NO-THOUGHT SHOPPING: UNDERSTANDING AND CONTROLLING NONCONSCIOUS PROCESSING IN MARKETING

Robert O. Fabrize, Jr., B.J., M.A.

Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

December 2012

APPROVED:

David Strutton, Major Professor
Kenneth Thompson, Committee Member
Nancy Spears, Committee Member
Christina Wasson, Committee Member
Audhesh Paswan, PhD Program Coordinator for Department of Marketing & Logistics
O. Finley Graves, Dean of the College of Business
Mark Wardell, Dean of the Toulouse Graduate School

Fabrize, Jr., Robert O. No-Thought Shopping: Understanding and Controlling Nonconscious Processing in Marketing. Doctor of Philosophy (Marketing), December 2012, 125 pp., 15 tables, 8 figures, bibliography, 130 titles.

This dissertation explores how nonconscious thought processing might be affected and activated in ways that influence consumer decision making. To activate nonconscious thought processes, this dissertation relies on priming—the unobtrusive activation of mental representations by stimuli in a social context, which occurs without participants' conscious awareness. Three dimensions of consumer decision making are investigated: purchase intention, product evaluation and arousal.

The dissertation is based on the auto-motive model of nonconscious goal pursuit and somatic marker hypothesis. The dissertation is driven by three experiments, which respectively explore crucial areas in priming effects and addresses the following research question: can primes be shaped or controlled by marketers?

Specifically, the dissertation examines whether shopping behavior can be primed. Second, the dissertation also examines how facial primes displaying basic emotions (happiness, anger, contempt, disgust, fear, sadness, and surprise) can prime emotion and arousal. Finally the dissertation examines the effect of the interaction of the buying prime with the primes of faces displaying basic emotions on the dependent variables of purchase intention, product evaluation, emotion, and arousal.

Results from three experimental studies show that shopping behavior can be primed, and primed participants will exhibit higher product evaluation than those exposed to a control prime. Second while exposing participants to primes of faces displaying emotions did not elicit those emotions, the priming with faces did reveal a

marginal activation of arousal in the participants. Third priming with faces was not found to interact with primed buying behavior such that the interaction would affect the level of arousal.

The results indicate that Bargh's auto-motive model of nonconscious goal pursuit can be applied to marketing. Thus priming shopping behavior can affect product evaluation though the effect of this prime appears to be too weak to be applied in the field. Priming with faces was found not to interact with primed shopping behavior and thus affect product evaluation. The impact of the findings on marketing practitioners suggests that more laboratory investigation is necessary. Further laboratory investigation should be used to raise the effect level of the prime and to find ways to shape and control nonconscious goal pursuit prior to attempting to bring priming into the field.

ACKNOWLEDGEMENTS

They say a dissertation is a marathon. You run it alone. You run in fear and doubt. You push through darkness and anger. Only in the wake of my dissertation defense did I encounter the paradox and understand the truth. I ran the path alone, yet others ran too. They cheered when I pushed through and shuddered when I stumbled. They pinned their love and dreams on me. I ran alone through the hearts of my people. This page is for them.

To the faculty who called me out: David Strutton, Ken Thompson, Christina Wasson, Nancy Spears, Francisco Guzmán, Lynne Cooke, and Jeff Sager.

To my parents who showed me how first: Robert Fabrize, Roma Fabrize, and Mary Fabrize

To my cohort who struggled with me: Sally Baalbaki, Trang Tran, TC Mims, Atefeh Yazdanparast Ardestani, Iman Naderi, Eric Van Steenburg, Gina Tran, Lucian Visinescu, Alaa Al-Beayeyz, Gina Hardin, Josh Daspit, Marcus Cox, and Kwabena Boakye

To my friends who held strong: Ray Roberts, John McCormick, Jackie Kelly, Gale Stuart, and John Sutherland.

And to Sheila, who bet everything—her heart.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

,

CHAPTER 1

THE BEGINNING

With its deep roots in antiquity, western rationality has dominated theories of decision making. According to historical western understanding of rationality, deliberative choice is based on humankind's ability to bring about change by its own effort and requires dispassionate calculation (Aristotle 1958). Descartes (1673/2006) concluded that only what a person was immediately conscious of could be considered a thought. Thus deliberation and consciousness went on hand in hand to influence business practice and theory. For example, Benjamin Franklin suggested moral algebra: listing pluses and minuses of a possible decision in two columns and choosing the longest column, so a consumer using moral algebra will maximize the expected utility of the decision. This rationale from classical economic theory gives us economic man (Simon 1959). Rational choice theory (Simon 1955) postulates that actors pursue goals based on their self-interest and consciously choose alternatives that yield the highest expected utility. Consequently rational choice depends on the availability and conscious evaluation of information (Monroe 1995). Fishbein and Ajzen's theory of reasoned action (Ajzen and Fishbein 1980; Fishbein and Ajzen 1975) extends this conscious and rational worldview by positing that the person's intentions to perform a behavior are based on the person's beliefs about the consequence of that behavior.

