			

a. R Squared = ,155 (Adjusted R Squared = ,142)

Figure 4.1: Willingness to pay as a function of packaging color and product category



To probe the predicted interaction effect I conducted a contrast analysis. Planned comparisons show that willingness to pay for butter was not significantly different in the two color conditions ($M_{AuNaturel} = 2.99\$$; $M_{Red} = 2.65\$$; $F(1,194) = .29$, $p = .59$), whereas for rice willingness to pay was significantly higher for *au naturel*-colored packaging than for red-colored packaging ($M_{AuNaturel} = 6.05\$$; $M_{Red} = 3.78\$$; $F(1, 194) = 13.32$, $p < .000$). Table 4.10 shows results of the planned comparison.

Table 4.10: Results of planned comparison (study 2)

Univariate Tests

Dependent Variable: Willingness to pay

Product CODE		Sum of Squares	df	Mean Square	F	Sig.
Butter	Contrast	2,859	1	2,859	,295	,587
	Error	1878,506	194	9,683		
Rice	Contrast	129,009	1	129,009	13,323	,000
	Error	1878,506	194	9,683		

To replicate the mediation effect of *Safety Emotions* on the relationship between packaging color and willingness to pay, a mediation analysis with the bootstrap method was conducted. As mentioned, each respondent was asked to rate three 7-point items measuring the *Safety Emotions*. Cronbach alpha for the safety emotions was .940, and item-to-total correlations were larger than .80 for all of the items. Therefore, responses to the three items were averaged to form a single variable called *Safety Emotions*.

Building upon the results of planned comparisons that have shown the effect of packaging color on willingness to pay only in the non-dangerous product category condition (i.e., rice), I conducted the mediation analysis considering only data collected on rice ($n = 100$; 32% females; $M_{Age} = 32.88$; $SD_{Age} = 9.44$).

To demonstrate support for safety emotions as a mediator of the relationship between packaging color (0 = red; 1 = *au naturel*) and willingness to pay, the 95% bootstrap confidence interval associated with the point estimate of the indirect effect (through safety emotions) of the relationship between packaging color and willingness to pay must not include zero (Zhao et al., 2010).

Table 4.11 shows complete results of this mediation analysis. A first regression analysis of packaging color on willingness to pay showed the expected (total) effect ($c = 2.27$; $t = 2.73$, $p < .01$). In a second regression analysis I found a significant effect of

packaging color on safety emotions ($a = .86, t = 2.84, p < .01$). Finally, in a third regression analysis I found a significant effect of safety emotions on willingness to pay ($b = .58, t = 2.13, p < .05$), and a significant direct effect of packaging color on willingness to pay ($c' = 1.77, t = 2.08, p < .05$). The 95% bias corrected bootstrap confidence interval (5000 trials) of the indirect effect (packaging color \rightarrow safety emotions \rightarrow willingness to pay) ranges from .16 to 1.17. Since zero is not included in the confidence interval, I conclude that the indirect effect is different from zero, and that safety emotions indeed mediate the effect of packaging color on willingness to pay.

Table 4.11: Results of mediation analysis (study 2)

Run MATRIX procedure:

Dependent, Independent, and Proposed Mediator Variables:

DV = WTP

IV = Color

MEDS = Safety Emotions

Sample size

100

IV to Mediators (a paths)

	Coeff	se	t	p
Safety Emotions	,8562	,3011	2,8434	,0054

Direct Effects of Mediators on DV (b paths)

	Coeff	se	t	p
Safety Emotions	,5840	,2742	2,1300	,0357

Total Effect of IV on DV (c path)

	Coeff	se	t	p
Color	2,2721	,8319	2,7312	,0075

Direct Effect of IV on DV (c' path)

	Coeff	se	t	p
Color	1,7721	,8503	2,0840	,0398

Model Summary for DV Model

R-sq	Adj R-sq	F	df1	df2	p
,1123	,0939	6,1327	2,0000	97,0000	,0031

```

*****
                BOOTSTRAP RESULTS FOR INDIRECT EFFECTS

Indirect Effects of IV on DV through Proposed Mediators (ab paths)
                Data      Boot      Bias      SE
TOTAL           ,5000    ,4836    -,0164    ,2345
Safety Emotions ,5000    ,4836    -,0164    ,2345

Bias Corrected and Accelerated Confidence Intervals
                Lower      Upper
TOTAL           ,1602    1,1706
Safety Emotions ,1602    1,1706
*****

Level of Confidence for Confidence Intervals:
    95

Number of Bootstrap Resamples:
    5000

----- END MATRIX -----

```

Considering that the proposed conceptual framework as a whole implies a moderating effect of product category on the mediated relationship between packaging color and consumers' willingness to pay, I conducted a moderated mediation analysis on the whole sample (N = 198), to probe the moderating role of product category (0 = butter, 1 = rice) on the mediating effect of safety emotions in the relationship between packaging color (0 = red; 1 = *au naturel*) and willingness to pay. Table 4.12 shows results of the moderated mediation analysis.

Table 4.12: Results of moderated mediation analysis (Study 2)

```

Run MATRIX procedure:

*****PROCESS Procedure for SPSS Release 2.16.1 *****

Model = 59
  Y = WTP
  X = Color
  M = Safety Emotions
  W = PDTCODE

```

Sample size
198

Conditional indirect effect(s) of X on Y at values of the moderator(s)

Mediator	PDTCODE	Effect	Boot SE	BootLLCI	BootULCI
Safety Emotions	,0000	,0523	,0684	-,0353	,2657
Safety Emotions	1,0000	,5000	,2361	,1522	1,1293

*****INDEX OF MODERATED MEDIATION *****

Mediator	Index	SE(Boot)	BootLLCI	BootULCI
Safety Emotions	,4477	,2469	,0569	1,0715

When the moderator is dichotomous, this is a test of equality of the conditional indirect effects in the two groups.

*****ANALYSIS NOTES AND WARNINGS *****

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
5000

Level of confidence for all confidence intervals in output:
95,00

----- END MATRIX -----

Results of the moderated mediation analysis show a significant conditional indirect effect of packaging color on consumers' willingness to pay for rice (coded as 1). Specifically, the conditional indirect effect for rice is .50 with a 95% bias corrected bootstrap confidence interval (5000 trials) ranging from .15 to 1.13. Differently, the conditional indirect effect for butter is .05 with a 95% bias corrected bootstrap confidence interval (5000 trials) ranging from -.03 to .27. Therefore, this conditional indirect effect is non-significant. Moreover, when comparing these two conditional indirect effects, I found that their difference is statistically significant, with a 95% bias corrected bootstrap confidence interval (5000 trials) ranging from .06 to 1.07.

4.2.3 Discussion

Results of study 2 showed again that packaging color influences customers' willingness to pay for a product. Specifically, I found that consumers are more willing to pay for a product with *au naturel*-colored packaging rather than for the same product in red-colored packaging. Moreover, I demonstrated that this effect is moderated by product category, distinguishing the category in terms of perceived dangerousness for consumers' health. More precisely, I showed that for dangerous product categories (i.e., butter), the packaging color does not influence willingness to pay.

This study provides further support for the expected mechanism driving the effect of packaging color on consumers' willingness to pay. Specifically, I showed that the relationship between packaging color and consumers' willingness to pay is mediated by *Safety Emotions*. In particular, bootstrap analysis findings have shown that the total effect of *au naturel*-colored packaging on consumers' willingness to pay is significantly reduced upon the addition of *Safety Emotions* to the model. Moreover, a moderated mediation analysis provided support to the conditional indirect effect of packaging color on consumers' willingness to pay via safety emotions being moderated by product category.

4.3 Study 3: The moderating effect of cognitive load on the relationship between packaging color and willingness to pay

The purpose of study 3 was to test the moderating effect of cognitive load on the relationship between packaging color and consumers' willingness to pay for the product. Based on H₄ rationale (see Chapter 2 for more detail), I expect to observe a stronger





packaging color effect in the high cognitive load condition compared to the low cognitive load condition. Overall, I predict that packaging color and cognitive load interact in determining consumers' willingness to pay.

