

The Role of Implicitly Primed Colour Cues on Product Evaluation

Kimberly Donato

A Thesis

in

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Science (Administration) at
Concordia University
Montreal, Quebec, Canada

October, 2011

© Kimberly Donato, 2011

CONCORDIA UNIVERSITY
School of Graduate Studies

This is to certify that the thesis prepared

By: Kimberly Donato

Entitled: The Role of Implicitly Primed Colour Cues on Product Evaluation

and submitted in partial fulfillment of the requirements for the degree of

Master of Administration (Marketing)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

Dr. Lynda Dyer _____	Chair
Dr. H. Onur Bodur _____	Examiner
Dr. Darlene Walsh _____	Examiner
Dr. Bianca Grohmann _____	Supervisor

Approved by Dr. Harjeet S. Bhabra

Graduate Program Director

Date: October 27, 2011

ABSTRACT

The Role of Implicitly Primed Colour Cues on Product Evaluation

Kimberly Donato

Recently researchers have found that consumer products are evaluated more favourably when their environment and physical surroundings are congruently associated to the concepts of the product in question. Although the role of colour cues within product judgment and attitude perception have been widely investigated, few have approached the subject from an environmental perspective. The current study examined the role of colour exposure within one's peripheral environment on overall product impressions as well as its contribution to specific product attribute formation through the conceptual associations induced by exposure to the prime.

The results of the current study reveal that colour priming activated perceptions that the product (i.e. dish soap) was an efficient cleanser. Interestingly, this only occurred when the product itself was not the colour of the prime. This finding not only speaks to the role of environmental cue exposure but also sheds light on how consumers weigh information sources. When a consumer is unable to retrieve desired information from physically perceiving the product the results suggest they rely on external sources to formulate their judgments. Implications of this study and avenues for future research are discussed.

TABLE OF CONTENTS

INTRODUCTION	1
REVIEW OF THE LITERATURE	4
OVERVIEW OF SENSORY CUES IN THE LITERATURE.....	4
COLOUR ASSOCIATIONS AND INFERENTIAL PROCESSING	5
PRIMING AND FLUENCY JUDGMENTS.....	9
HYPOTHESIS DEVELOPMENT	13
METHODOLOGY	17
PRETESTING	17
<i>STIMULUS DEVELOPMENT</i>	17
<i>PARTICIPANTS</i>	17
<i>MEASURES</i>	18
<i>DESIGN</i>	19
<i>RESULTS</i>	19
THE CURRENT STUDY	22
<i>STIMULUS DEVELOPMENT</i>	23
<i>MEASURES</i>	24
<i>PARTICIPANTS</i>	25
<i>PROCEDURE</i>	25
RESULTS	27
MANIPULATION CHECKS	27
HYPOTHESIS TESTING.....	29
OVERALL PRODUCT EVALUATION.....	29
SENSORY ATTRIBUTE PERCEPTION: EFFICIENCY.....	29
CREDENCE ATTRIBUTE PERCEPTION: ENVIRONMENTALLY- FRIENDLY	30
DISCUSSION	32
PRODUCT EVALUATION	32
EVALUATION OF SENSORY ATTRIBUTES.....	35
EVALUATION OF CREDENCE ATTRIBUTES.....	36
MANAGERIAL IMPLICATIONS	40
LIMITATIONS.....	41
DIRECTIONS FOR FUTURE RESEARCH	43
CONCLUSION	45
APPENDICES.....	46
APPENDIX A: PRODUCT DESCRIPTIONS IN MAIN STUDY.....	46
<i>Dish Soap Description</i>	46
<i>Body Lotion Description</i>	46

REFERENCES..... 47

INTRODUCTION

Prevalent within the cognitive and social psychology literature (Allison, Puce and McCarthy 2000; Goldstone 1995) is the recognition that the visual system is the primary sensory modality utilized to process one's surroundings (Köster 2003). In terms of its relevance within marketing communication, it is not surprising that consumers formulate their attitudes, behaviours and product judgments based largely on what is physically in front of them through the details, design and features of a product. The subtle effects of colour attributes in particular influence greatly evaluation and judgment through simple perceptual processing, through physiological manifestations induced by their presence and lastly, the conceptual associations they stimulate in one's mind (Fishbein and Ajzen 1975; Szybillo and Jacoby 1974). The influence of such associations have been widely investigated as a strong predictor in altering the perception of various sensory attributes of a product, from swaying one's perception of the taste of a candied chocolate (Levitan, Li and Spence 2008) to influencing the perceived potency and efficacy of a placebo drug (Roullet and Droulers 2005).

That said, increasing evidence primarily within the advertising field suggests that environmental cues including colour in one's environment can influence consumers judgment and preference of a brand or product based their prior experiences with that cue. Through priming and the notion of processing fluency, prior exposure to a colour cue enhances perceptions of future situations that retain this cue, either perceptually, which contributes to successful identification and detection of a product or brand or conceptually, through the associations induced and brought forth through its exposure

(Labroo, Dhar and Schwarz 2008; Lee and Labroo 2004). Yet save for a recent study conducted by Berger and Fitzsimons (experiment 1, 2008) who examined this process on free brand recall, few have examined how environmental peripheral colour cues and these corresponding ideas and associations contribute to prospective product judgments and perceptions of its functional attributes.

Given that consumers' often formulate judgments based on available resources regardless of situational relevance (Schwarz 2004), the current study will also investigate the role of colour cues in the judgment of abstract credential product attributes (i.e., those typically not evaluated through visual perception) as well as traditional sensory ones (i.e., those typically evaluated through visual product perception).

Numerous firms are now striving to present themselves to consumers as being socially responsible and sustainable enterprises, primarily by promoting their product as so. Yet, the very essence of such attributes creates a considerable challenge for practitioners to enhance their product in this fashion. Perhaps more so than when influencing an sensory attribute of the product such as its perceived potency, consumers must rely on the information and physical sources in front of them (i.e. visual perception of the product itself) to infer, formulate and judge a product on this type of attribute. As a result, reliance on visual properties of the product such as its colour increases. The current study strives to address how colour exposure can increase the judgment of credential attributes through the impressions and associations that are stimulated through their perception. Additionally, this research will act to replicate and confirm the existing

literature on sensory attribute evaluation and the role of colour priming on functional attribute evaluation.

The current investigation will first demonstrate that perceptual priming of colours extends past the capacity to simply enhance brand recall (Berger and Fitzsimons; Lee and Labroo 2004), but rather, prior exposure to a visual cue has direct implications on product judgments physically presented to the participants later. Secondly, given that a comprehensive review of the implications and the role of colour cues on credence attribute perception remains scant at best, this research also intends to broaden the current body of literature on colour cue perception by comparing and contrasting its role on sensory and credence attribute formation.

Using a cognitive distracter task, participants were implicitly primed with a colour cue prior to evaluating two household products on the two types of attributes as well as on overall product impression. Partial support was found for the effect of implicit colour priming on evaluation of a products sensory attributes (e.g., that the product is an efficient cleaner) while implicit colour priming did not influence the credence attribute in question (e.g., that the product was perceived as being environmentally friendly). Colour priming did not improve overall evaluation impressions.

A synopsis of the current literature in the pertinent areas is first presented followed by an explanation of the current study and its results. A discussion concerning theoretical as well as managerial implications of this type of exposure is also included. Consideration for the possible limitations that surround the study and avenues for future exploration will conclude the paper.

REVIEW OF THE LITERATURE

OVERVIEW OF SENSORY CUES IN THE LITERATURE

Gone are the days in which product judgment and evaluation are solely outcomes of rational and cognitive consumer thought processes. Rather, consumers are intuitive thinkers, formulating evaluation and judgment decisions largely based on quick, implicit strategies and inferential processing (Fishbein and Ajzen 1975).

Although these inferences develop from numerous sources, a large majority of consumer behaviour and perception are derived through one's senses, be it within the retail atmosphere, the product itself or through logo and brand management (Kotler 1993; Petty, Cacioppo and Schumann 1983). Sensory cues require little cognitive attention and involvement in order to influence consumers. Simply perceiving a positive cue for example stimulates approach behaviour towards that particular situation (Mehrabian and Russell 1973). Furthermore and notably within a retail setting where cognitive attention and resources are often limited, sensory cues are quick and accurate heuristics in impression formation (Chartrand and Bargh 1996; Kahneman and Tversky 1984; Kardes 1988; Shah and Oppenheimer 2007; Tversky and Kahneman 1973) and are therefore crucial in understanding the product judgment formation process. Sensory cues such as colour attributes are often relied upon when the required information in order to make a conscious judgment is not available to the consumer (Fishbein and Ajzen 1975; Gilbert 1989; Winter and Uleman 1984).

A variety of metrics are influenced by subtle exposure to sensory cues, including product quality evaluations, recall and recognition of brands and overall product

evaluation (e.g., Doyle and Bottomley 2006; North, Hargreaves and McKendrick 1999; Kotler and Keller 2006; Peck and Shu 2009; Wadhwa, Shiv and Nowlis 2008). Knasko (1995) for example found that pleasant odours emitted within the retail environment stimulated and promoted approach behaviour. On the other hand, North, Hargreaves and McKendrick (1999) found large effects concerning music selection on consumer behaviour. They found that playing French music in the background of a retail store encouraged the sales of French wines whereas sales increased in favour of German wines when German music was used.

COLOUR ASSOCIATIONS AND INFERENTIAL PROCESSING

Sensory cues however do not contribute equally towards consumer judgment and behaviour. Visual cues and colour attributes are perhaps the greatest contributors to this process as documented by consumers themselves stating that they are more aware of what they see in front of them and valuing visual markers more so than perceptions induced by the things they hear, smell, feel or taste (Köster 2003). Some have documented how flavor perceptions of a fruit juice change as a function of its colour and colour attributes contribute greatly to helping consumers correctly identify and process a perfume's scent (Demattè et al 2006; Levitan et al 2008; Schifferstein 2006; Schifferstein and Blok 2002).

The results of the studies previously cited are not surprising; from an evolutionary perspective, the visual modality plays a significant role in the physical processing of one's surroundings through consistently and predictably aiding in recall and/or recognition of previously viewed stimuli. This is a strategic advantage towards survival

and functions as a crucial safety mechanism (Herz 2010). From a social perspective, visual markers contribute to determining proper identification of group members from strangers (Jeannerod 2004) as well as providing fundamental sensory and cognitive information in terms of spatial orientation and notions of agency (Rogers and Graham 1979).