But rational choice theory and the theory of reasoned action do not explain everything. Consumers often act in an irrational (or nonlogical) manner. In fact, a hallmark of Bagozzi's (1975) marketing man is that he often acts irrationally. If rationality is allied with conscious, deliberative thought, then one begins to wonder from where

marketing man's irrationality stems. Can a person make an unconscious choice? Choice without consciousness would smack of heresy to Descartes.

Current research suggests that another part of the mind also direct a person's choices: the unconscious. Gigerenzer (2007) suggests that "the intelligence of the unconscious is in knowing, without thinking." This intelligence is based on inferences drawn from the real world. These inferences are also based on prior knowledge about the world. However, because of the limitations of the conscious mind and memory, these inferences are not apparent to the conscious mind (Schooler and Anderson 1997; Schooler and Hertwig 2005). Because they are not apparent to the conscious mind, these choices and goals are developed "nonconsciously."

The concept of knowing and deciding without awareness is no longer confined to the psychological laboratory. It has entered the mainstream popular culture with books such as Gerd Gigerenzer's (2007) *Gut Feelings: The Intelligence of the Unconscious* or Malcolm Gladwell's (2005) bestseller *Blink: The Power Of Thinking Without Thinking*.

Nonconscious processing of goal-directed behaviors has been actively researched for more than 20 years by social psychologists (Bargh 1990; Bargh et al. 1996; Fitzsimons et al. 2002). Nonconscious processing is processing that lacks an "active, intentional conscious involvement, or awareness of the extensive processing taking place" (Bargh 1990). In effect, the thoughts and behaviors that nonconscious processing produces are not open to introspection by the subject (Aarts 2007).

Bargh proposes the "auto-motive" model of automatic, nonconscious goal activation:

> the mechanism proposed here by which the social environment may control judgments, decisions, and behavior is the formation of direct and automatic

> mental links between representations of motives and goals in memory (and consequently the goals and plans associated with them) and the representations of the social situations in which those motives have been frequently pursued in the past. The result of this automatic associative link is that the motive-goal plan structure becomes activated whenever the relevant triggering situational features are present in the environment. The activated goals and plans then presumably guide the social cognition and interaction of the individual, without the person's intention or awareness of the motive's guiding role. (Bargh 1990)

According to this model, goal pursuit sequences can occur outside of conscious awareness. Though people may consciously choose to pursue a certain goal, a conscious choice is not essential for goal activation or goal completion (Bargh 2002; Chartrand 2005). Goals, intentions, attitudes, constructs and schemas reside in memory and can be activated by environmental stimuli, such as advertising, store displays, other consumers, etc., and by past experience. When a particular goal is activated consistently in a particular social setting over time, the goal is linked to the memory of the social situation. Therefore, in a given situation, the goal can become activated without the person consciously being aware of its activation (Bargh et al. 2001).

As mentioned earlier, goals are mental representations of the state a person desires. These mental representations are tied to behaviors or outcomes of the behaviors (Aarts and Dijksterhuis 2003). These mental representations are also tied to affect (Fazio et al. 1986; Zajonc 1980). Aarts, Custers and Veltkamp (2008) propose that affect and nonconscious goal pursuit operate in tandem. They have proposed an affective motivational route to nonconscious goal pursuit. In this route, primed goal pursuit is followed by positive affect which potentiates participant motivation because the positive affect signals that the goal is worth pursuing and readies participants for goal pursuit.

The mental representations we think of as motivations are also affected by the environment. In an experiment on behavior in the library, Aarts and Dijksterhuis (2003) found that environmental cues can automatically activate mental representations of normative behavior (the idea of how to behave) as well as the behavior itself. These could be activated nonconsciously when the participants had goals to visit the environment and when the normative behavior and the environment were strongly associated. This strong association can take the form of habit—the mental representation of a goal-action link (Aarts and Dijksterhuis 2000). When a goal becomes active, habit nonconsciously takes over. People can also consciously create their own mental representations of goal-action links, which when activated imitate nonconscious goal-direction (Aarts and Dijksterhuis 2000).

Priming: Starting Up Nonconscious Processing

Nonconscious processes can be activated through priming. Bargh (2006) defines priming as the unobtrusive activation of a representation in a given social context that influences the subsequent scenario without the subject's awareness of this influence. For example, the first researchers to use priming in nonconscious processing gave participants a scrambled sentence task, either using words for hostility or words for kindness (Srull and Wyer 1979). Using a cover story of a language study, researchers gave participants scrambled strings of five words. The participants were asked to make grammatically correct sentences from the strings of words. Members of one group of participants received word strings from which they could make sentences describing kindness while the other group was given word strings which they could only make

sentences describing hostility. After the priming exercise, the researchers asked the participants to read an ambiguously worded description and to rate the subject of the description based on a series of trait characteristics. Participants primed with hostility words rated the description and the subject as hostile. Individuals primed with kindness rated the description and protagonist as kind.