In this study I set up a 2 (*Packaging Color: au naturel color vs. red color*) by 2 (*Cognitive Load: high vs. low*) between-subjects experimental design. The dependent variable was willingness to pay (WTP) for the product and the product category was rice. The manipulation of the main independent variable (i.e., packaging color) was achieved by changing only the color of the packaging (*au naturel vs. red*), keeping the other elements (i.e., logo, design, size of product) constant between conditions.

With regard to cognitive load, previous literature suggests to use a manipulation based on a memory task. Specifically, and following previous studies I manipulated cognitive load as follow: in the high cognitive load condition participants were asked to memorize some pieces of information (i.e., 7 numeric code), then to answer some questions about products and then to recall the information previously memorized; no memory task was administered to participants in the low cognitive load condition. Moreover, to discourage inappropriate participants' behavior, in the high cognitive load condition I added a time restriction (5 seconds) to memorize the code.

Table 4.13 depicts the structure of study 3, showing the four combinations obtained crossing the two levels of the main independent variable, *packaging color (au naturel color vs. red color)*, and the two levels of the moderation variable, *cognitive load (high vs. low)*.

Table 4.13: The design stimuli for study 3

		Packaging Color	
		<i>Au naturel color</i>	<i>Red color</i>
Cognitive Load	<i>High</i>	 <p><i>with memory task</i></p>	 <p><i>with memory task</i></p>
	<i>Low</i>	 <p><i>no memory task</i></p>	 <p><i>no memory task</i></p>

4.3.1 Procedure and measures

Data were collected during a laboratory study conducted on undergraduated students at a large Italian University. Two hundred and two participants (52% females; $M_{age} = 22.34$; $SD_{Age} = 1.96$) took part in the study. Participants were randomly assigned to one of the four conditions set up in a Qualtrics study. Participants were informed that the study was about the evaluation of a product from a different country that may be

launched in the local market. Considering the importance of color in the study, respondents were also asked to indicate if they were color blind (self-reporting item with three levels of answer: (1) Yes, (2) I don't know, (3) No). None of the participants declared to be colorblind.

Participants assigned to the high cognitive load condition ($n = 102$) were first presented with a seven-digit numeric code (7225470) and were asked to memorize and to mentally rehearse the code while completing the study. This method has been used in prior research to manipulate cognitive load (Gilbert & Osborne, 1989; Lalwani, 2009; Pontari & Schlenker, 2000). Participants assigned to the low cognitive load condition ($n = 100$) did not receive these instructions and proceeded directly to complete the study.

Participants were exposed to one of the two stimuli and then asked to type their willingness to pay for the product ("How much would you be willing to pay for this product?"). Moreover, in order to check whether the cognitive load manipulation was successful, all participants responded to the following two items (adapted from Skitka et al., 2002): "How difficult was it to concentrate while making the evaluation of the product?" (7-point scale ranging from 'Not difficult at all' (1) to 'Extremely difficult' (7)), and "How distracted did you feel while making the evaluation of the product?" (7-point scale ranging from 'Not distracted at all' (1) to 'Extremely distracted' (7)). Finally, participants answered some socio-demographic questions (gender and age).

Table 4.14 shows the measures used in study 3.

Table 4.14. Measures collected in study 3

<i># Item</i>	<i>Item</i>	<i>Type of measuring</i>	<i>Construct</i>
<i>1</i>	How much would you be willing to pay for this product?	Free Text Entry	<i>Willingness to pay</i>
<i>2</i>	How difficult was it to concentrate while making the evaluation of the product?	7-point scale ranging from 'Not difficult at all' (1) to 'Extremely difficult' (7)	<i>Cognitive Load Manipulation check</i>
<i>3</i>	How distracted did you feel while making the evaluation of the product?	7-point scale ranging from 'Not distracted at all' (1) to 'Extremely distracted' (7)	<i>Cognitive Load Manipulation check</i>

4.3.2 Cognitive load manipulation check

To ensure that participants in the high cognitive load condition were really mentally busy, I asked them to mentally rehearse the code while completing the study. Following Stern, West, Jost and Rule (2012), I made the a priori decision to exclude from the analyses those participants who made two or more errors in reporting the code, because probably they were not rehearsing enough the code and therefore were not cognitively busy. On the basis of this criterion, 26 participants were excluded from the overall sample. Therefore, a total of 176 participants (52.3% females; $M_{Age} = 22.35$; $SD_{Age} = 1.879$) were considered in the analysis. Participants then answered the two manipulation checks and reported their demographics.

4.3.3 Results

In order to check whether the cognitive load manipulation was successful, I performed two independent samples *t*-tests on the two manipulation check items with the cognitive load condition as a between-subject factor. Results revealed that

participants who were asked to memorize and to rehearse the code while making their evaluations found that it was more difficult to concentrate ($M_{High} = 3.30$, $M_{Low} = 2.06$, $t(174) = 5.37$, $p < .001$), and that they felt significantly more distracted while making their product evaluations ($M_{High} = 4.24$, $M_{Low} = 1.44$, $t(174) = 9.72$, $p < .001$) compared to participants in the low cognitive load condition. Therefore, I concluded that the manipulation was successful.

Results of a between subjects two-way ANOVA revealed a significant main effect of packaging color on consumers' willingness to pay for the product. Consistent with the proposed conceptualization, I found that *au naturel*-colored packaging increases consumers' willingness to pay for a product. Specifically, respondents show more willingness to pay for an *au naturel*-colored packaging ($M_{AuNaturel} = 4.17\text{€}$) than for a red-colored packaging ($M_{Red} = 1.72\text{€}$; $F(1,172) = 50.32$, $p < .001$). Moreover, results show a significant main effect of cognitive load on willingness to pay for the product ($M_{HighCL} = 3.32\text{€}$; $M_{LowCL} = 2.56\text{€}$; $F(1,172) = 4.88$, $p = .03$), and the expected interaction effect of color packaging and cognitive load on willingness to pay ($F(1,172) = 4.29$; $p = .04$).

Tables 4.15 and 4.16 show descriptive statistics and results of the Two-way ANOVA, respectively. Figure 4.2 shows willingness to pay means as a function of packaging color and cognitive load.

Table 4.15: Descriptive statistics (Study 3)

Descriptive Statistics

Dependent Variable: Willingness to pay

Color CODE	CL CODE	Mean	Std. Deviation	N
Red Color	Low CL	1,6969	,92289	51
	High CL	1,7443	1,28088	37
	Total	1,7168	1,08118	88
<i>Au naturel</i> Color	Low CL	3,4286	2,11394	49
	High CL	4,9051	3,86155	39
	Total	4,0830	3,08590	88
Total	Low CL	2,5454	1,83134	100
	High CL	3,3663	3,29726	76
	Total	2,8999	2,59287	176

Table 4.16: Results of Two-Way ANOVA (Study 3)