The role and significance of visual and colour cues from a marketing perspective is derived from their capacity to influence consumers on a variety of levels. Most importantly, colour cues are highly influential given their potential to function on two levels, both perceptually as well as conceptually on consumer judgment formation. The physical perceptual processing of a colour cue aids in guiding a consumer towards identifying, recalling and recognizing a product, brand or advertisement (Demattè, Sanabria and Spence 2009; Krishna 2006; Levitan et al 2008; Stevenson and Oaten 2008; Solso and Short 1979). Zellner and Kautz (1990) as well as Zellner and Whitten (1999) found that merely processing the colour red improved identification accuracy of both a product's scent as well as overall product impression formation.

Colour cues also induce conceptual thought processes, which aid in influencing judgments about the nature and intent of a situation or product (Jacoby et al 1989; Roediger 1990) as well as related to stimulation of memories and associations related to the colour attribute in question (Meyers-Levy and Perracchio 1995). Described by Tavassoli (2001), the launching of Pepsi's 'Project Blue' operation for example was instilled to combat the overlap of implicit associations induced by the colour red that were also typically associated in favour of the competitor, Coca Cola. Additionally

Apple's Macbook 'Creativity through Colour' campaign allowed Apple to present itself as an artistic, fun and young firm successfully penetrating an entirely new demographic, appealing to the creative and the imaginative through associations related to colours.

Starbucks Corporation also maximizes on colour cue exposure through the salience of the colour green within their coffee shop, instilling perceptions of trust and familiarity to its consumers.

Evidence also suggests that colours are perceived simultaneously both perceptually and conceptually. Demattè, Sanabria and Spence (2009) for example found stimuli evaluation and judgments changed when perceptual information (i.e., implementing the color red and an oval shape) was available. Consumers evaluated the sweetness of pink candies to be greater than orange ones. Being also associated to thoughts of strawberries, watermelon and cherries, perceiving the colour red alongside perceiving an oval shape induced the perception of a 'fruit', which subsequently chimed conceptual associations of these products being sweet.

The arousal inducing potential of colour cues provide an additional example for how colours implicitly induce simultaneously perceptual as well as conceptual judgments. As one moves across the visual spectrum from low wavelength colours such as blue to highly arousing colours such as red at the higher end of the spectrum (Berlyne 1960) consumers fundamentally (mis) attribute this arousing nature as evidence of a product's functionality or potency (Crowley 1993; Fransen, Fennis and Prun 2010; Jacoby et al 1989; Rouillet and Droullers 2005). Rouillet and Droullers (2005) for example found that red, brown and grey coloured pharmaceutical placebos enhanced perception of

drug potency compared to placebos coloured in green and yellow. Product recall and recognition also improves when highly arousing colours are utilized (Puccinelli et al 2009).

The conceptual associations induced by a colour's arousal properties are also profound. Colours at the lower end of the colour spectrum such as blue given their milder influences stimulate conceptual associations such as being cooler and calming while those towards the higher end of the spectrum such as red tend to be perceived as more stimulating and potent (Berlyne 1960).

Marketing practitioners benefit greatly from maximizing on specific conceptual associations and prior experiences consumers habitually associate with colour attributes to influence product evaluation. In one of the earliest studies on the topic, Schiller (1935) asked homemakers to match various products to their projected colour appropriateness and the results were striking: the colours green and yellow induced perceptions of hygiene and were appropriately associated with soap products. The colours black and silver however were symbolic of fashion and social status and were more preferred within the context of perfume targets.

It is not surprising that product judgment and evaluation are greatly susceptible to this diverse array of associations elicited by colour cues and visual perception. Particular considerations for the influence of colour cues on product judgment through associative processing are particularly crucial when evaluated from a global perspective. Although the colour purple signifies love in China and the USA, in Mexico it traditionally holds negative connotations, representing the emotions of anger and envy and thus should be

avoided in new product design (Hupka et al 1997; Jacobs et al 1991). Such cultural and social associations directly alter ROI perceptions such as purchasing behaviour, trial consideration and product satisfaction (Babin, Harvesty and Suter 2003; Bellizzi, Crowley and Hasty 1983; Crowley 1993; Kotler 1993; Tavassoli 2001).

The next portion of the research will cover the premise for the current study in terms of overall induction of these attributes through priming models and the influence on product judgment.

PRIMING AND FLUENCY JUDGMENTS

A large number of studies within the social psychology literature promote the notion that inferential processing and situational judgments are enhanced and function through priming of a cue, object, or statement. The importance of a prime is rooted in fundamental human behaviour functioning primarily on an approach-avoidance continuum; positively associated situations are approached while negatively associated situations are typically avoided (Bloch 1995; Mehrabian and Russell 1972).

Cues that induce positive affect are perceived as credible sources of information and are thereby useful in formulating attitudes and opinions about a target stimulus (Schwarz 2004; Whittlesea 1993; Winkielman et al 2003). From an evolutionary standpoint, familiar, predictable and prototypical ideas, behaviours and judgments are naturally preferred and processed as 'safe', lending knowledge towards inferring whether another individual is friend or foe or an item is safe to consume or use (Herz 2010; Thornhill and Gangestad 1993; Zajonc 1998).

Prior studies examining this process have found for example that priming participants with positive facial expressions (Williams, Mathews and MacLeod 1996) and personality traits contributed to overall perception and liking of social groups (Gilbert 1989; Winkielman et al 2003). Reber, Winkielman and Schwarz (1998) found in their study on that highly ‘positive’ primes contributed to higher image evaluations on the prettiness and liking scales while strong ‘negative’ primes reduced preference and evaluation perceptions; images were rated higher on the ugly and dislike scales.

Over time, researchers have modified this technique to assess a variety of implicit processes in terms of their influence on judgment and evaluations. Regardless of the mode of execution however, it is through the processing fluency of the initial priming task that allows future experiences to be interpreted favourably (Fishbein and Ajzen 1975; Schwarz 2004; Whittlesea 1993; Winkielman et al 2003) given that fluency induction is hedonically marked and positively valenced (Reber, Schwarz and Winkielman 2005).

Various approaches to induce processing fluency through priming have been applied, from increasing processing fluency through mere presence or exposure of a cue (Unkelbach 2007; Zajonc 1968, 1980, 1998) through font type (Häfner and Stapel 2010) and semantic priming of goals or attributes (Fitzsimons and Bargh 2003; Hassin, Aarts and Ferguson 2005; Whittlesea 1993). Through activation of a network of related and proximal concepts associated with this initial stimulus (Collins and Loftus 1975; Higgins 1996; Sherman and Clore 2009), fluency perception of a prime is also indirectly influential on participant response. den Heyer, Briand and Dannenbring (1983) found for

example that participants exposed to and primed with the semantic item 'cat' provided stronger and quicker responses not only to subsequent trials in which that cue was present but also when related semantic items such as the word 'dog' were displayed.

From strictly a colour processing perspective, Stroop (1935) was the first to investigate perceptual processing, priming and the role of fluency on semantic activation and interplay with colour exposure. He found that participants had greater difficulty in naming the word of a colour, for example the word 'blue,' when exposed to the word being displayed in a green colour.

Particularly salient within the context of advertising and communication, priming and the fluency experience through image, brands or goal priming has been found to improve brand recall, recognition and consideration. Berger and Fitzsimons (2008) for example found that when primed with the brand name 'Puma' and the image of a feline through its logo, participants responded to other concepts and notions within the semantic network of 'cat', resulting in quicker responses to words like 'dog' and additional animal related concepts than when primed with completely unrelated semantic or visual cues. Till et al (2008) also found that through exposure to and priming of participants with images of athletes, related associations such as sports, exercising or fitness were activated, improving brand recall for an energy drink advertisement more so than when an image of an actor, which is not as strongly associated with these concepts, was implemented. Overall, favourable product judgments enhanced by a prime have also been investigated (Baker 1999; Chartrand et al 2008; Coates, Butler and Berry 2004; Janiszewski 1993; Lee 2002; Lee and Labroo 2004; Nedungadi 1990; Shapiro 1999).

Given the strength and implications found for priming methods and the remarkable potency of colour cues to induce strong perceptual and conceptual associations, it is surprising that few have delved into investigating the relation between fluent peripheral environmental cues on product evaluation and judgment.

Berger and Fitzsimons (2008) however did evaluate the role of extraneous peripheral cues but they chose to consider the implications on brand recall. Using either an orange or a green pen influence the type and amount of brands participants recalled. Among various tasks, participants were asked to list various brands in a series of product categories. Depending on the colour of the pen they were writing with, participants recalled more brands associated with that colour than brands associated to the other colour. This subtle peripheral cue increased fluency perceptions for that cue and ultimately contributing to higher recall of brands related to the colour.

Limitations however from that study do exist. The current study aims at expanding and drawing from this study to increase the breadth of knowledge within the area of extraneous peripheral colour cue processing on product judgment. This study however will differ than the original in the following ways: firstly, as opposed to the original study in which participants were required to list brand names without the aid of the colour prime, the colour prime will reappear as an element of the product being evaluated to enhance processing fluency appeals.

Secondly, rather than having participants complete a questionnaire about brand choices, they will have to evaluate an actual physical product placed in front of them. In this way, a more direct view for the role of associative priming and fluency as an

extraneous cue will be achieved. This research will investigate how such an experience contributes to direct product evaluation within a retail environment.

Thirdly, as opposed to simply asking if they could recall and list brand names, they will be directly judging the product and formulating opinions about specific product attributes induced by exposure to the prime.

HYPOTHESIS DEVELOPMENT

Up until recently, the role and potency of processing fluency and information retrieval behaviour have been examined from a larger advertising and branding framework using visual primes such as images and logos as well as semantic cues. Few have examined whether this process can extend towards implicit exposure of sensory cues in one's environment such as colour perception on future judgment decisions. This presents the premise for the first hypothesis.

Hypothesis 1: Overall Product Evaluation

Through the experience of processing fluency, exposure to the visual cue (i.e., the dark green colour) prior to viewing the product containing this visual property (i.e., dark green dish soap) will enhance product evaluations and preference ratings than when an colour prime is activated but the product that does not contain the visual property (i.e., clear dish soap).