Researchers have used other types of priming successfully, such as parafoveal/peripheral placement priming, and dichotic listening priming. To nonconsciously prime using parafoveal/peripheral placement, the researcher has the participant read a webpage or newspaper article as a distraction. The target materials appear outside of the participant's focal view on the side of the material the participants are focusing on (1.5- 5 degrees off for parafoveal and greater than 5 degrees off for peripheral). Because the subjects are preoccupied reading the article, the target materials are nonconsciously processed. This type of priming has been used to test left and right hemispheric processing of pictorial and text ads in newspapers (Janiszewski 1988). Participants can be primed auditorialy using dichotic listening. In dichotic listening, participants receive different verbal messages in each ear, but are asked to attend to the messages from one ear while ignoring the other ear. At the same time they are asked to repeat the message from the attended ear. Dichotic listening has been used to investigate lexical decision making (Dupoux et al. 2003).

Priming is powerful and has been found to affect many different human enterprises. Researchers have employed priming to affect goal performance such as categorizing words (Bargh et al. 2001). Priming can affect social behaviors such as stereotypes about the elderly or minorities (Bargh et al. 1996). Decision making also

can also be affected by priming. Chartrand, Huber, Shiv, and Tanner (2008) primed thrift and prestige goals which affected consumer's choice after the event causing a greater proportion of those primed with prestige goals to choose the more prestigious brand of socks. The presence of significant others can also be used to prime goal pursuits in participants such that the mere presence of significant partners affects people's willingness to help others (Fitzsimons and Bargh 2003). Other have found that merely asking a participant hypothetical questions will prime participants and can affect their future decisions (Fitzsimons and Shiv 2001).

A Need for Extension into Marketing

Researchers in both social psychology and consumer behavior have argued that much of consumer behavior is determined without conscious thought (Dijksterhuis et al. 2005; Zaltman 2003). However, most of the research in nonconscious processing has been done in social psychology (Bargh 2006; Bargh et al. 1996; Ferguson 2008). Most of the studies have been laboratory studies with scant generalization to social situations. Nonconscious processing remains relatively unexplored in consumer behavior. To date, the nature, role, and possible attitudinal or behavioral impact of nonconscious processing has been the subject of fewer than 50 articles and only one special issue of the *Journal of Consumer Psychology* (2011, Volume 21, Issue 11).

Part of the reason research into nonconscious processing has remained in the laboratory is because some of it has required special laboratory equipment to induce nonconscious processing (Janiszewski 1988). In other cases, the experiment required computer equipment to measure response latencies to measure nonconscious

response (Aarts et al. 2007). Careful staging of the experiments to be able to video record respondents' faces has also necessitated the use of laboratory settings (Cheng and Chartrand 2003). Past research has relied heavily on laboratory settings because only carefully controlled experimental conditions can be used to draw causal relationships.

Consumer behavior would serve as a logical forum for the extension of investigations into nonconscious goal pursuit. First, consumer behavior, particularly shopping, is often seen as a social act. Tauber (1972) sees consumer shopping as social activity outside the home, a peer group activity, and a form of communication. One aspect of social activity is that of being seen by others. Rook (1984; 1985) explored shopping as a ritual activity performed before an audience and imbued with psychosocial significance. Shopping activity also takes place in public places, for example shopping malls, which Bloch et al. (1994) conceive as a consumer habitat. Second, the received view describes two motivation theories (classical conditioning and operant conditioning) that operate without cognitive awareness (Mowen and Minor 2006). A third learning theory, iconic rote learning, occurs when two or more concepts are visually associated and relies on the visual persistence of the stimulus in memory (Long 1980). However, iconic rote memory operates without conscious control and without deliberation. More importantly, these three theories focus solely on the individual and do not account for the influence of the person's relationship with others and with society. Expanding the investigation of nonconscious processing into consumer behavior, particularly into retailing, also makes sense. Investigating

nonconscious processing might have direct implications for store atmospherics, product selection, and customer service.

Noted social psychology researcher John A. Bargh (2002) even identifies consumer behavior as the best place outside of the laboratory to assess the impact of nonconscious processes. Taken together, these points suggest a logical extension for further research into nonconscious processing within the field of consumer behavior.

Nonconscious Processing and Consumer Behavior

Because so few studies into nonconscious processing have been conducted, the consumer behavior arena offers a broad spectrum of sub-disciplines amenable to further research in this area. These sub-disciplines include advertising, branding, ethics, art direction, retail sales, and public policy.