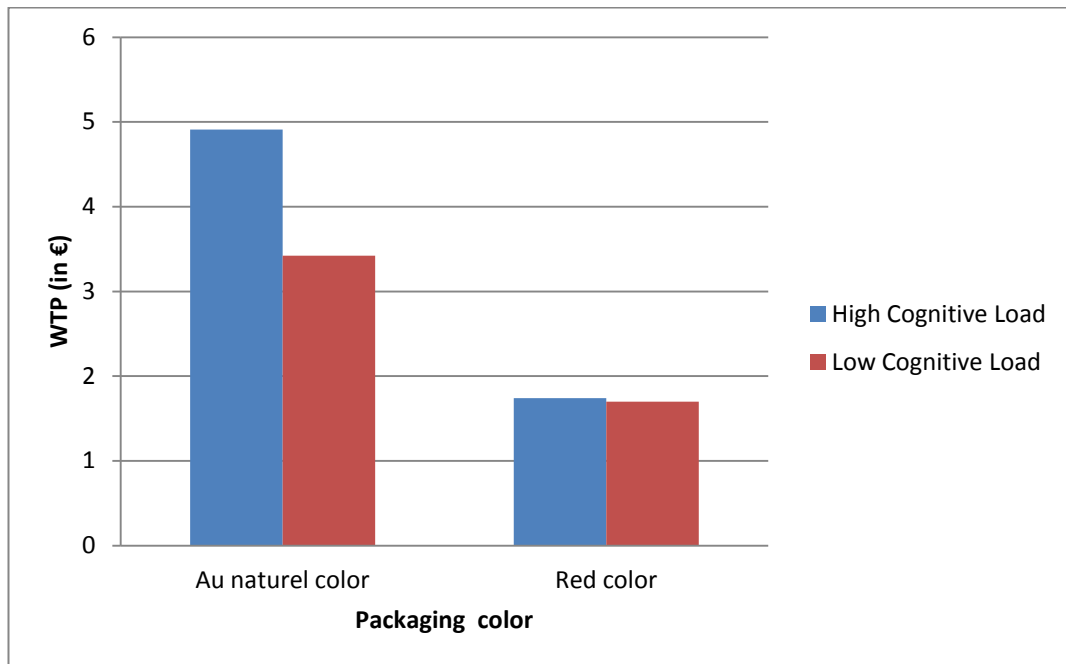
Tests of Between-Subjects Effects

Dependent Variable: Willingness to pay

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	293,732 ^a	3	97,911	19,077	,000
Intercept	1495,920	1	1495,920	291,461	,000
Color	258,261	1	258,261	50,319	,000
CL	25,060	1	25,060	4,883	,028
Color * CL	22,035	1	22,035	4,293	,040
Error	882,789	172	5,132		
Total	2656,565	176			
Corrected Total	1176,521	175			

a. R Squared = ,250 (Adjusted R Squared = ,237)

Figure 4.2: Willingness to pay as function of packaging color and cognitive load



Results of planned comparisons showed that in the high cognitive load condition, participants' willingness to pay for an *au naturel*-colored packaging was higher than participants' willingness to pay for a red-colored packaging ($M_{AuNaturel} = 4.91\text{€}$; $M_{Red} = 1.74\text{€}$; $F(1,172) = 36.96$, $p < .001$). A similar pattern was observed in the low cognitive load condition, replicating results of study 1 ($M_{AuNaturel} = 3.43\text{€}$; $M_{Red} = 1.70\text{€}$; $F(1,172) = 14.60$, $p < .001$). As predicted, however, the effect of packaging color on consumers' willingness to pay is significantly larger in the high cognitive load condition than in the low cognitive load condition ($b_{HighCL} = 3.16$, $p < .001$, $b_{LowCL} = 1.73$, $p < .01$; $F(1,172) = 4.29$, $p < .04$). That means that the effect of *au naturel*-colored packaging (vs. red-colored packaging) on consumers' willingness to pay is stronger in the high cognitive load condition than in the low cognitive load condition.

4.3.4 Discussion

In study 3, I gathered further support for the proposed conceptual model and showed that *au naturel*-colored packaging generates higher customers' willingness to pay for a product. Specifically, I have found that consumers are more willing to pay a product in an *au naturel*-colored packaging rather than a product in a red-colored packaging. Next, I demonstrated that this effect is moderated by the accessibility of processing resources, that is, the individual cognitive load experienced during the evaluation of a product. More precisely, I have shown that in both condition of cognitive load (i.e., high cognitive load and low cognitive load) consumers are more willing to pay for a product with *au naturel*-colored packaging rather than a product with a red-colored packaging, but this relationship is stronger in the high cognitive load condition.

This interaction effect can be explained considering that under conditions of high cognitive load – e.g., the case in which an individual has fewer cognitive resources available to evaluate a product – it is more likely that evaluations will be based on heuristics such as colors. For this reason, under conditions of high cognitive load consumers' willingness to pay for a product with an *au naturel*-colored packaging (vs. a product with a red-colored packaging) is stronger than under conditions of low cognitive load.

4.4 Study 4: Ruling out an alternative explanation of the relationship between packaging color and willingness to pay





Results of the previous studies provide evidence of the influences of *au naturel*-colored packaging on consumers' willingness to pay for a product. However, one might

argue that the product categories used in the studies (e.g., rice) remind by themselves *au naturel* colors, and therefore that the significant effect of the *au naturel*-colored packaging on willingness to pay for the product could be due to the fit between the color of the product (i.e., beige-like rice) and the color of the packaging, compared to the un-fit between product color and packaging color in the red-colored packaging conditions. Therefore, this study was designed with the main objective of ruling out an alternative explanation of the proposed effect based on the fit between product color and packaging color. I expect to find the packaging color effect on willingness to pay irrespective of the fit between product color and packaging color.

In study 4 I adopted a 2 (*Packaging Color: au naturel color vs. orange color*) by 2 (*Product Color: beige color vs. orange color*) between-subjects experimental design. The dependent variable was willingness to pay (WTP) for the product. Table 4.17 shows the structure of the study, based on the four combinations obtained crossing the two levels of the main independent variable, *packaging color (au naturel color vs. orange color)* and the two levels of the other independent variable, *product color (beige color vs. orange color)*.

Rice and carrots were chosen as stimuli for this study. Considering results of previous studies that provided evidence of the effect of packaging color on willingness to pay only in non-dangerous product categories (study 2), these two product categories were selected because are comparable in terms of perceived dangerousness for consumer's health.

Table 4.17. The design stimuli for study 4

		Packaging Color	
		<i>Au naturel color</i>	<i>Orange color</i>
Product Color	<i>Beige color</i>		
	<i>Orange color</i>		

Therefore, the manipulation of the main independent variable (i.e., packaging color) was realized by changing only the color of the packaging (au naturel vs. orange) keeping the other elements constant (i.e., logo, design, size) for both conditions. The choice of orange for the second version of packaging color is justified by the need to create fitting condition between packaging color and product color (i.e., carrots), as well as unfitting conditions. Additionally, investigating the effect of packaging color also on

carrots allows me to test H_1 and H_2 on a new product category, thus verifying the external validity of the proposed framework.

4.4.1 Procedure and measures

Two hundred and seventeen participants recruited by Amazon Mechanical Turk took part in the study. Participants were randomly assigned to one of the four conditions set up in a online Qualtrics study. Participants were informed that the study was about the evaluation of a product from a different country that may be launched in the local market. Considering the importance of the color in this study, five participants were excluded from the analysis because they reported to be colorblind. A total of 212 participants (50% females; $M_{Age} = 35.86$; $SD_{Age} = 11.56$) were considered in the analysis.

Participants were exposed to one of the four stimuli and then asked to type their willingness to pay for the product ("How much would you be willing to pay for this product?"). Participants then answered the same 7-point items used in studies 1 and 2 to measure safety emotions ("To what extent does this product makes you feel tranquillity?"; "To what extent does this product makes you feel relief?"; "To what extent does this product makes you feel serenity?")

Finally, participants answered some socio-demographic questions (gender, age, education, and job).

Table 4.18 shows the measures used in the main study.

Table 4.18. Measures used in study 4

# Item	Item	Type of measuring	Construct
1	How much would you be willing to pay for this product?	Free Text Entry	<i>Willingness to pay</i>
2	To what extent does this product makes you feel tranquillity?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>
3	To what extent does this product makes you feel relief?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>
4	To what extent does this product makes you feel serenity?	7-point scale ranging from 'Not at all' (1) to 'Very much' (7)	<i>Safety Emotions</i>

4.4.2 Results

A two-way ANOVA revealed a significant main effect of packaging color on willingness to pay for the product. Consistent with the proposed conceptualization, I found that *au naturel*-colored packaging increases the consumer's willingness to pay for a product. Specifically, respondents have shown higher willingness to pay for an *au naturel*-colored packaging ($M_{AuNaturel} = 5.58\$$) than for an orange-colored packaging ($M_{Orange} = 3.08\$$; $F(1,208) = 25.73$, $p < .001$). Results show a non-significant main effect of product color on willingness to pay ($F(1,208) = .82$; $p > .36$), and a non-significant interaction effect of packaging color and product color on willingness to pay ($F(1,208) = 2.26$; $p = .13$). Tables 4.19 and 4.20 show descriptive statistics and results of the Two-way ANOVA, respectively.