Hypothesis 2: The Sensory Attribute of Product Effectiveness

Various studies speak to the role of extrinsic product cues on sensory attribute formation (Miyazaki, Grewal and Goodstein 2005; Rao and Monroe 1988; Parr, White and Heatherbell 2003), but primarily within the food and beverage market and for household consumer products (e.g., Acebron and Dopico 2000; Fenko et al 2009; Lavin and Lawless 1998; Schifferstein and Tanudjaja 2004). Fenko et al (2009) for example demonstrated that the perceived ‘freshness’ of a house candle was largely determined through perceptual processing of the product, including colour cues. Additionally, the dark colour green used by Wheatley and Chiu (1977) stimulated more favourable evaluations and perceptions of a carpet’s durability and quality than lighter, paler shades of green.

Given this, the second hypothesis replicates existing evidence for the role of colour judgment on sensory attribute impression formation while also examining the role of priming in this process. Through processing fluency and perceptions of efficiency, participants exposed to the visual cue (i.e., the dark green colour) prior to viewing the product containing this visual property (i.e., the green dish soap) will rate the dish soap as more efficient than when a colour prime was presented but the product did not have this colour attribute (i.e., clear dish soap).

Hypothesis 3: The Credence Attribute of Environmental- Friendliness

Desiring not only goods and services of exceptional quality and affordable pricing (Steenkamp 1990; van den Heuvel et al 2006), consumers are equally seeking out, purchasing and investing their money into products that are environmentally friendly,

organic and sustainable (Luchs et al 2010). Differing from search attributes which are directly measurable prior to consumption (e.g., the price and size of a product) and experiential/sensory attributes evaluated through trial and usage (e.g., the taste of a fruit juice or the ease in opening an package; Steenkamp 1990), such credence attributes (e.g., the product is certified organic) cannot be confirmed.

Although limited in research, evidence from the study conducted by van den Heuvel et al (2007) supports the significance of colour cues on abstract credence attributes. They found that the perceived 'health' of a tomato was influenced by the colour of the fruit more than by other available extrinsic cues such as its texture or tactile qualities. Furthermore, research suggests that when precise, conscious information is unavailable, consumers will often rely on visual cues and properties to formulate their impressions (Fishbein and Ajzen 1975; Park and Srinivasan 1994).

Given the extent by which exposure to colour cues contribute to message persuasion as well as their role on recall and recognition of a stimuli or situation in question (Jacobs et al 1991), investigating credence attribute formation from this perspective is a crucial strategic imperative. The current study will examine the role of implicit priming of conceptual cues on the credence attribute of environmental-friendliness. Through processing fluency and perception of being environmentally-friendly, participants exposed to the visual cue (i.e., the dark green colour) prior to viewing the product containing this visual property (i.e., green soap) will rate the dish soap as being more environmentally-friendly than when a colour prime was presented but the product did not possess this attribute (i.e., clear dish soap). Additionally, primed

groups will fare better than groups that evaluate green dish soap without previous exposure the colour cue.

METHODOLOGY

PRETESTING

STIMULUS DEVELOPMENT

In order to investigate the effects of colour exposure on product and attribute evaluation, a pre-test was conducted to determine what colour the primed cue should be. This selection was based on the perceived appropriateness and prototypicality of the colour to the product category as well as to determine which colours were capable of stimulating the desired perceptual and conceptual cues associated with the sensory and credence attributes in question. A total of 13 colours were assessed (dark green, light green, purple-pink, light pink, purple, white, red, light red, yellow, yellow-orange, light blue, brown, orange). The colours were presented to the participants through paint chip samples from a local hardware store.

The colours for the pre-test were selected by surveying various local retailers' product offerings and the common colours typically used within the product categories in question. The product category considered to be the most useful for the purpose of this study was liquid dish soap given that most brands offer similar colour permutations with no colour being exceptionally distinctive to the category and all are similarly marketed in terms of their 'potency' and 'efficacy' appeals and in recent years, on their perception of being 'environmentally friendly'.

PARTICIPANTS

Investigators recruited participants from a local university for the study in exchange for course credit. In total 35 participants (12 males, 23 females) ranging from

between 18 and 36 years of age ($M = 21$, $sd = 1.81$) were recruited. No participant was found to suffer from significant visual impairments or colour blindness. All participants were fluent in the English language.

MEASURES

To the researcher's knowledge, no prior studies have measured specific product attributes through colour exposure as a result; the researchers chose to assess colour perception based on Osgood et al's (1957) dimensional analysis of sensory stimuli. This analysis evaluates colour based on 3 types of attributes: attributes associated with perceived activity of the colour, its potency and overall affective judgment towards it. Once achieved, we formulated our own scales for the specific attributes later evaluated. Participants rated the colours on 23 Likert scales anchored by opposite adjectives for example, the extent by which the colour was perceived to be 'stale/fresh', 'tense/energizing', 'dirty/clean', or 'weak/strong'. The colour chips were also assessed on 17 Likert-type scales measuring more specific marketing adjectives such as the extent by which the colour was perceived to be 'environmentally-friendly', 'safe or 'hydrating'.

Additionally, to ensure that the colours were appropriate for the attributes in question and that they were also appropriate for the product categories used in the main study, participants rated the colour cue at the end of the study on 2-items: *This colour is "not at all unattractive/very attractive"* and *"not at all eye-catching/very eye-catching"* ($r = .50$). Participants also rated the appropriateness as well as the likelihood of associating these colour cues to various household products; dish soap, hand soap, candles and body lotion using the following 2 items: *"Please indicate to what extent this colour is*

appropriate for the following products; hand soap, dish soap, body lotion, moisturizer, candles (not at all appropriate/extremely appropriate)” and “Please indicate to what extent this colour is likely for the following products (not at all likely/very likely)” (r = .90). These items would also be asked within the main experiment to create the evaluation ratings and its perceived utility.

DESIGN

The investigators randomly assigned each participant a workstation presenting 13 colour swatches with a questionnaire for each. The participants completed the questionnaires at their leisure. Once finished, they were thanked for their time, received their course credit and left.

RESULTS

In order to select the colour best fit for ratings of the main attributes, the researchers systematically eliminated colours from consideration. The first criterion was that the colour needed to be both appropriate for the dish soap category as well as often seen in the retail marketplace. Many colours were automatically eliminated as a result. The colours ‘red’, ‘light red’, ‘brown’, ‘purple’, ‘purple-pink’, ‘yellow- orange’, ‘light blue’ and ‘light pink’ were removed given that participants either determined them all to be unlikely and inappropriate or that they did not differ significantly from the scale midpoint ($M_{\text{red category fit}} = 2.27$, comparison to scale mid-point (4): $t(29) = -6.80, p < .001$; $M_{\text{light red category fit}} = 3.26$, compared to scale mid-point (4): $t(28) = -2.09, p = .05$; $M_{\text{brown category fit}} = 1.47$, compared to scale mid-point (4): $t(28) = -15.58, p < .05$; $M_{\text{purple category fit}} = 3.63$, compared to scale mid-point (4): $t(29) = -.95, p < .012$; $M_{\text{purple-pink category fit}} =$

3.60, compared to scale mid-point (4): $t(30) = -1.14, p > .05$; $M_{\text{yellow-orange category fit}} = 4.23$, comparison to scale mid-point (4): $t(29) = .76, p < .001$; $M_{\text{light blue category fit}} = 4.08$, compared to scale mid-point (4): $t(29) = .25, p > .05$; $M_{\text{light pink category fit}} = 3.78$, compared to scale mid-point (4): $t(33) = -.60, p > .05$).

Once completed, the following colours remained: ‘dark green’, ‘light green’, ‘orange’ and ‘yellow’. The researchers then turned to specific items that would produce the dependant attributes in question in the main study. Each attribute was created by extracting 2 or more items based on Osgood’s (1957) dimensional attributes for sensory stimuli. The first scale constructed and measured the perception that the colour was perceived as being environmentally friendly by averaging the following 2 items: ‘*This colour is (healthy/unhealthy)*’ and ‘*This colour is (safe/unsafe)*’ ($r = .72$). As this point, the colour ‘orange’ was eliminated from the analysis ($M_{\text{orange environment}} = 3.90$, compared to scale mid-point (4): $t(30) = -.47, p = .63$) given that it ranked low on being perceived as being an environmentally friendly colour.

At the end of this round, 3 colours remained; ‘dark green’, ‘light green’ and ‘yellow’. The investigators continued onto the perception of the colours efficiency perceptions. Efficiency ratings were assessed using a composite of 2 dimensions; ‘*This colour is powerful (not very descriptive/ descriptive)*’ and ‘*This colour is strong (not very descriptive/descriptive)*’ ($r = .88$). All three colours were perceived as effective ($M_{\text{dark green effective}} = 5.30$, compared to scale mid-point (4): $t(29) = 4.69, p < .000$; $M_{\text{yellow effective}} = 5.23$, compared to scale midpoint (4): $t(28) = 4.70, p < .000$; $M_{\text{light green effective}} = 3.20$, compared to scale midpoint (4): $t(34) = -2.93, p < .000$).

At this point, color selection was analyzed based on overall evaluation based on 2 items; “*This colour is ‘bad/good’* and *‘negative/positive’* ($r = .95$). This examination however yielded no clear results as the colours were similarly ranked on this dimension ($M_{\text{dark green evaluation}} = 5.63$, compared to scale mid-point (4): $t(29) = 5.83, p < .01$; $M_{\text{yellow evaluation}} = 6.10$, compared to scale midpoint (4): $t(27) = 9.99, p < .01$; $M_{\text{light green evaluation}} = 5.37$, compared to scale midpoint (4): $t(34) = 8.47, p < .000$).

Using a more stringent alpha to improve the likelihood of find an obvious choice, the colours were then evaluated based on 3 items to judge attractiveness of the colour; “*This colour is ‘unfamiliar/familiar’*, *‘easy to process/difficult to process* and *‘eye catching/not at all eye catching’* (Cronbach’s $\alpha = .87$). Both the ‘yellow’ as well as the ‘light green’ were then eliminated ($M_{\text{light green processing}} = 4.61$, compared to scale midpoint (4): $t(34) = 2.46, p < .05$; $M_{\text{yellow processing}} = 6.42$, compared to scale midpoint (4): $t(28) = 17.41, p < .01$). The ‘yellow’ was removed given that the nature of the experiment required slightly more ambiguity in responses than this colour could provide in order to ensure that the results were activated through exposure to the cue and not simply given past experiences and familiarity with this colour. Additionally, the ‘light green’ was eliminated because evaluations regressed toward the mean more strongly than the other two colours and it possessed a larger dispersion than the other two ($M_{\text{light green}} = 4.60, sd = 1.46$ vs. $M_{\text{dark green}} = 5.92, sd = 1.28$ vs. $M_{\text{yellow}} = 6.42, sd = .75$).