Within the realm of consumer behavior, the greatest concentration of research into nonconscious processing exists in the advertising sub-discipline. Researchers have found that priming can increase attitude toward the advertisement, increase purchase intent, increase the use of attributes in product evaluation, increase risk awareness, and increase the favoring of domestic over imported products. Yi (1990) found that affect priming prior to viewing target ads could increase attitude toward the ad and purchase intent. Further research on priming in advertising found that priming an attribute prior to viewing target advertising increases the use of the attribute in product evaluation (Yi 1991). Research in ambient media (posters on HIV awareness) has been found to raise reported awareness of the issue primed in the posters among respondents (Turk et al. 2006). Priming by showing news footage of deaths and disasters (death related media

contexts) prior to television advertising for domestic and foreign brands has been found to make consumers favor domestic brands (Liu and Smeesters 2010). Semantic primes have been shown to increase perceptual fluency (cuing visual identifiers on product labels) that lead to increased liking of the target (Labroo et al. 2008). For example, cuing a visual identifier (a frog) increased the preference for wine with a frog on the label over wine without a frog on the label. Frequent and recent priming of conceptual cues from advertising has been found make consumers find the products more accessible, rate the product more favorably and choose the product more often (Berger and Fitzsimons 2008).

Some research into nonconscious processing has also been reported in the branding literature. Maison et al. (2004) tested the validity of the implicit association test (IAT), an established priming technique, on brands, implicit attitudes, explicit attitudes, and consumer choice. The IAT measures implicit attitudes by taking the difference between the association of two target concepts with an attribute of a subsequent one. When the primed associations are highly associated with the subsequent category, the response is faster. They found that implicit attitudes predicted consumers' brand preferences, brand recognition, and product usage. Implicit attitudes were found to correlate with explicit attitudes. Ferraro et al. (2009) found that priming, in the form of repeated incidental brand exposures, increased the choice of the target brand among participants. Priming with a designer's name and information can shift consumer preference in consumer goods (Gabrielsen et al. 2010). Priming of product properties can induce category beliefs about products that speeds access to the attributes when participants apply them to hybrid products (Rajagopal and Burnkrant 2009).

Consumer behavior researchers have also found priming to affect ethical judgment (Kellaris et al. 1996), creative output of advertising art direction (Brown and Bhadury 2006), insincere flattery in retail sales (Chan and Sengupta 2010), variety seeking (Maimaran and Wheeler 2008), and consumption of low-fat foods (Geyskens et al. 2007).

Taken as a whole, the investigations of researchers in consumer behavior have extended nonconscious processing from social psychology to marketing. However, this research has focused primarily on applying nonconscious priming in the context of consumer behavior. While this cross fertilization of the disciplines is admirable, repeating the research already done in social psychology in marketing seems redundant. If consumer behavior is the best place outside of the laboratory to test nonconscious processing (Bargh 2002), then it would appear pointless to repeat all of the work in social psychology that tested priming in the context of consumer behavior. Rather, research on nonconscious processing in marketing should aim at discovering what researchers in social psychology have yet to discover regarding nonconscious processing.

What Should Be Next in Studies of Nonconscious Processing: Statement of Research Objectives

Research on priming has extended well beyond the study of its effects and now must address the areas of psychological phenomena including “appraisal and evaluation, motivation and goal pursuit, social perception and judgment, and social behavior” (Bargh 2006, p. 148). He urges researchers to begin answering ‘second-generation’ questions regarding priming effects and suggests the following question,

which is paraphrased here to fit this study's context: Are nonconsciously instigated influences controllable (Bargh 2006)? This question serves as the seed for the research objectives of this dissertation.

The first research objective of this dissertation is to find out if participants can be primed with buying behavior. Social psychologists have previously primed participants with many social behaviors including hostility (Srull and Wyer 1979), self-monitoring and mimicry (Cheng and Chartrand 2003), helping behaviors (Custers et al. 2008), prejudice (Bargh et al. 1996), and normative behaviors (Aarts and Dijksterhuis 2003), yet marketing researchers have mainly focused on investigating the effects of nonconscious processing in many disparate areas including, attitude (Yi 1990), motivation (Chartrand et al. 2008), decision making (Fitzsimons and Shiv 2001). Marketing researchers have not investigated whether buying behavior can be primed. To that end, this dissertation aims to investigate how to prime shopping behavior.

The second research objective of this dissertation is to investigate if faces with specific emotions can be used to prime those same emotions in participants and change their state of arousal. Evidence exists that emotion can be primed in different ways including through advertising (Yi 1990), news (Liu and Smeesters 2010), and music (Storbeck and Clore 2008). Winkielman et al. (2005) have found that priming subjects with negatively and positively valenced faces will influence consumption and willingness to pay for a beverage. However, the authors manipulate only the valence of the face (happy = positive / angry = negative) and have participants to rate their feelings on one item (from pleasant to unpleasant). The authors also measure arousal in the same manner (from high to low). The focus of this research is to investigate if priming

with faces displaying certain emotions (anger, happiness, contempt, surprise, and neutrality) will elicit these same emotions, and if priming with faces displaying these emotions will affect arousal. The findings should reveal that the using faces for affective/emotional primes should create these same emotions in the participants. The findings should also demonstrate that the different emotions affect the four different dimensions of arousal posited by Thayer (1978): general activation (active, energetic), general deactivation (placid, calm), deactivation sleep (sleepy, tired), and high activation (fearful, tense). These findings would be useful to marketers in retailing, personal selling, and advertising.