Table 4.19: Descriptive statistics (Study 4)

Descriptive Statistics

Dependent Variable: Willingness to pay

Color packaging	Color product	Mean	Std. Deviation	N
Orange	Orange	2,4843	1,23567	53
	Beige	3,6738	2,88433	52
	Total	3,0734	2,28040	105
<i>Au naturel</i>	Orange	5,7302	4,46962	52
	Beige	5,4356	4,63901	55
	Total	5,5788	4,53839	107
Total	Orange	4,0918	3,63581	105
	Beige	4,5794	3,96845	107
	Total	4,3379	3,80617	212

Table 4.20: Results of Two-Way ANOVA (Study 4)

Tests of Between-Subjects Effects

Dependent Variable: Willingness to pay

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	372,099 ^a	3	124,033	9,610	,000
Intercept	3974,525	1	3974,525	307,937	,000
ColorPackaging	332,089	1	332,089	25,730	,000
ColorPDT	10,607	1	10,607	,822	,366
ColorPackaging * ColorPDT	29,167	1	29,167	2,260	,134
Error	2684,641	208	12,907		
Total	7046,069	212			
Corrected Total	3056,740	211			

a. R Squared = ,122 (Adjusted R Squared = ,109)

With regard to the interaction effect I have anyhow performed a contrast analysis. Results of a planned comparison analysis (see Table 4.21) showed that the willingness to pay for rice was significantly higher in the *au naturel*-colored packaging condition

than in the orange-colored packaging condition ($M_{AuNaturel} = 5.44\$$; $M_{Orange} = 3.67\$$; $F(1,208) = 6.43$, $p < .02$). The same pattern holds for the carrots ($M_{AuNaturel} = 5.73\$$; $M_{Orange} = 2.48\$$; $F(1,208) = 21.42$, $p < .001$). Figure 4.3 synthesizes results of study 4.

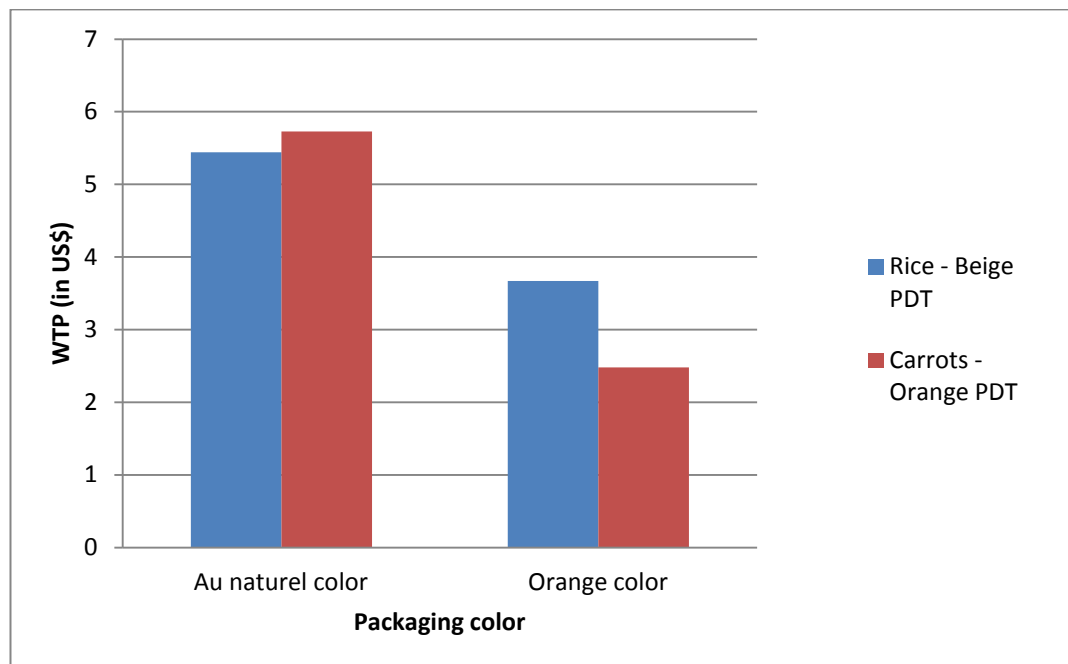
Table 4.21: Results of planned comparison (Study 4)

Univariate Tests

Dependent Variable: Willingness to pay

Color product		Sum of Squares	df	Mean Square	F	Sig.
Orange	Contrast	276,533	1	276,533	21,425	,000
	Error	2684,641	208	12,907		
Beige	Contrast	82,964	1	82,964	6,428	,012
	Error	2684,641	208	12,907		

Figure 4.3: Willingness to pay as function of packaging color and product color



These results cannot be explained by the fit between product color and packaging color. In fact, participants have shown a greater willingness to pay for carrots in the version with the *au naturel*-colored packaging (that does not fit with the product color) rather than in the version with the orange-colored packaging (that fits with the product color). This implies that the results can be explained by the characteristics of *au naturel*-colored packaging but not by the fit between product color and packaging color.

To obtain further support for the mediation effect of *Safety Emotions* on the relationship between packaging color and willingness to pay, a mediation analysis with the bootstrap methods was conducted. Cronbach alpha for the three items measuring the *Safety Emotions* construct was .95, and item-to-total correlations were larger than .84 for all of the items. Therefore responses to the three items were averaged to form a single variable called *Safety Emotions*.

The 95% bootstrap confidence interval associated with the point estimate of the indirect effect (through safety emotions) of the relationship between packaging color (0 = orange; 1 = *au naturel*) and willingness to pay must not include zero (Mugge & Dahl, 2013).

Table 4.22 shows complete results of the mediation analysis. A first regression analysis of packaging color on willingness to pay showed the expected (total) effect ($c = 2.50$; $t = 5.06$, $p < .001$). In a second regression analysis I found a significant effect of packaging color on safety emotions ($a = .55$, $t = 2.34$, $p < .02$). Finally, in a third regression analysis I found a significant effect of safety emotions on willingness to pay ($b = .49$, $t = 3.46$, $p < .001$), and a significant direct effect of packaging color on willingness to pay ($c' = 2.24$, $t = 4.58$, $p < .001$). The 95% bias corrected bootstrap confidence interval (5000 trials) of the indirect effect (packaging color \rightarrow safety

emotions → willingness to pay) ranges from .05 to .64. Since zero is not included in the confidence interval, I conclude that the indirect effect is different from zero, and that safety emotions again mediate the effect of packaging color on willingness to pay.

Table 4.22. Mediation analysis

Run MATRIX procedure:

Dependent, Independent, and Proposed Mediator Variables:

DV = WTP

IV = Color

MEDS = Safety Emotions

Sample size

212

IV to Mediators (a paths)

	Coeff	se	t	p
Safety Emotions	,5536	,2370	2,3361	,0204

Direct Effects of Mediators on DV (b paths)

	Coeff	se	t	p
Safety Emotions	,4857	,1405	3,4582	,0007

Total Effect of IV on DV (c path)

	Coeff	se	t	p
Color	2,5054	,4947	5,0639	,0000

Direct Effect of IV on DV (c' path)

	Coeff	se	t	p
Color	2,2365	,4885	4,5778	,0000

Model Summary for DV Model

	R-sq	Adj R-sq	F	df1	df2	p
	,1571	,1490	19,4702	2,0000	209,0000	,0000

BOOTSTRAP RESULTS FOR INDIRECT EFFECTS

Indirect Effects of IV on DV through Proposed Mediators (ab paths)

	Data	Boot	Bias	SE
TOTAL	,2689	,2722	,0033	,1464
Safety Emotions	,2689	,2722	,0033	,1464

Bias Corrected and Accelerated Confidence Intervals

	Lower	Upper
TOTAL	,0510	,6444
Safety Emotions	,0510	,6444

Level of Confidence for Confidence Intervals:
95

Number of Bootstrap Resamples:
5000

----- END MATRIX -----

4.4.3 Discussion

This study provides evidence on the relationship between packaging color and customers' willingness to pay for a product, and on the mediating effect of safety emotions. More important, findings suggest that the effect of packaging color on consumers' willingness to pay holds regardless of the fit between the product color and packaging color. Indeed, beyond supporting again the investigated effect for rice, results of the analysis show that consumers are willing to pay more also for the orange product (i.e., carrots) in an *au naturel*-colored packaging rather than the orange product in an orange-colored packaging.