In conclusion, the ‘dark green’ colour was selected for use in the main study given it was perceived as highly appropriate and likely for the product category in question ($M = 5.53$ on a seven-point scale, comparison to scale midpoint (4): $t(29) =$

5.46, $p < .001$). The colour dark green was also perceived as being environmentally friendly and efficient ($M = 2.93$, comparison to scale mid-point (4): $t(29) = -3.84$, $p < .001$; $M = 5.30$, comparison to scale mid-point (4): $t(29) = 4.69$, $p < .001$, respectively). Lastly, the dark green was overall favourably evaluated ($M = 5.63$, comparison to scale mid-point (4): $t(30) = 5.83$, $p < .001$).

The colour 'white' was chosen for the filler product to provide additional validity to the study while not allowing additional ideas related to particular colours come to mind. The results demonstrated that white was neutral for all the attributes in question. The colour white was highly appropriate for the product category ($M = 6.31$, on a seven-point scale, comparison to scale midpoint (4): $t(28) = 11.76$, $p < .001$). It however ranked low on its perception of being environmentally friendly ($M = 2.84$, comparison to scale mid-point (4): $t(28) = -3.97$, $p < .001$) and efficient ($M = 2.38$, comparison to scale mid-point (4): $t(28) = -6.21$, $p < .001$) which was crucial in this situation. The white was overall positively evaluated as well ($M = 5.49$, comparison to scale mid-point (4): $t(28) = 5.67$, $p < .001$).

THE CURRENT STUDY

The researchers created a 2 (prime vs. no prime) \times 2 (applicable vs. inapplicable) factorial design to observe the role and influence of peripheral cue exposure on product attribute formation particularly comparing when the colour cue is salient versus absent in the cued product. Researcher's manipulated fluency of the cue by implicitly priming participants with the colour cue through a distracter activity (a sentence scramble exercise) administered on coloured paper. Primed participants received the task printed

on dark green paper while those in the control condition completed the task on traditional white paper. The applicability of the colour prime to the target product occurred in the second part of the study through the evaluation task. Participants either assessed a green (applicable) or a clear (inapplicable) dish soap product. Through this experimental design the researcher were able to investigate colour exposure from a fluency perspective while also actively investigating colour processing overall and its role in product judgment formation.

STIMULUS DEVELOPMENT

Comparable to Berger and Fitzsimons (2008) who examined colour cues extraneously and peripherally using different colour pens; implicit colour priming (i.e., the fluency manipulation) in this study was embedded implicitly within a cognitive distracter task, through the colour of the paper the task was printed on. The printing paper was identical to the dark green colour chip assessed in the pre-test.

The distracter task used was the ‘Scrambled Sentences Test’ (Stapel and Koomen 2005; Srull and Wyer 1979). Participants were asked to form 14 coherent meaningful sentences using 4 out of 5 words (*eg. “he-exercising-what-want-did”*) presented within each question. This particular task was selected due to the amount of concentration required to complete the sentences thereby reducing focus and attention on extraneous physical attributes within the environment, i.e. the colour of the paper. This task also allowed the colour cues to function as implicitly as possible while also contributing to covering the true purpose of the study.

Once completed, the participants moved onto the second part of the task, evaluating the target (i.e., the liquid dish soap) as well as the filler product (i.e., body lotion). In order to increase the experimental realism of the study, participants also assessed a filler product, white body lotion. White was selected based on the pre-test results of appropriateness and applicability of the colour cue to the product category. Each product was presented in a small cylindrical clear bottle labeled either ‘body lotion’ or ‘dish soap’. The containers were open to the participants and were asked to assess them as they would if they were in a retail environment. Participants were free to look inside, smell and/or use each product (as applicable) to generate their impressions. Participants evaluated and judged both products on the attributes under consideration.

MEASURES

Participants evaluated each product on a questionnaire that assessed their overall evaluation of the product, perceptions of its efficiency and the perception that it was an environmentally friendly product. Attributes related specifically to only one of the products (eg. ‘degreasing’ for the dish soap or ‘moisturizing’ for the body lotion) were also included within the questionnaire to enhance experimental realism. As conducted in the pre-test, each product was assessed based on scale items from Osgood et al (1957). The items would later merge to form the scales required to calculate overall product evaluation, the perception that it was an efficient and functional cleaner and that it was perceived as environmentally friendly. The questionnaire also controlled for the potential confounding variables of confidence and expectation related to one’s product judgments (Thomas and Menon 2007). Effort and involvement variables in the priming task were

also measured. Basic demographic questions of gender, age, language skill and visual acuity were also included.

PARTICIPANTS

In total 197 participants (80 males and 117 females, 2 missing) were recruited to participate in the study in exchange for course credit at a local university. Participants ranged from between the ages of 17 and 39 years ($M = 22$, $sd = 3.59$) and all were proficient in the spoken and written English language. No participant reported being colour blind or suffering from severe visual impairments.

PROCEDURE

Participants were told that they were about to evaluate two new products that were soon going to be released to market. They were asked to formulate personal impressions about the products and assess them on various scales. Participants first completed the sentence-scrambling task in which the colour prime was embedded. The task was printed on either green or white paper depending on the condition. Participants were told that although there was no set time limit they were to try to complete the task as quickly and as accurately as possible, without focusing too hard on any given question.

Once the priming task was complete, each participant was handed the products to assess one at a time, beginning with the dish soap. Each product came with a brief summary description of the product to improve the realism of the study (*See Appendix A*). This information complemented the attributes in question including but not limited to, the size of the product's package and the suggested retail price. Both the descriptions of the

liquid dish soap as well as the body lotion were neutral and highly unlikely to induce considerable influence over the product perceptions and the dependent measures. The dish soap was presented in either green or clear while the body lotion was always white. No time restrictions were in place, participants completed the task at their own pace. Once completed, participants received their course credit were thanked for their time and left.

RESULTS

MANIPULATION CHECKS

Firstly, the researchers validated that the groups perceived the colour cue hedonically and favorably before continuing with the outcome measurements. Similar to the pre-test, participants rated the colour cue on a 2-item scale: “*The colour of the product is (not at all unattractive/very attractive)*” and “*The colour of the product is (not at all eye-catching/very eye-catching)*” ($r = .79$). This reconfirmed that the colour was positively evaluated ($M = 4.57$, comparison to scale mid-point (4): $t(196) = 4.79, p < .001$) and further supported the selection process conducted earlier.

One significant concern associated with using the sentence-scrambling task in this capacity was how potential involvement, perception of and general displeasure associated with completing the task could influence subsequent evaluations and perceptions (Bower, Gilligan and Monteiro 1981). Therefore, series of checks assessed both primed and unprimed groups experienced the task similarly. Participants rated overall task involvement on a 2-item scale: “How did you work through this task? I did it (*did it quickly/paid a lot of attention*) and (*not at all involved/very involved*)” ($r = .60$). A one-way ANOVA revealed no significant difference between the prime and control conditions ($M_{\text{prime}} = 3.14, M_{\text{control}} = 4.10, F(1, 197) = .714, p = .40$).

Overall task perception was also verified through a 2-item scale: “How would you rate the task on the following scales? I (*liked/disliked*) this task” and “This task was (*negative/positive*)” ($r = .90$). Analysis of a one-way ANOVA revealed that the prime and

control conditions perceived the task similarly ($M_{\text{prime}} = 4.78$, $M_{\text{control}} = 4.80$, $F(1, 197) = .009$, $p = .93$).

Lastly, overall affective state was assessed through 4 items: “At this moment I am feeling: (*depressed/cheerful*), (*annoyed/content*), (*unhappy/happy*) and (*puts me in a good mood/puts me in a negative mood*)” ($r = .94$). A one-way ANOVA revealed no significant effect of overall mood between the prime and control conditions ($M_{\text{prime}} = 5.01$, $M_{\text{control}} = 5.10$, $F(1, 197) = .306$, $p = .59$).

HYPOTHESIS TESTING

OVERALL PRODUCT EVALUATION

The first hypothesis contended that through processing fluency, more favorable evaluations would occur for products possessing the primed colour cue. The researchers argued that groups presented with the green colour prime would fare better than those not primed as well as those who evaluated the clear dish soap rather than the green dish soap.

An ANOVA investigating the role of the colour prime (green vs. no prime) on evaluation of the target product (green vs. clear dish soap) was conducted. Overall product evaluation was calculated by taking the mean of 2 items: “*Did you (dislike/like) the product?*” and “*Would you rate this product (unfavourably/favourably)?*” ($r = .92$). The results revealed no significant interaction between the primed cue and product presentation. Participants primed with the visual cue did not perceive the green product more favourably than participants who later evaluated the clear liquid dish soap ($F(1, 195) = 1.289, p > .05$). Additionally, no main effect was found for the colour prime ($F(1, 195) = .059, p = .80$) or the product color ($F(1, 195) = .739, p = .39$) on product evaluation.

SENSORY ATTRIBUTE PERCEPTION: EFFICIENCY

The second hypothesis examined the role of processing fluency on the evaluation of the functional attribute of product efficiency or utility. This hypothesis stated that exposure to the dark green colour in the priming task would induce favourable

evaluations of perceived efficiency of the product when later exposed to this cue as a feature of the product.

Similar to how overall evaluation was measured the attribute of efficiency was obtained through the average of 2 items: “*Do you believe this product is (ineffective/effective)?*” and “*Would you rate this product (useful/useless)?*” ($r = .76$). An ANOVA revealed a significant interaction between the prime and product colour ($F(1, 194) = 5.597, p < .05$) on product efficiency.