The third research objective of this dissertation is to gain insight regarding how to control or shape priming effects in a retailing context. From a practical standpoint being able to control priming effects would give marketers another advantage in shaping behavioral outcomes within the retail setting. In advertising, priming effects for cognitive contexts, which prime attributes of the product, have been shown to affect product evaluations, specifically attitude toward the brand (Yi 1990). In the same investigation, priming effects for affective context, which triggered emotional reactions, have been shown to affect attitude toward the ad (Yi 1990). Though evidence exists that affect and emotion can affect evaluation of advertising, the researchers conducted this investigation using a cognitive/conscious framework (Lau-Gesk and Meyers-Levy 2009). If emotion can affect cognitive evaluation of a product, it bears investigating whether primed emotion can control the level of other priming effects. Findings by Aarts et al. (2008) serve as a starting point. The authors primed positive/neutral affect with a height estimation task and found that the participant group receiving the positive affect had

higher measurements for the object. The prime the researchers used were words for feelings. Whereas words might be convenient to prime, neuroscience tells us that the brain's amygdala processes and stores basic emotions (Morris et al. 1998) by sorting out facial expressions (Morris et al. 1999) and produces an instinctive reaction. The use of faces to prime emotion has yet to be investigated and may provide a stronger and less transient prime. Therefore, this investigation proposes to investigate the differential effects of emotional primes using faces and words to determine how these alternative primes might interact with other primes directed at influencing behavioral outcomes such as product or brand choice. The findings should reveal that the using faces for affective/emotional primes should be stronger and more effective at shaping buying primes than using words for the affective emotional primes. From a practical perspective, these findings would be useful to marketers in retailing and personal selling.

This dissertation aims at providing new theoretical knowledge on nonconscious processing in the field of consumer behavior. It should serve as a first step to bring what has, up until now, resided in the laboratory out into the marketplace. It should also provide other consumer behavior researchers with a stepping stone to develop new theories of decision making which might take into account both the cognitive and nonconscious systems. On the practical side, this dissertation should provide managers with better ways of engaging with customers.

CHAPTER 2

LITERATURE REVIEW

This chapter contains a review of the literature and the development of hypotheses. The literature review contains four parts. First, the priming literature from social psychology is reviewed, and the methods for using priming to explore nonconscious thought are discussed. The second section explores the application of research relying on priming to explore nonconscious thought in consumer behavior. The third section comprises a discussion of the history of consciousness and nonconsciousness in both psychology and marketing. The fourth section discusses the neurological underpinnings of nonconscious thought processes. This literature review is followed by the hypothesis development section. The hypothesis development section begins with a description of the theoretical frameworks which allow for the development of hypotheses to test the following research questions on priming effects proposed by Bargh (2006): Are nonconsciously instigated influences controllable by those who are priming?

Nonconscious Thought Processes in Social Psychology

Nonconscious thought processes have been a focal point of research in social psychology. This literature review explores three areas of the research in social psychology: social behavior/attitudes, goal pursuit, and affect. These areas of research are complementary to the types of research normally conducted in consumer behavior.

Social Behaviors/Attitude

Early research in the automaticity of social behavior was conducted by Srull and Wyer (1979) who used priming to study the encoding of behavioral trait categories into memory. They investigated whether encoded trait categories affected subsequent judgment tasks. Using the scrambled sentence task, they primed participants with either hostility or kindness. (A scrambled sentence task is a list of five words from which only four words may be chosen to complete a grammatically correct sentence. The thought conveyed in the sentence is the prime given to the participant. The scramble sentence task is usually presented to the participant as a filler task or a mind clearing task.) After the scrambled sentence task, the researchers then asked participants read a vignette about a target person's behaviors. The behaviors described in the vignette were ambiguous as to the target persons' kindness/hostility. Participants were then asked to rate the target person along trait dimensions. Participants' ratings of the target rose with the number of times participants had been primed. Ratings fell with increased time intervals between priming and presentation of the target stimulus. Their findings indicated that social information is encoded into memory via category accessibility that is later used in judgment.

To test nonconscious through processes, many researchers in social psychology have used priming as a tool for automatic activation. For example, researchers have found that that the mere presentation of objects can automatically activate attitudes and evaluations of the object (Fazio et al. 1986). The authors found that they could activate attitudes in participants by having them observe the attitude object, and that this

activation was automatic. They found that the strength of the activation depended on the strength of the object evaluation association in the participant's memory.

To measure differences in nonconscious responses (i.e. implicit attitudes) that operate nonconsciously, Greenwald, McGhee and Schwartz (1998) measured response latencies between the association of two target concepts with an attribute of a subsequent concept. They found that when the primed associations are highly associated with the subsequent category, the response time is faster. They tested implicit attitudes between mutually opposed ethnic groups (Korean-Americans vs. Japanese-Americans and European-Americans vs. African-Americans) and found that implicit attitudes (i.e., prejudice or animosity) were evident even for those who denied antipathy in self-reports. Thus, priming nonconscious processes revealed information that was contrary to information that was consciously reported. Thought, once viewed as solely a conscious and cognitive process, was being revealed as a process involving dimensions other than the consciousness.