Findings of study 4 provide further support to the mechanism driving the effect of packaging color on consumers' willingness to pay. Specifically, results demonstrated that the relationship between packaging color and consumers' willingness to pay is mediated by *Safety Emotions*.

CHAPTER 5 - GENERAL DISCUSSION

The main objective of this research was to understand whether and how packaging color (i.e., *au naturel*-colored packaging color) affects consumers' willingness to pay for a product. Moreover, this research aimed to verify the contingencies in which this effect may change.

At first, preliminary research steps were conducted to investigate the characteristics of *au naturel* color. Across both qualitative and quantitative studies, aimed to understand how these color shades are perceived in the mind of individuals and to clarify what are the main features that can describe this new concept of *au naturel* color, it was possible to corroborate the definition of "*au naturel*" color. Results of qualitative interviews have confirmed that the colors considered (i.e., shades of beige ranging from cream, sandy beiges, to brown) fall in the category "*au naturel*" color in the minds of respondents. Moreover, findings have shown important features of these shades of colors (i.e., they seem to have an untreated, undyed, unprocessed, and unbleached property or quality). Furthermore, across two quantitative studies (studies A and B), it was possible to identify a set of indicators and obtain scores able to create an *Au Naturel Colors Scale*. The ANCS represents the main characteristics of *au naturel* colors, that is a color that brings to mind something that comes from the soil, it is not an artificial color nor it is dyed, it is untreated or unprocessed, and it expresses authenticity, that is something genuine and not altered).

Secondly, across four experimental studies, it was possible to provide evidence that packaging color affect consumers' willingness to pay for a product. Specifically, results have shown that the presence of *au naturel* color on product packaging increases consumers' willingness to pay compared with a non *naturel*-colored packaging product.

Moreover, results have provided evidences in terms of mediation and moderation of the relationship between packaging color and consumers' willingness to pay for a product. Specifically, the role of *Safety Emotions* (i.e., low arousal emotions that have a reassuring function for the individual) was evaluated as mediator of such effect. The results have provided evidence that the mechanism based on *Safety Emotions* mediates the effects of an *au naturel* colored-packaging color on consumers' willingness to pay. Indeed, a mediation analysis with bootstrap methods has shown that the total effect of *au naturel* colored-packaging on consumers' willingness to pay is significantly reduced upon the addition of *Safety Emotions* to the model (studies 1, 2 and 4). Further, results of study 2 have shown the moderating effect of product category (distinguished in terms of perceived dangerousness of product for consumers' health) on the relationship between packaging color and consumers' willingness to pay. Specifically, the effect of packaging color and consumers' willingness to pay occurs only for non-dangerous product category (i.e., rice), while for dangerous product categories (i.e., butter) the packaging color does not influence willingness to pay. Results of study 2 have also provided support to the conditional indirect effect of packaging color on consumers' willingness to pay via *Safety Emotions* being moderated by product category. Still in terms of moderating effect, results of study 3 have provided evidence of the role of the cognitive load on the relationship between packaging color and consumers' willingness to pay. In particular, in both condition of cognitive load (i.e., high cognitive load vs. low cognitive load) consumers are more willing to pay for a product with *au naturel*-colored packaging rather than a product with a non *au naturel*-colored packaging, but this relationship is stronger in the high cognitive load condition. Finally, study 4 has ruled out the alternative explanation of the proposed effect based on the fit between product

color and packaging color. Specifically, results of this study have corroborated the evidence of the packaging color effect on consumers' willingness to pay irrespective of the fit between product color and packaging color.

5.1 Theoretical contributions

This research contributes to the consumer behavior literature making several theoretical contributions. First, the focus on the *au naturel* color is novel and relevant. Indeed, prior research has focused mainly on the effects of colors such as red and blue and paid little attention to the hues of color that include predominantly the shades of beige. At the same time, the hues of *au naturel* color are relevant because they have specific features that may evoke specific associations in consumers' mind and therefore may have a pivotal role in some evaluative processes.

Results of the presented preliminary analyses on the *Au Naturel Color Scale* have allowed to corroborate the main features of *au naturel* color, suggesting that shades of beige reflect the characteristics of the concept of *au naturel* color better than other colors. These results show that *au naturel* color (i.e., beige) is perceived by consumers as a color that brings to mind something that comes from the soil, as not artificial color, not dyed, untreated or unprocessed, and expressing authenticity, that is something genuine and not altered and, as consequence, more natural. Results of the presented preliminary studies suggest that different shades of beige converge in featuring the *au naturel* characteristics. Although in the experimental studies I used only one specific shade of beige (see Table 2.1), I expect even different hues of beige (e.g., sand, camel, brown) may produce the documented effect on consumers' willingness to pay.

Second, findings of this research allow to advance the understanding of the use of visual stimuli as heuristics in the effortlessly routes of processing information. Indeed, this research offers insight into how the use of *au naturel* color in product packaging, by working as a mental shortcut to simplify the evaluation, influence consumers' willingness to pay for a product. Third, and most importantly, results of this research enrich color marketing literature by identifying the key underlying process through which the *au naturel* color packaging influences consumers' willingness to pay. Consistently with theorizing the use of feelings in the category of heuristic processing activated in the peripheral route, as well as with the literature on "feeling as information", this research consistently shows that the *au naturel* color positively influences willingness to pay through safety emotions, which are low arousal emotions characterized by sensations of tranquillity, serenity and relief. By considering the meaning of color to consumers, it is possible to explain why the *au naturel* color generates positive and reassuring sensations, which in turn influence consumers dispositions toward the product. Fourth, this research contributes to identify two contingencies of the use of *au naturel* color as heuristics still using the dual process theory. The dual-process models suggest that people are capable of (and engage in) both analytic and heuristic processing (Boyer, 2006; Stanovich, 2004). Specifically, according to the dual-process approach, when a person is motivated and capable of processing the information content of a communication, the possible change of dispositions is the outcome of the central processing route. Conversely, when the subject is not motivated or is not able to allocate a certain effort cognitive to the topic in question, any changes in dispositions are the result of a peripheral path. Findings of this research have provided evidence that in the absence of individual's motivation and

cognitive skills required, the consumer activates the peripheral path of the dual-process model, in which consumers use the color of the packaging as a heuristic to evaluate the product itself. Specifically, this research has shown that the perception of dangerousness of product category and the different levels of cognitive load have a moderating role. With regard to the product category (potentially dangerous for consumers' health vs. potentially non-dangerous for consumers' health), the positive effect of *au naturel*-colored packaging on consumers' willingness to pay holds for potentially not dangerous products for consumer's health, while for potentially dangerous products for consumer's health it disappears. Consumers are more motivated when they are evaluating a product category potentially dangerous for consumers' health and, in turn, they could be more involved during the evaluation. Therefore, results show the evidence that variations in consumers' involvement as a function of product category have effect on relationship between packaging color and consumers' willingness to pay. With regard to the individual cognitive load, results have shown that under conditions of high cognitive load, the effect of *au naturel*-colored packaging on the consumers' willingness to pay is stronger than the conditions of low cognitive load. Taken together, these results validate the use of color packaging like a heuristic in the peripheral path of the dual-process model.

In sum, I demonstrated the positive effect of *au naturel*-colored packaging on consumers' willingness to pay. Second, I identified the low arousal-emotions (i.e., Safety Emotions) as the mediating mechanism through which *au naturel* color affects consumers' willingness to pay. Third, I identified product category and cognitive load as moderator variable in the relationship between packaging color and consumers' willingness to pay.

5.2 Managerial Implications

The findings of this research have several and important implications for managers and policy makers. Indeed, color is a design element that must be carefully considered in the design packaging phase. Colors are also environmental primes that may provide automatic guidance in supermarkets (Dijksterhuis et al. 2005) because the colors themselves, as part of packaging, do not require explicit instructions to consumers (Hofmann et al., 2010) or extensive information processing (Trudel & Murray, 2013).