Planned independent t-tests revealed the green dish soap was perceived as more effective than the clear dish soap in the control condition ($M_{\text{green}} = 5.43, M_{\text{clear}} = 4.91, t(96) = 2.60, p < .01$). No difference in effectiveness perceptions between the green and clear dish soap was found in the prime condition ($M_{\text{green}} = 5.22, M_{\text{clear}} = 5.39, t(96) = .81, p = .42$). Planned independent t-tests found that efficiency ratings for the clear dish soap were higher in the primed than in the control condition ($M_{\text{prime}} = 5.39, M_{\text{control}} = 4.91, t(96) = 2.28, p < .05$). No difference was found between the two conditions when reviewing only the green dish soap ($M_{\text{control}} = 5.43, M_{\text{prime}} = 5.22, t(96) = 1.04, p = .30$).

CREDENCE ATTRIBUTE PERCEPTION: ENVIRONMENTALLY-FRIENDLY

The third and final hypothesis pertained to whether colour priming enhanced the perception that the product was perceived as being environmentally friendly. A confirmatory factor analysis was conducted to produce a scale to measure this attribute given its dimensionality and complexity in evaluating. The factor analysis included the following three questions: “*Do you believe this product is (environmentally*

harmful/environmentally friendly)?”, “*Would you rate this product (toxic/harmless)?*” and “*Would you rate this product (harsh/mild)?*” The analysis revealed that all 3 questions loaded onto 1 component accounting for 60.62% of the total variance. That said, the item measuring the perceived harshness of the product was removed given its relatively lenient factor loading on the component 1 compared to the other two (.70 vs. .80 and .83) and its overall low scale reliability when this attribute was included (*Cronbach’s* $\alpha = .67$). Once removed, the reliability of the scale improved ($r = .76$).

The ANOVA however found no significant interaction effect ($F(1, 194) = 2.98, p > .05$). Additionally, no main effect was found for prior exposure on the target product nor did the colour of the product itself in isolation influence this perception ($F(1, 194) = .00, p > .05$; $F(1, 194) = 1.87, p > .05$). Therefore, the third hypothesis was not supported.

DISCUSSION

With consideration of processing fluency and familiarity, the current study investigated the role of extraneous peripheral cue exposure on product perception and judgment. While the results differed from anticipated effects, they nevertheless contribute significantly to providing additional knowledge within the area of colour marketing in terms of their general influences on consumer behaviour. Furthermore, although the focus was to determine the extent by which processing fluency contributes to judgment and evaluation formation, the results also reveal interesting evidence concerning colour exposure on attribute judgment processing.

PRODUCT EVALUATION

The first hypothesis intended to replicate prior studies which support the concept that repetitive exposure to a cue will induce more favourable positive outcomes as a result of perceived fluency in processing the cue (Labroo, Dhar and Schwarz, 2008; Lee and Labroo, 2004; Schwarz 2004; Winkielman et al 2006).

Although the predicted outcome was an increase in evaluation ratings for products in which the primed cue was present, prior exposure to the colour cue through the priming task did not result in this effect. Additionally, no significant differences between the two applicability conditions within the priming condition were found. Those that evaluated the green dish soap responded similarly to those who evaluated the clear dish soap.

The most parsimonious explanation for this result concerns the very information seeking strategy hypothesized to have been functioning. It is recognized in the literature that perceptually fluent cues are more pleasant and preferred than disfluent cues (Lee 2004; 2002; Lee and Labroo 2004; Reber, Winkielman and Schwarz 1998; Zajonc 1991). Despite the fact that the dark green colour was indeed perceived affectively based on both the pre-test as well through the manipulation checks conducted within the main study, when perceived as a peripheral extraneous cue product evaluation was not significantly altered. One might infer from this observation that if ones primary strategy is to induce higher affective evaluation and appeal through processing fluency, than colour exposure must be more directly related to the subsequent task and the goal requirements of the future task to ensure that the affective appeal of exposure to this cue is properly enhanced. This is further supported by the fact that even without exposure to the perceptual cue in the control condition; neither product was perceived more favourably than the other. This suggests that product evaluation requires more than simple peripheral processing of the cue within the environment in order to enhance this type of appeal.

An additional explanation of the results found in the subsequent hypotheses pertains to the importance of having specific criteria in place in order to portray the effects found in other priming studies. In many if not all previously examined cases, the priming as well as the judgment task has been typically executed either on the computer or through a pencil and paper task.

This creates a situation in which the participant feels somewhat dissociated from the task they are completing. Predicting the next shape or product within a sequence

being displayed or rating various objects and products of which they have perhaps little attention on purchasing (Labroo, Dhar and Schwarz 2008; Lee and Labroo 2004) would simulate a 'laboratory situation' effect on the participant.

As a result, the applicability of what they might actually do when forced to make a purchase decision in a physical retail establishment for example, remains unknown. The current study placed the participants in a more realistic setting by having them perform the judgment task on a product physically placed in front of them mimicking as if a real decision was to be determined. The current approach exemplified the limited effect of perceptual priming in terms of its usage within in a retail setting. The extent by which the prime is carried forth and integrated into future evaluations is perhaps less potent than when advertisements for example, which are much more proximal and direct on attitude and perception are perceived.

To this end, the possible moderator of time delay within a longitudinal research design would greatly benefit the area of colour marketing by exploring the strength of implicit judgments and their range of utility in terms of consumer behaviour. Would exposure to a colour cue satisfy behaviour and evaluation judgments in the distant future or is it only immediate responses that benefit from this type of exposure? Advancement in this area will not only continue to support the outcomes seen within the literature on priming, by measuring and designing outcomes at two separate time intervals but also, would further determine the strength and depth of colour exposure on a consumer behaviour over time.

EVALUATION OF SENSORY ATTRIBUTES

Similar to hypothesis 1, the implicit perception of the perceived efficiency and strength of the dish soap was investigated through theories of processing fluency and priming. Additionally however, the researchers found that prior experience with this colour cue also contributed to judgment formation. This process has been widely investigated in the past; colour attributes of the product or item influences their functional attributes particularly within the food and beverage market, enhancing the perceived sweetness of fruit, the intensity of a fruit juice, or the taste of a candy (Lavin and Lawless 1998; Levitan et al 2008). From a product perspective, colour cues have also been found to influence judgment of the perceived potency of a drug medication (Roullet and Droulers 2005).

Although the results did not project strong influences of colour priming across all instances compared to the control condition, perceptions of the products efficiency increased through exposure to the colour cue in different ways and depending on the situation at hand. Without the prime for example, the green product was rated more favourably than the clear dish soap but comparing between the primed and control conditions, the process was reversed. This suggests that although the colour green possesses strong perceptual associations with the attribute of efficiency, the ability to bring forth these associations and relevant thoughts depends on the extent by which the available information is perceived to contribute to judgment formation. The perception of the product improved when primed with the colour cue only when the product itself did not generate sufficient amount of information. This supports what has been previously

found regarding the relevance of certain sensory cues to evaluation of particular product categories (Creusen and Schoormans 2005; Demattè et al 2010).

Within the psychological literature, habituation (i.e., the reduction in the detrimental effect of an irrelevant stimulus; Elliot and Cowan 2001) provides an alternative explanation as to why the green dish soap produced no significant effects. Differing from studies that find priming to be a beneficial component in enhancing brand or product recall (e.g., Lee and Labroo 2004), peripheral cues might influence judgment on a more primary level of visual processing. Although the novelty of the initial exposure to the green cue might have been capable of inducing these concepts, over time and upon re-exposure through the presentation of the product itself, the cue was no longer actively processed (Elliot and Cowan 2007). The novelty of the situation was no longer present; participants habituated to the color cue and did not incorporate it into their judgment process.

EVALUATION OF CREDENCE ATTRIBUTES

The last hypothesis examined whether it was possible for a product's credence attributes to be induced through exposure to a colour prime and whether this attribute was enhanced simply by being exposed to a product of a certain colour. The impression that the product was environmentally friendly however was not sufficiently influenced by colour cue exposure nor did the actual colour of the product contribute to changes in the perception of this attribute.

Although the growing trend of firms towards sustainable practice and being more environmentally friendly is gaining in influence, Newell, Goldsmith and Banzhaf (1998) critique that consumers are still wary about these claims and motives behind these corporate ventures. Favourable evaluation for this particular attribute within the entire notion and experience of green marketing has not reached the stage of automated thought processing within the public just yet. Therefore, associations to sustainable practice were not induced by colour exposure. Furthermore, given, consumers often interpret new information in light of prior experience to the product category or brand (Plous 1993); the perception of the environmental nature of this product would have largely depended on their information stored concerning these traditional product categories and prototypical exemplars. Both the typical and expected criteria associated with a “green” product (i.e., an environmentally positioned product) as well as the attributes and cues associated with the larger product category of it being a ‘soap’ product will have contributed to the impressions produced as well.

This gives rise to the notion that this particular type of cue might function more strongly when incorporated into very strong, persuasive and convincing messages with direct goals included within the prime, rather than reliance solely on implicit and subliminal judgment perception. Numerous studies have confirmed the role of colour cues towards judgment of sensory attributes, arguing in favour of the role of perceptual fluency when exposure to another cue is also available (eg. Demattè, Sanabria and Spence 2006; Fenko, Schifferstein and Hekkert 2010; Schifferstein and Tanudjaja 2004; Zellner and Whitten 1999).

Another possibility that supports this cross-modal theoretical approach concerns the consideration for two other heuristic strategies, the law of simplicity as well as the law of grouping (Goldstein 2005). Appealing to parsimony, tenements of this research contend that individuals naturally attempt to assimilate and group like attributes and cues together as well as desire to process external stimuli as simply and easily as possible as an entire holistic experience of the product, similar to what has been seen and reviewed within the context of retail atmospherics (Kotler 1983). Given that the level of ambiguity and abstract nature of credence attribute judgments, perhaps the cross-modal integration of various cues and not only sensory cues will induce a larger reaction and can be better capable of evaluating the attribute ‘environmentally-friendly’. In the future studies should determine how a product’s scent, its pricing strategy and even how other visual cues such as the sheer weight or volume of the product’s packaging come together to induce judgment.

Additionally, greater evaluation must be drawn towards fully grasping the conceptual nature of these more abstract attributes to determine how they might contribute to product perception overall and also specifically in terms of their relation to colour exposure. The study by Luchs et al (2010) for example found that consumers were more likely to choose baby powder (i.e., through implicit perceptions associated with gentleness) over gasoline when primed with high ethical and environmentally conscious statements. Gasoline however, through associations related to strength, was chosen when low ethical and environmentally conscious primes were used. Merging with the results of this study, one of the strongest studies in favour of the role and impact of associative colour priming specifically regarding complex abstract thoughts can be found in the area

of social cognition research conducted by Sherman and Clore (2009). These researchers found that participants were primed with ideas of immorality through the act of recopying an unethical statement, identified and responded more quickly to words presented later that were printed in a black color rather than white. However, and predictably, the opposite effect occurred when the statement recopied was morally good. Together these results demonstrate the link between ethical priming, conceptual processing, and colour exposure.