Bargh, Chen and Burrows (1996) used priming techniques, which had previously been used to influence the formation of impressions, to influence social behavior. The researchers activated a trait construct in participants in one context and found that the participants would perform the same behavior in another unrelated context. The authors explained that behavior responses automatically link themselves to representations in social situations. For example, participants exhibit behavioral responses (e.g., anger) that are associatively linked to social situations (e.g., being forced to wait for other people). Thus anger and having to wait for other people are linked in the person's mind. Like the perceptual traits and attitudes tested by prior researchers, Bargh et al. (1996)

found that when such behavioral responses are tied to social situations, they can become automatically activated.

Self-monitoring is one behavioral response that was found to operate nonconsciously in social situations. The key to investigating nonconscious self-monitoring was priming. Self-monitoring motives and behaviors (mimicry) can occur outside of conscious awareness (Cheng and Chartrand 2003). In three studies, researchers relied on confederates' body language to prime participants. The authors examined nonconscious mimicry in different situations with different cues and found that participants rated high in self-monitoring nonconsciously mimicked the gestures of confederates they wished to affiliate with. Mood has been found to affect nonconscious behaviors (van Baaren et al. 2006). The researchers primed participants with positive and negative moods and found that participants primed with a positive mood nonconsciously mimicked the confederate's behavior of playing with a pen more often than participants primed with a negative mood. Moods were found to inform people about their environment to help them match their cognitive processes to that environment. Accordingly when in a good mood, people automatically adjust to the environment by acting like others in it. However, participants primed with a bad mood are more reserved in their adjustment to the social situation and are less influenced by the actions of others. This behavior adjustment to the social environment was found to occur automatically without conscious awareness.

A touchstone of social psychology is that the environment is an integral part of the study of human behavior. Based on the premise that a situational norm is a mental representation of environment and normative behavior, Aarts and Dijksterhuis (2003)

used priming to test if environment can direct normative behavior. They used the situational norm that one should be silent in the library and primed participants with pictures. They subsequently measured the accessibility of the representation of the normative behavior and the behavior itself. Thus, the perception of the social target was sufficient to activate the normed behavior.

Even the experience of self-agency can arise from nonconsciously activated outcome and its subsequent production (Aarts et al. 2009). Self-agency is the belief that persons cause their own actions and create their own outcomes from these actions. By priming the outcome just before the participant produces the action, researchers have created a sense of self-agency in the participant—even when the outcome was ambiguous. When the primed outcome is kept active over time, it behaves like a goal when the goal is nonconsciously primed at the same time with positively valenced information. Priming the participants long before the trial also increased the perception of self-agency however only if the outcome was attached to positive affect.

Goal Pursuit

The association linking behavioral responses to social situations is further explored by Aarts and Dijksterhuis (2000) who consider the association of goals (on traveling to class) and behaviors (riding a bicycle) as habits. The authors found that the mere activation of the goal automatically activated the response that the participant had habituated. Once, primed, both habitual and nonhabitual bicycle commuters showed enhanced association between the goal (travel) and the behavior (biking). Therefore habits are goal-action linkages. These findings support Bargh's (1990) goal-dependent

automaticity because the automaticity of the goal only exists when the goal is activated. The researchers also found that participants who formed intentions (linking the goal and an action) stimulated their own goal-directed automaticity. Creating a mental representation of a goal as a thought was sufficient to automatically activate behavior outside of the participant's awareness.

Nonconscious processing also causes people to project goals, both conscious and nonconscious ones, onto others (Kawada et al. 2004). The authors found that people who were predisposed to hold a learning goal over a performance goal tended to project on others (and rate the others) as having more of a learning goal. They also found that participants who were implicitly primed or explicitly assigned to have a goal for competition more often perceived others as having competitive goals as compared to participants in the control group. The authors found that the actual goal to compete was a projection rather than a trait construct for competitiveness. The participants projecting were completely unaware of their projections.

Nonconscious activation of behavior goals has been another area of social psychology research that has relied on priming to test its theories. Researchers have used priming to activate behavioral goals in study participants without their conscious awareness (Bargh et al. 2001). The researchers found that nonconscious goals, once activated, operate in the same manner as consciously chosen goals. These nonconscious goals promoted goal directed action. Until the goals are acted upon, they continue to grow in strength. In the face of obstacles within the environment, nonconscious goals will produce persistence at the performance of the task. If the task is disrupted because more attractive alternatives appear in the environment,

nonconscious goals favor the resumption of the task. Thus nonconscious goal pursuit is adaptive, and conscious and nonconscious goals can interplay such that when nonconscious goals are superimposed over parallel conscious goals, nonconscious goals tend to outperform the parallel goal that is operating in conscious awareness. As the authors suggest:

> In goal pursuit that is linked to the here and now through the automatic activation of internal goal representations, the cause of the resultant behavior is inherently interaction—not caused by either situation or person in isolation, but by their combination. In other words, behavior guided by nonconscious goals is not 'habit' … in the sense of a single and inflexible behavioral response to single environmental events, but instead is behavior that is flexibly responding to environmental events as they unfold in the ongoing situation. (Bargh et al. 2001, p. 1025)

As such goal pursuit appears flexible and driven by the self and the social context.