The understanding of the associations between color and meanings can help choosing the right color for communicating a specific meaning of the product and therefore to reach a given positioning. Therefore, understanding how consumers perceive products with *au naturel*-colored packaging is strategically important for policy makers, designers and managers.

From a managerial and policy making perspective, the proposed *Au Naturel Color Scale* can be used to evaluate how consumers perceive specific color tones (e.g., ivory, tan, cream, taupe, camel, sand, etc.) and to verify if their use on product packaging reflects the characteristics belonging to the domain of the construct.

Considering the results of this research that show a higher consumers' willingness to pay for a *au naturel*-colored product packaging (vs. a non *au naturel*-colored product packaging), the main implication of this research suggests for policy makers the need to regulate the use of colors on product packaging from a consumers' protection perspective. Indeed, results of this research have showed that consumers use packaging color as heuristic to simplify their decision choice during the shopping experience. Specifically, consumers use *au naturel*-colored packaging as heuristic to associate to the

product characteristics of reliability and safety (through Safety Emotions) and, in turn, they are more willing to pay for the product. Building upon the *Au Naturel Color* construct, if consumers show a greater willingness to pay for a product with *au naturel*-colored packaging due to the associations linked to the main characteristics of the construct (i.e., something that comes from the soil, not artificial, untreated or unprocessed, and something genuine and not altered), it is likely that consumers expect to purchase a product with those specific features. Therefore, to reduce consumer confusion, public policy makers may recommend the use of *au naturel* color only on a selection of products, that is the products that reflect the specific characteristics linked to *au naturel* color construct. Still in terms of consumers protection, considering that companies could take advantage of these mental shortcuts that consumers apply during their shopping experience, using these color tones in a misleading manner, a regulatory of *au naturel* color system could prevent these opportunistic behavior by firms.

Based on these results, public policy makers may favour an "*Au Naturel*" color (vs. non *au naturel* color) system for product packaging in product categories that really reflect the consumers' associations in terms of, for example, genuineness and non artificial features of the product.

From the company perspective, if the *au naturel* color system becomes a common practice, food manufacturers may use the *au naturel* color system (being a heuristic) to communicate the value and the difference of their products from the competitors, making the best of this strong semantic characterization of *au naturel* color, but adopting an ethical perspective and a social fair conduct. Moreover, considering the evidence of this research showing that *au naturel*-colored packaging evoke Safety Emotions (i.e., tranquillity, serenity, and relief), firms may use the *au*

naturel color system to position their products as safe products. In this case, turnover may even increase if consumers perceive product with *au naturel*-colored packaging to be more reassuring thus increasing their willingness to pay (with respect to willingness to pay for a hypothetical non *au naturel*-colored product packaging). For product and packaging managers in the domain of food products, this study represents an insight about the effect of packaging color on the consumers' willingness to pay. By creating packaging using *au naturel* color that evokes reassuring emotions in a visually recognizable way, managers and designers may positively influence the consumers' willingness to pay for food products.

5.3 Limitations and Further Research

To conclude, I note some limitations in this research that offer opportunities for future research.

The studies were designed to assess the consumers' willingness to pay for a product featuring a *au naturel*-colored packaging (*vs.* a non *au naturel*-colored packaging). However, both the online setting and the pre-selection of stimuli question the generalizability of the results. Although a real consumer sample participated in the studies, I cannot rule out the possibility that these participants acted differently compared with their real-life behavior. Regarding the stimuli, the studies were limited to food products, while it could be interesting to understand whether the effect of *au naturel*-colored packaging on consumers' willingness to pay would prove to be the same also for other product categories, like as tobacco, drug, and body care products.

Looking around in current market place, the use of these color tones (i.e., *au naturel* color) on packaging of organic and natural product seems to be a common

practice. In particular, increasingly different types of companies (e.g., in food, tobacco, body care sectors) use *au naturel* color on the packaging of their products associated with labels such as "natural" or "organic". Building upon this common practice it could be interesting to understand if the mere presence of *au naturel* color on the packaging (i.e., without organic claim) evoke a higher perception of product naturalness and, in turn, determine a higher consumers' willingness to pay for the product.

Further research may also be devoted to understand if there are other potential aspects which may moderate the effect of the *au naturel* colored-packaging on consumers' willingness to pay. First, one might consider the possibility that consumer characteristics or personality trait may influence this relationship. It might be interesting to investigate if, for example, Need for Cognition may moderate the effect of *au naturel* colored-packaging on consumers' willingness to pay. Specifically, consumers with low Need for Cognition could be more willing to pay for a product in response to *au naturel*-colored packaging within a product category, because it is more likely that their evaluations will be affected by heuristic cues such as the presence of *au naturel* colors. Second, the consumer's involvement toward a product may moderate the effect of *au naturel* colored-packaging on consumers' willingness to pay. In particular, consumers with low level of involvement, being less interested, could activate the peripheral route during the shopping experience and could be more willing to pay for a product in response to *au naturel*-colored packaging within a product category, because it is more likely that their evaluations will be affected by heuristic cues such as the presence of *au naturel* colors.

APPENDIX A - *Interview Outline*

1) Using the expression "Au naturel" color, how would you define the colors belonging to this label?

Complete these sentences:

2) In my opinion, "Au naturel" colors are colors that recall... (Why? --> Lifts)

3) In my opinion, "Au naturel" colors are colors with these features:..... (Why? --> Lifts)

4) In my opinion, "Au naturel" colors mean..... (Why? --> Lifts)

5) Could you tell me the first three "Au naturel" Colors that come to your mind? (*spontaneous recall*)

Show the "Au naturel" color palette (each color separately)

6) How would you define these colors?

7) Within these colors there are some that reflect your definition of "Au naturel" Colors? (*prompted recall*)

Ask the respondent to select max 3 colors and for each color ask:

8) What type of images does this color bring to your mind?

9) Which adjectives/words would you associate to this color?

10) What types of feelings does this color induce in you?

Show both color palette ("Au naturel" colors palette vs. Non "Au naturel" colors palette)

11) Could you tell me the differences and similarities between these two color palettes?

12) In your opinion, which of these palette contains hue of color that is possible to define as "Natural" colors?

13) Have you ever bought some products with "Au naturel-colored" packaging? If yes, could you provide an example?

14) Imagine having to buy the following product (*show the product in two versions*):

- In your opinion, which differences do exist between these two products?

- Which one do you think is a more natural? (Why? --> Lifts)

- Which one do you think has more natural ingredients? (Why? --> Lifts)

- Which one do you think is healthier? (Why? --> Lifts)