Tangent to this, Wheeler and Berger (2007) found that although primes might function in similar ways, depending on the personal associations and individual differences and goals assumed by each consumer, consistent responses for all will not occur. One most likely moderator is the individual difference variable of knowledge both in terms of the product category (Parr, White and Heatherbell 2003) in general as well as on this particular attribute. To this end, additional studies should also review how familiarity and preference towards sustainable products on a larger scale contributes to the evaluation process. This inquiry will aid in understanding the conditions required for a peripheral product cue such as colour exposure to influence the judgment process.

Lastly, as a possible extension to Berger and Fitzsimons (2008) as well as other studies concerned with colour processing, it is not unfathomable to assume that the design and navigational facility of a website will eventually become an attribute primed and stimulated through the perceptual experience of colour processing similar to how conceptual associations are induced by colour cues. As consumers continue to view and rely on a product's website, popular social media sites and in some cases discussion

forums as part of their information gathering strategy, navigation ease and fluency of various websites embedded with colours cues in the backdrop will undoubtedly increase in relevance.

MANAGERIAL IMPLICATIONS

It is safe to say that the image of a large bright red tomato in a pasta sauce commercial for example can induce and stimulate a sense of delight, anticipation of the taste of the sauce and possibly a variety of additional sensory-related attributes concerning this product. Is it also possible that colour cues are equally likely to stimulate the perception of credence attributes?

Consumers are faced more than ever with a multitude of product options to evaluate and ultimately consider for purchasing, often equivalent in many respects. Through impression formation and the relevance of peripheral cues, a competitive advantage is attainable. The results of this study give rise towards the consideration that through a logo, billboards or even an element of the storefront, peripheral cues stimulate and elicit associations in one's mind prior to the consumer entering the place of business. Granted an feat indeed difficult to control and perhaps more achievable in terms of small business to business relationships, the colour cues and visual patterns of the future retail establishments should be considered in the product placement process. This environment should mimic and represent the core values of one's own product line to confirm and/or further contribute to the presentation of one's own image and marketing strategy.

Despite the potential consequences exposure to these cues might have on consumer judgment, practitioners must consider the value and opportunity cost of attempting to control such extraneous stimuli, by weighing their role in influencing the product attributes proposed through marketing strategies. If the colour green did in fact increase perceptions of efficiency when presented implicitly to consumers for example yet an important attribute for a fruit juice is to enhance the perception of its taste for example, exposure to this cue within the environment would be of little influence. Conversely, if the cue provided strong, negative associations related to taste then greater priority should be made to control and minimize this type of exposure.

LIMITATIONS

One particular issue that might have contributed to the somewhat inconsistent results witnessed within this study was the colour testing method applied. The colours were pre-tested with various colour chips and participants were asked to evaluate each colour on the various attributes. Colour chips and swatches have been the method of choice in the past to establish both conceptual and perceptual associations of colour cues (Chen and Chen 2008; Evans 1974) and also to investigate colour as a sensory attribute regarding luminosity and saturation and not simply in terms of hue (i.e., 'warm vs. cold'). Nevertheless, what was addressed earlier concerning intent and application returns within this context. Although a participant might remark that a particular colour induces specific associations when evaluating colour cues through traditional means, activation of these associations however weakens when participants are placed within the consumption context and physical products placed in front of them are to be weighed based on these

cues (Schifferstein and Cleiren 2006). Therefore, to improve the validity of the stimuli used, colour attributes of a product should mimic and be presented as closely as possible to how they would be seen in the retail setting, incorporating pretesting measures of colour stimuli within physical bottles or jars for example, rather than through traditional means of colour chips and/or swatches.

Additionally, many have found strong responses for the fluency heuristic when products are compared to one another. That which is processed more quickly is rated higher on the criterion in question (Jacoby and Dallas 1981). In this study, participants were neither required to make a selection based on the products presented nor were they asked to rate one product over another. In order to make the colour cue manipulation more pronounced, preference and evaluation judgments could have been measured by presenting two identical products to the participants that differed solely on the colour cue. As Creusen and Schoormans (2005) as well as Higgins (1996) express, ambiguity of the target attribute influences information search strategies and attribute involvement. To this end, products, which are similar in functionality and price, for example, are more likely comparable based on implicit attributes such as a products colour. Providing a comparison product therefore would have allowed for implicit associations to be more strongly cued within the current study as well.

Lastly, the degree by which the colour green stimulated certain attributes might not have been as strong as needed to induce the judgment response. Although not empirically supported as of yet, the perceptual experience of the colour green is perhaps more typically associated with thoughts of money, economics, and personal finance and

is only semantically referenced to environmental and sustainable practices. The associations are perhaps not yet as easily automated as traditional cue associations are, for example that red indicates warning or danger or that the colour yellow is perceived as mellow and welcoming. In order to replicate these results and the role of associative learning to credence attributes, stronger more direct associations must be employed. By priming the participants with a colour cue that is well known to be associated with a particular brand, idea or product, direct observation of the relation between colour and product judgment will improve.

DIRECTIONS FOR FUTURE RESEARCH

Aside from the specific future explorations regarding this study, overall colour judgment and perception is an area that has received extensive awareness but still remains shallow in terms of depth and understanding in terms of product presentation and retail marketing. Elliot and Maier (2007) highlight the startling notion that studies on colour perception within consumer behaviour have largely been anecdotal in nature; these cues have been evaluated from a practical perspective involving very specific situations and direct desired outcomes with little foundation to support the effects on a theoretical level. Additionally, save for Levy (1984) and Whitfield and Wiltshire (1990), few have lent themselves to conducting strongly controlled experimental designs regarding colour cues and visual perception. Thus, this study was the first to offer specific theoretical assumptions in an attempt to comprehend further the precise role colour cues have in the product judgment process and not simply relying on recognizing a colours associative property in isolation.

The results of the current study demonstrated and further support the evidence and results found by Grossman and Wisenblit (1999) who found that low involvement products are primarily influenced by extraneous sensory attributes. Although the strength of the associations were not very high in the current study, future studies should consider the incorporation of a wider variety of product categories into their designs in order to determine whether the role of category and involvement can provide greater evidence for the role of colour cue perception on attribute judgment. The implications would also address methodological issues as well. If the dish soap was perceived as being a high involvement product for example, colour cues would have been less likely to be incorporated into one's judgment. Therefore, judgment would have been made primarily on the information that was presented in the product description, which could have potentially confounded the results considerably.

CONCLUSION

In terms of their influence on product evaluation and judgment, the role of sensory cues such as colour features of a product has sparked considerable interest in the past 20 years or so. Colour cues activate specific physical as well as cognitive and perceptual associations and impressions when perceived within one's external environment (eg. Berlyne 1960; Collin and Loftus 1975; Higgins 1996). Up until recently, colour exposure within a consumer perspective has focused largely on associative learning and conditioning principles to explain the relation between colour pairings and products or brands presented either as an attribute of the product or as an external cue within the retail environment. However, and rooted within the psychological sciences is the notion that colour cues induce changes in judgment and evaluation merely through the heuristic strategy of processing fluency (Winkielman and Cacioppo 2001; Winkielman, Schwarz, Fazendeiro and Reber 2003, Zajonc 1983) and often occurring without any motivational precursors (Bargh et al 2001; Dijksterhuis and Bargh 2001).

Through an implicit association task, the precise attribute in question greatly determines the extent by which this particular type of heuristic strategy is utilized. Additionally, this study provided stronger evidence for the role and significance of having a comparison product to stimulate the judgment process, featured either as an external product or through the effects of prior experience. Lastly, this study brought forth awareness for the consideration of the additional moderators of familiarity and knowledge of the product category when investigating the effects of colour properties on product judgment.

APPENDICES

Appendix A: Product Descriptions in Main Study

Dish Soap Description

Product Description – New Liquid Dish Soap

This new liquid dish soap works without leaving a thick residue to rinse away.

It has been developed based on a unique combination of emulsifiers and other active ingredients.

In consumer tests, this new product's performance was comparable to some of the existing brands.

Initially, the product will be offered in a clear 700 ml (24 oz.) bottle.

Body Lotion Description

Product Description – New Body Lotion

This new moisturizer will be launched this winter.

It has been developed based on alternative raw materials and proprietary technology.

In consumer tests, this new product's compared reasonably well with that of other brands on the market.

The initial product design consists of a 118 ml (4 oz) jar.

REFERENCES

- Acebron, Laurentino Bello and Domingo Calvo Dopico (2000), "The Importance of Intrinsic and Extrinsic Cues To Expected and Experienced Quality: An Empirical Application For Beef," *Food Quality and Preference*, 11 (3), 229-238.
- Allison, Truett, Aian Puce and Gregory McCarthy (2000), "Social Perception from Visual Cues: Role of the STS Region," *Trends in Cognitive Science*, 4 (7), 267-278.
- Babin, Barry, David M. Havesty and Tracy Suter (2003), "Color and Shopping Intentions: The Intervening effect of Price, Fairness and Perceived Affect," *Journal of Business Research*, 56 (7), 541-551.
- Baker, William (1999), "When Can Affective Conditioning and Mere Exposure Directly Influence Brand Choice?" *Journal of Advertising*, 28 (4), 31-46.
- Bargh, John A. (2006), "What Have We Been Priming All These Years? On the Development, Mechanisms, and Ecology of Nonconscious Social Behavior," *European Journal of Social Psychology*, 36 (2), 147-168.
- Baylis, Gordon C. and Jon Driver (1992), "Visual Parsing and Response Competition: The Effect of Grouping Factors," *Perception & Psychophysics*, 51 (2), 145-162.
- Bellizzi, Joseph, Ayn E. Crowley and Ronald Hasty (1983), "The Effects of Color in Store Design," *Journal of Retailing*, 59 (1), 21-45.