Motivation can be boosted nonconsciously when positive affect is combined with self-symbols, i.e. letters similar to the person's name (Holland et al. 2009). Primed participants were found to drink more of the target beverage with the brand name that contained the letters of the person's name than the control group. The amount the participants drank correlated positively with their ratings for the taste of the beverage and their intention to buy. When exposed to the self-symbol condition, participants spent more time than the control group on their assigned task (a scrambled letter task). Self symbols have also been found to be implicit motivators when measuring pure behavioral persistence. Participants with higher implicit self-esteem levels spent more time solving unsolvable word problems than those with low implicit self-esteem.

Nonconsciously activated goals (motivation) can also moderate the placebo effect. Using priming to effect nonconscious goal manipulation, investigators found an increase in the placebo effect in response to the expectations of the participants (Geers

et al. 2005). Motivation moderated the placebo effect for participants whether they had positive and negative expectations of the placebo. The moderating effect also occurred in different measures of the placebo effect. Thus, nonconscious goal activation can also affect body functions as well as social judgments.

Religious goal pursuits have also been tested using priming (Wenger 2007). The researcher primed shortcomings to create a sense of incompleteness that activated the cognitive process to compensate. With the compensatory process activated, participants exhibited lower response times to goal relevant information. In his subsequent experiment in this investigation, primed participants with higher levels of religiousness who had focused on shortcomings spent more time reading the religious passage.

Whereas much of previously mentioned nonconscious goal pursuit has focused on strongly associated means and goals in social environments, nonconscious goal pursuit can help primed participants learn the structure of completely new environments, too. When researchers primed the goal of achievement in participants and gave them an implicit learning task with a goal but did not reveal the relational rules to achieve the goal, participants primed with the achievement goal achieved their target goal more often than participants who were not primed (Eitam et al. 2008). However, the priming did not change the participants' explicit (conscious) motivation or knowledge.

Implicit learning is also a factor in flexibility, a process which is considered effortful and therefore a conscious process. However, flexibility can be affected by nonconscious goal priming (Hassin 2008). Participants primed with flexibility and given an attribution task considered more causes for a protagonist's behavior in an

ambiguous scenario than the control group. But when flexibility stands in the way of goal achievement, that flexibility will be reduced because participants will focus on probable causes while discounting the rest.

Nonconscious goal pursuit (also termed automatic goal pursuit or AGP) is thought to enhance flexibility, if flexibility facilitates goal achievement (Hassin et al. 2009). Participants primed with an achievement goal demonstrated higher flexibility and performance than control groups, suggesting they were adapting to their dynamic environment rather than following predetermined scripts. Hassin et al. (2009) suggest that primed participants were better able to achieve their goal because they would resist short-term temptations better.

Ferguson (2008) found that when a goal in memory was nonconsciously activated, it created positive implicit attitude toward the goal that may help achieve that goal. Participants exhibited this evaluative readiness without conscious awareness of the stimulus, and nonconscious goal activation was observed in both immediate and delayed conditions. The effect of evaluative readiness was higher for participants who had some skill at the goal and for those who found the goal more important.

Nonconscious goal pursuit is an open-ended affair. Once active, these mental representations will function on other stimuli in the environment that related to the goal content regardless of whether the content was the intended focus of the conscious goal. Once the goal is active, it will follow its own agendas, independent of any conscious control even going so far as to spill over onto other targets (Bargh et al. 2008). The researchers primed participants to evaluate participants using certain criteria for a job

as either a crime reporter or a waiter. This priming shaped the participants' evaluations of bystanders in subsequent situations demonstrating a spillover effect.

Nonconscious goal pursuit can make people overcome physical and social obstacles. Researchers have primed participants with the mental representation of a social group (nurses) and found that the participants were able to overcome their aversion to picking up a soiled tissue when the goal was to help someone else (Custers et al. 2008). The same researchers found that by priming the goal of helping, participants overcame the social obstacle of providing feedback to a negatively evaluated minority student. Thus when primed with social groups typecast for a specific goal, participants became more motivated to help others and overcome obstacles encountered during the pursuit of the goal.

In the absence of the conscious will, an affective motivational route of nonconscious goal pursuit informs people to pursue a primed goal. The affective-motivational route involves the mental representations of both the goal and the affect because people see their actions as possible methods of achieving their goals. Priming the nonconscious representation of the goals provides a reference point from which they can focus cognition and action. Researchers have shown that if positive affect is coactivated with or associated with a cognitive representation of the goal, goal pursuit is triggered (Aarts et al. 2008). Negative affect put the goal pursuit on hold.