Socio-demo data

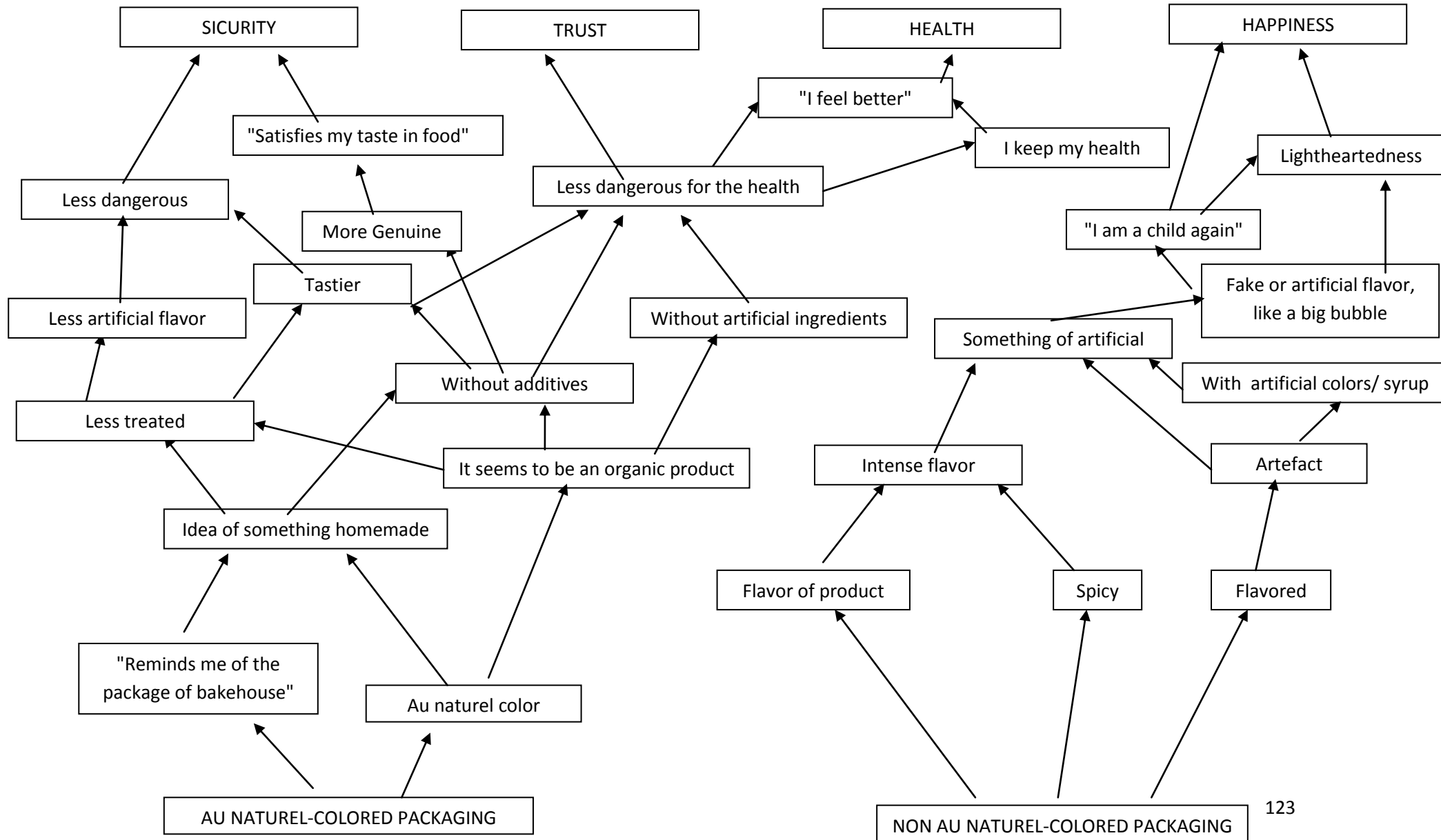
a) Gender

b) Age

c) Profession

d) Nationality

APPENDIX B - Means-end chain



APPENDIX C - Some examples of preliminary studies stimuli



REFERENCES

- Alfnes, F., Guttormsen, A.G., Steine, G., and Kolstad. K. (2006). Consumers' Willingness To Pay For The Color Of Salmon: A Choice Experiment With Real Economic Incentives, *American Journal of Agricultural Economics*, vol. 88, 1050–1061.
- Allison, R. I., & Uhl, K. P. (1964). Influence of beer brand identification on taste perception. *Journal of Marketing Research*, 1, 36–39.
- Babin, B. J., Hardesty, D. M., & Suter, T. A. (2003). Color and shopping intentions: The intervening effect of price fairness and perceived affect. *Journal of Business Research*, 56(7), 541–551.
- Bagchi, R., & Cheema, A. (2013). The Effect of Red Background Color on Willingness-to-Pay: The Moderating Role of Selling Mechanism. *Journal of Consumer Research*, 39(February), 944-960.
- Ballast, D. K. (2002). Interior design reference manual. Professional Pub. Inc.: Belmont, CA.
- Bargh, J. A. (2002). Beyond Simple Truths: The Human-Internet Interaction. *Journal of Social Issues*, 58, 1–8.
- Baron, R.M. & Kenny, D.A. (1986), “The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations”, *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Bellizzi, J. a., & Hite, R. E. (1992). Environmental color, consumer feelings, and purchase likelihood. *Psychology and Marketing*, 9(5), 347–363.
- Bellizzi, J.A., Crowley, A.E., & Hasty, R.W. (1983). The effects of color in store design. *Journal of Retailing*, 59, 21–45.

- Bloch, P.H., Brunel, F.F. & Arnold, T.J. (2003). Individual differences in the centrality of visual product aesthetics: concepts and measurement. *Journal of Consumer Research*, 29(4), 551–65.
- Bohner, G., Moskowitz, G.B., & Chaiken; S. (1995). The Interplay of Heuristic and Systematic Processing of Social Information. *European Review of Social Psychology*, 6, 33-68.
- Bohner, G., & Wänke, M. (2002). Attitudes and attitude change. Social Psychology. Hove, UK: Psychology Press.
- Bottomley, P.A., & Doyle, J.R. (2006). The Interactive Effects of Colors and Products on Perceptions of Brand Logo Appropriateness. *Marketing Theory*, 6, 63-83.
- Boyer, T., W. (2006). The development of risk-taking: A multi-perspective review. *Developmental Review*, 26, 291–345.
- Cahoon, R.L. (1969). Physiological Arousal And Time Estimation. *Perceptual and Motor Skills*, 28, 259–68.
- Chaiken, S. (1987). The heuristic model of persuasion. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds), *Social Influence: The Ontario Symposium* (Vol. 5, pp. 3-39). Hillsdale, NJ: Erlbaum.
- Chandon, P. (2013). How Package Design and Packaged-based Marketing Claims Lead to Overeating. *Applied Economic Perspectives and Policy*, 35 (1), 7–31.
- Chebat, J.C., & Morrin, M. (2007). Colors and cultures: Exploring the effects of mall décor on consumer perceptions. *Journal of Business Research*, 60(3), 189–196.
- Chen, S., & Shelly Chaiken, S. (1999). Motivated Heuristic and Systematic Processing. *Psychological Inquiry*, 10, 44-49.
- Cheskin, L. (1957). How to predict what people will buy. Liveright Publishing Corporation, New York.

- Clarke, T., & Costall, A. (2008). The emotional connotations of color: A qualitative investigation. *Color Research & Application*, 33, 406–410.
- Cox B. G., Binder D. A., Chinnappa B. N., Christianson A., Colledge M. J., Kott P. S. (1995), *Business Survey Methods*, John Wiley & Sons.
- Crowley, A. E. (1993). The two-dimensional impact of color on shopping. *Marketing Letters*, 4(1), 59–69.
- Elliot, A.J., & Maier, M. (2007). Color and psychological functioning. *Current Directions In Psychological Science*, 16(5), 250–254.
- Frank, M.G., & Gilovich, T. (1988). The dark side of self and social perception: Black uniforms and aggression in professional sports. *Journal of Personality and Social Psychology*, 54, 74-85.
- Garber Jr, L.L., Burke, R. and Jones, J.M. (2000). The role of package color in consumer purchase consideration and choice. Working Paper No. 00-104, Marketing Science Institute, Cambridge, MA.
- Garber Jr, L.L., & Hyatt, E.M. (2003). Color as a tool for visual persuasion. *Persuasive Imagery: A Consumer Perspective*.
- Garber Jr, L.L., Hyatt, E.M., & Starr Jr, R.G. (2000). The effects of food color on perceived flavor. *Journal of Marketing Theory & Practice*, 8(4), 59-72.
- Goethe, J.W. von. (1988). Theory of color. In D. Miller (Ed. & Trans.), *Scientific studies* (vol. 12, Goethe: Collected Works in English). New York: Suhrkamp.
- 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.
- Gorn, G.J., Chattopadhyay, A., Sengupta, J., & Tripathi, S. (2004). Waiting for the Web: How Screen Color Affects Time Perception. *Journal of Marketing Research*, 41(2), 215–25.