- and Robert Hite (1992), "Environmental Color, Consumer Feelings and Purchase Likelihood," *Psychology and Marketing*, 9 (5), 347-363.
- Berger, Jonah and Grainne Fitzsimons (2008), "Dogs on the Street, Pumas on Your Feet: How Cues in the Environment Influence Product Evaluation and Choice," *Journal of Marketing Research*, 45 (1), 1-14.
- Berlyne, D.E. (1960). *Conflict, Arousal, and Curiosity*. McGraw-Hill: New York.
- Bitner, Mary Jo (1992), "Servicescapes: The Impact of Physical Surroundings on Customers and Employees," *Journal of Marketing*, 56 (2), 57-71.
- Bloch, Peter (1995), "Seeking the Ideal Form: Product Design and Consumer Response," *Journal of Marketing*, 59 (3), 16-29.
- Bower, Gordon H., Gilligan, Steven G., and Monteiro, Kenneth (1981), "Selectivity of Learning Caused By Affective States," *Journal of Experimental Psychology: General*, 110 (4), 451-473.
- Chartrand, Tanya and John Bargh (1996), "Automatic Activation of Impression Formation and Memorization Goals: Non-Conscious Goal Priming Reproduces Effects of Explicit Task Instructions," *Journal of Personality and Social Psychology*, 71 (3), 464-478.
- and Joel Huber, Baba Shiv and Robin Tanner (2008), "Nonconscious Goals and Consumer Choice," *Journal of Consumer Research*, 35 (2), 189-201.

- Chebat, Jean-Charles and Maureen Morrin (2007), "Colors and Cultures: Exploring the Effects of Mall Décor on Consumer Perceptions," 60 (3), 189-196.
- Chen, Yan and Zhige Chen (2008), "Analysis and Evaluation of Color Perception," *International Journal of Clothing Science and Technology*, 20 (3), 184-191.
- Coates, Sarah, Laurie Butler and Dianne Berry (2004), "Implicit Memory: A Prime Example for Brand Consideration and Choice," *Applied Cognitive Psychology*, 18 (9), 1195-1211.
- Collins, Allan and Elizabeth Loftus (1975), "A Spreading-Activation Theory of Semantic Processing," *Psychological Review*, 82 (6), 407-428.
- Creusen, Mariell E.H. and Jan P.L. Schoormans (2005), "The Different Roles of Product Appearance in Consumer Choice," *Journal of Product Innovation Management*, 22 (1), 63-81.
- Crowley, Ayn E (1993), "The Two-Dimensional Impact of Color on Shopping," *Marketing Letters*, 4 (1), 59-69.
- Demattè, M Luisa, Daniel Sanabria, Rachel Sugarman and Charles Spence (2006), "Cross-Modal Interactions Between Olfaction and Touch," *Chemical Senses*, 31 (4), 291-300.
- and Daniel Sanabria and Charles Spence (2009), "Olfactory Discrimination: When Vision Matters?" *Chemical Senses*, 34 (2), 103-109.

- Demattè, Luisa M., Robert Österbauer and Charles Spence (2007), “Olfactory Cues Modulate Facial Attractiveness,” *Chemical Senses*, 32 (6), 603-610.
- den Heyer, Ken, Kevin Briand and Gary Dannenbring (1983), “Strategic Factors in a Lexical Decision Task: Evidence for Automatic and Attention Driven Processes,” *Memory & Cognition*, 11 (4), 374-381.
- Dijksterhuis, Ap and John A. Bargh (2001), “The Perception- Behavior Expressway: Automatic Effects of Social Perception on Social Behavior,” *Advances in Experimental Social Psychology*, 33, 1–40.
- Doyle, John and Paul A. Bottomley (2006), “Dressed for the Occasion: Font-Product Congruity in the Perception of Logotype,” *Journal of Consumer Psychology*, 16 (2), 112-123.
- Elliot, Emily and Nelson Cowan (2001), “Habituation to Auditory Distracters in a Cross-Modal, Color–Word Interference Task,” *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 27 (3), 654-667.
- Evans, Ralph Merrill. (1974). *The Perception of Color*. Wiley, New York, NY.
- Feldman, Jack and John G. Lynch Jr. (1988), “Self-Generated Validity: Effects of Measurement on Belief, Attitude, Intention and Behavior,” *Journal of Applied Psychology*, 73 (3), 421- 435.

- Fenko, Anne, Hendrik N.J. Schifferstein and Paul Hekkert (2010), “Shifts in Sensory Dominance Between Various Stages of User–Product Interactions,” *Applied Ergonomics*, 41 (1), 34-40.
- Fenko, Anne, Hendrik N.J. Schifferstein, Tse-Chia Huang and Paul Hekkert (2009), “What Makes Products Fresh: The Smell or the Colour?” *Food Quality & Preference*, 20 (5), 372-379.
- Fishbein, Martin and Icjek Ajzen (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Addison-Wesley Publishing Co: Reading, Mass: USA.
- Fitzsimons, Gráinne M. and John Bargh (2003), “Thinking of You: Nonconscious Pursuit of Interpersonal Goals Associated with Relationship Partners,” *Journal of Personality and Social Psychology*,” *Journal of Personality and Social Psychology*, 84 (1), 148-164.
- Fransen, Marieke L., Bob M. Fennis and Ad Th. H. Pruyn (2010), “Matching Communication Modalities: The Effects of Modality Congruence and Processing Style on Brand Evaluation and Brand Choice,” *Communications Research*, 37 (4), 576-598.
- Gilbert, Daniel. T (1989), “Thinking Lightly About Others: Automatic Components of the Social Inference Process,” *In* James S. Uleman and John Bargh (Eds), *Unintended Thought* (pp. 189-211). Guilford Press: New York, NY.

- Goldstein, E. Bruce. 2005. *Cognitive Psychology: Connecting the Mind, Research and Everyday Experience*. Thomson-Wadsworth: California.
- Goldstone, Robert (1995), "Effects of Categorization on Color Perception," *Psychological Science*, 6 (5), 298-34.
- Grossman, Randi Priluck and Joseph Wisenblit (1999), "What We Know About Consumers' Color Choices," *Journal of Marketing Practice: Applied Marketing Science*, 5(3), 78-88.
- Häfner, Michael and Diederik Stapel (2010), "Information to Go: Fluency Enhances the Usability of Primed Information," *Journal of Experimental Social Psychology*, 46 (1), 73- 84.
- Hassin, Ran, Henk Aarts and Melissa Ferguson (2005), "Automatic Goal Inferences," *Journal of Experimental Social Psychology*, 41 (2), 129-140.
- Herz, Rachel (2008). *The Scent of Desire*. Harpercollins Trade Paperback: United States.
- Herz, Rachel (2010), "The Emotional, Cognitive and Biological Basics of Olfaction," In Aradhna Krishna (Ed.), *Sensory Marketing: Research on the Sensuality of Products* (pp. 87-107). Psychology Press: Washington, DC.
- Higgins, Edward Tony (1996), "Knowledge Activation: Accessibility, Applicability, and Salience," In Edward T. Higgins and A. Kruglanski (Eds.), *Social Psychology: Handbook of Basic Principles* (pp. 133-168). Guilford Press: New York.

- Hupka, Ralph, Zbigniew Zaleski, Jurgen Otto, Lucy Reidl and Nadia Tarabrina (1997),
“The Colors of Anger, Envy, Fear, and Jealousy: A Cross-Cultural Study,”
Journal of Cross-Cultural Psychology, 28 (2), 156 – 171.
- Ishihara, S (1917). *Tests for Colour- Blindness*. Tokyo: Hongo Harukicho.
- Jacobs, Laurence, Charles Keown, Reginald Worthy and Kyung-II Ghymn (1991),
"Cross-Cultural Colour Comparisons: Global Marketers Beware," *International
Marketing Review*, 8 (3), 21-30.
- Jacoby, Larry L., Colleen Kelley, Judith Brown and Jennifer Jasechko (1989),
“Becoming Famous Overnight: Limits on the Ability to Avoid Unconscious
Influences of the Past,” *Journal of Personality and Social Psychology*, 56 (3),
326-338.
- Jeannerod, Marc (2004), “Visual and Action Cues Contribute to the Self–Other
Distinction,” *Nature Neuroscience*, 7 (5), 422-423.
- Janiszewski, Chris (1993), "Preattentive Mere Exposure Effects," *Journal of Consumer
Research*, 20 (3), 376-392.
- Kahneman, Daniel and Amos Tversky (1984), “Choices, Values and Frames,” *American
Psychologist*, 39 (4), 341-350.
- Köster, Egon Peter (2003), “The Psychology of Food Choice: Some Often Encountered
Fallacies,” *Food Quality and Preference*, 14 (5-6), 359-373.

Kotler, Philip (1973), "Atmospherics as a Marketing Tool," *Journal of Retailing*, 49 (4), 48-64.

----- and Kevin Lane Keller (2006). *Marketing Management*. Prentice-Hall, Upper Saddle River: New Jersey.

Krishna, Aradhna (2006), "Interaction of Senses: The Effect of Vision versus Touch on the Elongation Bias," *Journal of Consumer Research*, 32 (1), 557-566.

Labroo, Aparna, Ravi Dhar and Norbert Schwarz (2008), "Of Frog Wines and Frowning Watches: Semantic Priming, Perceptual Fluency and Brand Evaluation," *Journal of Consumer Research*, 34 (6), 819-831.

Lavin, Joseph and Harry Lawless (1998), "Effects of Color on Judgments of Sweetness Among Children and Adults," *Food Quality & Preference*, 9 (4), 283-289.

Lee, Angela (2002), "Effects of Implicit Memory on Memory-Based Versus Stimulus-Based Brand Choice," *Journal of Marketing Research*, 39 (4), 440-454.

----- and Aparna Labroo (2004), "The Effect of Conceptual and Perceptual Fluency on Brand Evaluation," *Journal of Marketing*, 41 (2), 151-165.

Levitan, Carmel A., Massimiliano Zampini, Ryan Li and Charles Spence (2008), "Assessing the Role of Color Cues and People's Beliefs About Color-Flavor Associations on the Discrimination of the Flavor of Sugar-Coated Chocolates," *Chemical Senses*, 33 (5), 415-423.

- Luchs, Michael, Rebecca Walker Naylor, Julie Irwin and Rajagopal Raghunathan (2010), "The Sustainability Liability: Potential Negative Effects of Ethicality on Product Preference," *Journal of Marketing*, 74 (5), 18-31.
- Mehrabian, Albert and James Russell (1973), "A Measure of Arousal Seeking Tendency," *Environment and Behavior*, 5 (3), 315-333.
- Meyers-Levy, Joan and Laura A. Peracchio (1995), "Understanding the Effects of Color: How the Correspondence Between Available and Required Resources Affects Attitudes," *Journal of Consumer Research*, 22 (2), 121-138.
- Miyazaki , Anthony, Dhruv Grewal and Ronald C. Goodstein (2005), "The Effect of Multiple Extrinsic Cues on Quality Perceptions: A Matter of Consistency," *Journal of Consumer Research*, 32 (1), 146-153.
- Nedungadi, Prakash (1990), "Recall and Consumer Consideration Sets: Influencing Choice Without Altering Brand Evaluations," *Journal of Consumer Research*, 17 (3), 263-76.
- Newell, Steven, Ronald Goldsmith and Edgar Banzhaf (1998), "The Effect of Misleading Environmental Claims on Consumer Perceptions of Advertisement," *Journal of Marketing Theory and Practice*, 6 (2), 48-60.
- North, Adrian, David Hargreaves & Jennifer McKendrick (1999), "The Influence of In-Store Music on Wine Selections," *Journal of Applied Psychology*, 84 (2), 271-276.

- Park, Chan Su and V. Srinivasan (1994), "A Survey-Based Method for Measuring and Understanding Brand Equity and its Extendibility," *Journal of Marketing Research*, 31 (2), 271-288.
- Parr, Wendy, Geoffrey White and David Heatherbell (2003), "The Nose Knows: Influence of Colour on Perception of Wine Aroma," *Journal of Wine Research*, 14 (2-3), 79-101.
- Peck, Joann and Suzanne B. Shu (2009), "The Effect of Mere Touch on Perceived Ownership," *Journal of Consumer Research*, 36 (4), 434-447.
- Petty, Richard, John Cacioppo and David Schumann (1983), "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," *Journal of Consumer Research*, 10 (2), 135-146.
- Puccinelli, Nancy M., Ronald C. Goodstein, Dhruv Grewal, Robert Price, Priya Raghunir and David Stewart (2009), "Customer Experience Management in Retailing: Understanding the Buying Process," *Journal of Retailing*, 85 (1), 15-30.
- Rao, Akshay R. and Kent B. Monroe (1988), "The Moderating Effect of Prior Knowledge on Cue Utilization in Product Evaluations," *Journal of Consumer Research*, 15 (2), 253-264.
- Reber, Rolf, Norbert Schwarz and Piotr Winkielman (2005), "Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience?" *Journal of Personality and Social Psychology Review*, 8 (4), 364-382.

- Piotr Winkielman and Norbert Schwarz (1998), “Effects of Perceptual Fluency on Affective Judgments,” *Psychological Science*, 9 (1), 45-48.
- Roediger, Henry L. (1990), “Implicit Memory: Retention Without Remembering,” *American Psychologist*, 45 (9), 1043-1056.
- Rogers, Brian and Maureen Graham (1979), “Motion Parallax as an Independent Cue for Depth Perception,” *Perception*, 8(2) 125 – 134.
- Roulet, Bernard and Olivier Droulers (2005), “Pharmaceutical Packaging Color and Drug Expectancy,” *Advances in Consumer Research*, 32, 164-171.
- Schifferstein, Hendrik (2006), “The Perceived Importance of Sensory Modalities in Product Usage: A Study of Self-Reports,” *Acta Psychologica*, 121 (1), 41-64.
- and Sylvia Blok (2002), “The Signal Function of Thematically (In) Congruent Ambient Scents in a Retail Environment,” *Chemical Senses*, 27 (2), 539- 542.
- and Marc Cleiren (2005), “Capturing Product Experiences: A Split-Modality Approach,” *Acta Psychologica*, 118 (3), 293-318.
- and Inge Tanudjaja (2004), “Visualizing Fragrances Through Colours: The Mediating Role of Emotions,” *Perception*, 33 (10), 1249-1266.
- Schiller, Gwendolyn (1935), “An Experimental Study of the Appropriateness of Color and Type in Advertising,” *Journal of Applied Psychology*, 19 (5), 652–654.

- Schwarz, Norbert (2004), "Metacognitive Experiences in Consumer Judgment and Decision Making," *Journal of Consumer Psychology*, 14 (4), 332-348.
- Shankar, Maya, Carmel Levitan and Charles Spence (2009), "Grape Expectations: The Role of Cognitive Influences in Color-Flavor Interactions," *Consciousness and Cognition*, 19 (1), 380-390.
- Shapiro, Stewart (1999), "When an Ad's Influence Is Beyond Our Conscious Control: Perceptual and Conceptual Fluency Effects Caused by Incidental Ad Exposure," *Journal of Consumer Research*, 26 (1), 16-36.
- Sherman, Gary and Gerald Clore (2009), "The Color of Sin: White and Black Are Perceptual Symbols of Moral Purity and Pollution," *Psychological Science*, 20 (8), 1019-1026.
- Sing, Satyendra, Demetris Vrontis and Alkis Thrassou (2011), "Green Marketing and Consumer Behavior: The Case of Gasoline Products," *Journal of Transnational Management*, 16 (2), 84-106.
- Solso, Robert L. and Bruce Short (1979), "Color Recognition," *Bulletin of the Psychonomic Society*, 14 (4), 275-277.
- Steenkamp, Jan-Benedict E. M. (1990), "Conceptual Model of the Quality Perception Process," *Journal of Business Research*, 21(4), 309-333.
- Stevenson, Richard J. and Megan Oaten (2008), "The Effect of Appropriate and Inappropriate Stimulus Color on Odor Discrimination," *Perception & Psychophysics*, 27 (4), 640-646.

- Stroop, J. Ridley (1935), "Studies of Interference in Serial Verbal Reactions," *Journal of Experimental Psychology*, 18 (6), 643-662.
- Szybillo, George and Jacob Jacoby (1974), "Intrinsic versus Extrinsic Cues as Determinants of Perceived Product Quality," *Journal of Applied Psychology*, 59, (1), 74-78.
- Tavassoli, Nader T. (2001), "Color Memory and Evaluations for Alphabetic and Logographic Brand Names," *Journal of Experimental Psychology*, 7 (2), 104-111.
- Thomas, Manoj and Geeta Menon (2007), "When Internal Reference Prices and Price Expectations Diverge: The Role of Confidence," *Journal of Marketing Research*, 44 (3), 401-409.
- Thornhill, Randy and Steven W. Gangestad (1993), "Human Facial Beauty: Averageness, Symmetry and Parasite Resistance," *Human Nature*, 4 (3), 237-269.
- Till, Brian, Sarah Stanley and Randi Priluck (2008), "Classical Conditioning and Celebrity Endorsers: An Examination of Belongingness and Resistance to Extinction," *Psychology and Marketing*, 25 (2), 179-196.
- Tversky Amos and Daniel Kahneman (1973), "Availability: A Heuristic for Judging Frequency and Probability," *Cognitive Psychology*, 5 (2), 207-232.
- Turley L.W and Ronald Milliman (2000), "Atmospheric Effects on Shopping Behavior: A Review of the Experimental Evidence," *Journal of Business Research*, 49 (2), 193-211.

- Unkelbach, Christian (2007), "Reversing the Truth Effect: Learning the Interpretation of Processing Fluency in Judgments of Truth," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33 (1), 219-230.
- Urban, Glen L. and John R. Hauser (1993). *Design and Marketing of New Products* (2nd ed). Prentice-Hall. Englewood Cliffs, New Jersey.
- van den Heuvel, Timon, Hans van Trijp, Cees van Woerkum, Reint Jan Renes and Bart Gremme (2007), "Linking Product Offering To Consumer Needs; Inclusion of Credence Attributes and the Influences of Product Features," *Food Quality and Preference*, 18 (2), 296-304.
- Wadhwa, Monica, Barbara Shiv and Stephen Nowlis (2008), "A Bite to Whet the Reward Appetite: The Influence of Sampling on Reward-Seeking Behaviors," *Journal of Marketing Research*, 45 (4), 403-413.
- Wheeler and Berger (2007), "When the Same Prime Leads to Different Effects," *Journal of Consumer Research*, 34 (3), 357-368.
- Whittlesea, Bruce (1993), "Illusions of Familiarity," *Journal of Experimental Psychology: Learning, Memory and Cognition*, 19 (6), 1235-1253.
- Williams, J. Mark G., Andrew Mathews and Colin MacLeod (1996), "The Emotional Stroop Task and Psychopathology," *Psychological Bulletin*, 120 (1), 3-24.

Winkielman, Piotr, Jamin Halberstadt, Tedra Fazendeiro and Steve Catty (2006),

“Prototypes are Attractive Because They Are Easy on the Mind,” *Psychological Science*, 17 (9), 799-806.

Winkielman, Piotr, Norbert Schwarz, Tedra Fazendeiro and Rolf Reber (2003), “The

Hedonic Marking of Processing Fluency: Implications for Evaluative Judgments,”

In J. Musch & K.C. Klauer (Eds.), *The Psychology of Evaluation: Affective*

Processes in Cognition and Emotion (pp. 189-217). Lawrence Erlbaum

Associates Inc: Mahwah, New Jersey.

Winter, Laraine and James S. Uleman (1984), “When are Social Judgments Made?

Evidence for the Spontaneousness of Trait Inferences,” *Journal of Personality*

and Social Psychology, 47 (2), 237–252.

Zajonc, Robert (1968), “Attitudinal Effects of Mere Exposure,” *Journal of Personality*

and Social Psychology Monograph Supplement, 9 (2), 1-27.

----- (1980), “Feeling and Thinking: Preferences Need No Inferences,” *American*

Psychologist, 35 (2), 151-175.

----- (1998), “Emotions,” In Daniel Gilbert, Susan Fiske and Gardner Lindzey

(Eds.), *The Handbook of Social Psychology* (pp. 591-632). McGraw-Hill: Boston,

MA.

----- and Mary A. Kautz (1990), “Color Affects Perceived Odor Intensity,”

Journal of Experimental Psychology: Human Perception and Performance, 16

(2), 391-397.

----- and Lori A. Whitten (1999), "The Effect of Color Intensity and Appropriateness on Color-Induced Odor Enhancement," *American Journal of Psychology*, 112 (4), 585-604.