- Grady, D. (1993). The Vision Thing: Mainly in the Brain. *Discover*, 1, <http://discovermagazine.com/1993/jun/thevisionthingma227>.
- Greenwald, A.G. (1968). Cognitive Learning, Cognitive Response to Persuasion, and Attitude Change. *Psychological Foundations Of Attitudes*. Academic Press Inc., New York
- Grimes, A. & Doole, I. (1998). Exploring the relationship between color and international branding: a cross-cultural comparison of the UK and Taiwan. *Journal of Marketing Management*, 14, 799–817.
- Hagtvedt, H. (2014). Dark Is Durable, Light Is Convenient: Color Value Influences Perceived Product Attributes. In *Advance Consumer Research*, 42, 28-29.
- Hemphill, M. (1996). A note on adults' color-emotion associations. *Journal of Genetic Psychology*, 157, 275-281.
- Hine, T. (1995). *The Total Package: The Evolution and Secret Meanings of Boxes, Bottles, Cans, and Tubes*. Little, Brown
- Hoegg, J., & Alba, J.W. (2007). Taste Perception: More than Meets the Tongue. *Journal of Consumer Research*, 33(4), 490–98.
- Huang, L., & Lu, J. (2013). When Color Meets Health : The Impact of Package Colors on the Perception of Food Healthiness and Purchase Intention. In *Advance Consumer Research*, 41, 625–26.
- Kaltcheva, V.D., & Weitz, B. (2006). When Should a Retailer Create an Exciting Store Environment? *Journal of Marketing*, 70(1), 107–18.
- Krishna, A. (2012). An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior. *Journal of Consumer Psychology*, 22(3), 332–351.

- Labrecque, L.I., & Milne, G.R. (2012). Exciting red and competent blue: The importance of color in marketing. *Journal of the Academy of Marketing Science*, 40(5), 711–727.
- Lang, J. (1993). *Creating architectural theory: The role of the behavioral sciences in environmental design*. New York: Van Nostrand Reinhold.
- Lee, N.Y., Noble, S.M., & Biswas, D. (2016). Hey big spender! A golden (color) atmospheric effect on tipping behavior. *Journal of the Academy of Marketing Science*, 1-21.
- Linton, H. (1999). *Color in architecture: Design methods for buildings, interiors and urban spaces*. New York: McGraw Hill.
- Lohse, G.L., & Rosen, D. (2001). Signaling Quality and Credibility in Directional Advertising: The Influence of Color and Graphics on Choice. *Journal of Advertisement*, 30(2), 73–85.
- Madzharov, A.V., Ramanathan, S., & Block, L.G. (2012). The Best of Both Worlds: Effects of Product Color Brightness on Hedonic Food Consumption. In *Advance Consumer Research*, 40, 174-175.
- Mahnke, F. (1996). *Color, environment, human response*. New York: Van Nostrand Reinhold.
- Mai, R., Symmank, C., & Seeberg-Elverfeldt, B. (2016). Light and Pale Colors in Food Packaging: When Does This Package Cue Signal Superior Healthiness or Inferior Tastiness? *Journal of Retailing*, 92, 426-444.
- Marr, D. (1982). *Vision: A computational investigation into the human representation of processing of visual information*. San Francisco: W. H. Freeman.
- Mehta R., & Zhu, R.J., (2009). Blue or Red? Exploring the Effect of Color on Cognitive Task Performances. *Sciences*, 7, 1226–29.

- Meier, B. P., Robinson M. D. & Clore, G. L. (2004). Why Good Guys Wear White Automatic Inferences About Stimulus Valence Based on Brightness. *Psychological Science*, 15, 82–87.
- Meyers-Levy, J., & Peracchio, L. (1995). Understanding the Effects of Color: How the Correspondence between Available and Required Resources Affects Attitudes. *Journal of Consumer Research*, 22(2), 121.
- Meyers-Levy, J., & Zhu, R.J. (2007). The influence of ceiling height: The effect of priming on the type of processing that people use. *The Journal of Consumer Research*, 34(2), 174–187.
- Miller, E. G., & Kahn, B. E. (2005). Shades of Meaning: The Effect of Color and Flavor Names on Consumer Choice. *Journal of Consumer Research*, 32(1), 86–92.
- Mitchell, D.J., Kahn, B.E., & Knasko, S.C. (1995). There's something in the air: Effects of congruent or incongruent ambient odor on consumer decision making. *The Journal of Consumer Research*, 22(2), 229–238.
- Morrin, M., & Ratneshwar, S. (2003). Does it make sense to use scents to enhance brand memory? *Journal of Marketing Research*, 40(1), 10–25.
- Novak, T.P., Hoffman, D.L., & Yung, Y. (2000). Measuring the Customer Experience in Online Environments: A Structural Modeling Approach. *Marketing Science*, 19, 22–42.
- Peck, J., & Childers, T.L. (2003a). Individual differences in haptic information processing: The “need for touch” scale. *The Journal of Consumer Research*, 30(3), 430–442.
- Peck, J., & Childers, T.L. (2003b). To have and to hold: The influence of haptic information on product judgments. *Journal of Marketing*, 67, 35–48.
- Petty, R. E. & Cacioppo, J. T. (1981). *Attitudes and Persuasion: Classic and Contemporary Approaches*. Dubuque, IA: Wm. C. Brown.

- Petty, R. E. & Cacioppo, J. T. (1984). The Effects of Involvement on Responses to Argument Quantity and Quality: Central and Peripheral Routes to Persuasion. *Journal of Personality and Social Psychology*, 46, 69-81.
- Raghubir, P., & Greenleaf, E.A. (2006). Ratios in proportion: What should the shape of the package be? *Journal of Marketing*, 70(2), 95–107.
- Roullet, B., & Droulers, O. (2005). Pharmaceutical packaging color and drug expectancy. In *Advances in Consumer Research*, 32, 164–171.
- Sacks, O. (1995). *The case of the color blind painter. In An anthropologist on Mars: 7 Paradoxical tales*. New York: Vintage.
- Saito, M. (1996). Comparative studies on color preference in Japan and other Asian regions, with special emphasis on the preference for white. *Color Research and Application*, 21, 35-49.
- Schwarz, N., & Clore, G.L. (1988). How do I feel about it? The informative function of affective states. *Affect, cognition, and Social Behavior*, 44-62.
- Scott, L. (1994). Images in Advertising: The Need for a Theory of Visual Rhetoric. *Journal of Consumer Research*, 2, 252–73.
- Sela, A. & Shiv, B. (2009). Unraveling Priming: When Does the Same Prime Activate a Goal versus a Trait?. *Journal of Consumer Research*, 36, 418-433.
- Sharpe, D.T. (1974). *The Psychology of Color and Design*. Chicago: Helson-Hall
- Shevell, S. K., & Kingdom, F. A. A. (2008). Color in complex scenes. *Annual Review of Psychology*, 59, 143–166.
- Skorinko, J.L., Kemmer, S., Hebl, M.R., & Lane, D.M. (2006). A Rose by Any Other Name. . . : Color-Naming Influences on Decision Making. *Psychology & Marketing*, 23, 975–99.

- Sloman, S., A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin*, 119, 3-22.
- Soldat, A.S., Sinclair, R.C., & Mark, M.M. (1997). Color as an environmental processing cue: External affective cues can directly affect processing strategy without affecting mood. *Social Cognition*, 15, 55–71.
- Stanovich, K., E. (2004). *The robot's rebellion: Finding meaning the age of Darwin*. Chicago, IL: University of Chicago Press.
- Szocs, C., & Biswas, D. (2013). The Effects of Color on Food Temperature Perceptions. In *Advance Consumer Research*, 41, 721–22.
- Trudel, R. & Murray, K.B. (2013), “Self-Regulatory Strength Amplification Through Selective Information Process- ing,” *Journal of Consumer Psychology*, 23 (1), 61–73.
- Tutssel, G. (2000), “But you can judge a brand by its color”, *Brand Strategy*, November, pp. 8-9.
- Underwood, R.L. & Klein, N.M. (2002). Packaging as Brand Communication: Effects of Product Pictures on Consumer Responses to the Package and Brand. *Journal of Marketing Theory and Practice*, 10, 58–68.
- Wedel, M., & Pieters, R. (2012). *Visual Marketing: From Attention to Action*. Psychology Press.
- Wexner, L. B. (1982). The degree to which colors .are associated with mood-tones. *Journal of Applied Psychology*, 6, 432-435.
- Yalch, R.F., & Spangenberg, E.R. (2000). The effects of music in a retail set- ting on real and perceived shopping times. *Journal of Business Research*, 49(2), 139–147.
- Zampini, M., & Spence, C. (2005). Modifying the multisensory perception of a carbonated beverage using auditory cues. *Food Quality and Preference*, 16(7), 632–641.