Affect

Social psychologists have studied how nonconscious processes influence affect in participants and explored its impact on goals. They have also explored nonconscious affect as a moderator or shaper of decision making.

The nonconscious processing of affect has also been studied in social psychology by using priming. Dijksterhuis and Aarts (2003) tested the speed of detection of negative and positive stimuli. Participants who were subliminally primed with negative words were able to detect negative target words that were presented subliminally more accurately than positive words or no words at all. Participants were also able to categorize subliminally presented negative words more accurately than positive words. The researchers showed that humans evaluate all incoming stimuli regardless of the intention to evaluate. The evaluation is nonconscious and functional in that it allows the person the ability to either approach or avoid. The authors theorize that people developed fast detection of negative stimulus because it is often critical to survival.

The impact of affect on behavioral goals has also been studied with priming. Using nonconscious activation of behavior goals paired with words of positive affect has been found to cause participants to want to attain behavioral states (goals) more so than participants primed with neutral goals (Custers and Aarts 2005). The authors observed that this effect occurred in evaluational processes as well. If the goal is not already desired, positive shaping was found to increase the motivational activity to reach the goal. Thus wanting a goal and putting in the effort to achieve the goal can be seen as the same thing.

Unconscious affective reactions have also been used as primes. Winkielman, Berridge and Wilbarger (2005) subliminally presented happy and angry faces to participants to see how much of a beverage they would pour and consume. Subliminally presented smiles caused participants to pour and drink more. Subliminally presented

frowns caused participants to pour and consume less. Participants who were exposed to smile primes were also found to be willing to pay more for the beverage and had an increased desire for the beverage.

Negative affect has been found to inhibit both semantic and affective priming (Storbeck and Clore 2008). Investigators primed participants with positive and negative moods by having them listen to music. Participants were then primed for a type of decision making (evaluation, categorization or lexical decision—deciding if the target was a word or not). Positive affect allowed all three types of evaluation whereas negative affect inhibited the primes. In a second experiment using the participants' natural affect, happy and control moods groups evidenced the effect of priming across all three tasks. However, sad moods were found to restrain the effects of both affective and semantic priming.

Negative affect has also been found to moderate nonconscious goal priming (Aarts et al. 2007). When the nonconscious goals were primed close to when negative information was primed, motivation and subsequent behavior of social goals dropped to zero (the no goal condition).

Nonconscious Thought Processes in Marketing

Marketing falls behind social psychology in the study of the automaticity of behavior in consumer research. Like social psychology, marketing has relied on priming as a tool for exploring the effect of nonconscious processing on consumer behavior. To date, the consumer behavior literature on nonconscious processing has addressed three areas of investigation: attitude, motivation, and decision making. The majority of

investigations evaluated decision making. Most extant research is based on the theoretical perspective that contextual factors activate knowledge structures which in turn influence decision making. Participants may be unaware of one or more of the three stages in the process: the trigger (prime), the activation of knowledge structure, and the outcome, thereby making the process nonconscious (Chartrand 2005).

Attitude

Janiszewski (1988) tested whether attitude formation toward unattended stimuli could occur absent conscious thought in conditions where presentation format encouraged preconscious processing. Participants were asked to read a newspaper article, next to which an ad was placed either on the left or the right of the article. Janiszewski primed subjects by relying on their foveal vision (approximately 15° to the left or the right of the focus point). Placement on the left or the right of the article was found to activate the opposite hemisphere of the brain. Results indicated preferences can be generated without conscious thought.

Cognitive and affective priming have also been used to investigate the context of print ads (Yi 1990). To create a cognitive prime, Yi employed information about a product (product attributes). To create and affective prime, Yi used the context of the ad's placement to induce the positive or negative affect. Using automobile ads as the focal context, Yi cognitively primed participants for either safety or economy. The researcher primed another group affectively by placing the ad in a positive or negative context (the positive or negative tone of the article surrounding the ad). The affective priming, which triggered emotional reactions in the participants, was found to affect

attitude toward the ad. Cognitive priming, which was based on product attributes, was found to affect attitude toward the brand. Cognitive and affective primes each affected purchase intent. In affective priming, attitude toward the ad and purchase intent were higher when the affect was primed as positive rather than negative.

Researchers have also studied the effects of product placements in movies using priming. Using word-fragment completion tests, Yang and Roskos-Ewoldsen (2007) found that participants had higher completion rates for brand names that appeared in movies they had watched than for brands that did not appear. Participants exposed to the brand in the movie were more likely to select that brand that participants who were not exposed. Level of placement also influenced attitude toward the brand. For example, more positive attitudes for the brand were expressed when it was used by the character in the movie than when the brand was in the background or when the director used the brand to develop the storyline. This supports Fitzsimons and Shiv's (2001) findings that when relevance priming is high for the participants the impact of the prime is also high.

Watching movies is a passive, absorptive activity. But researchers have observed that product placements also can prime participants in a more interactive active pastime—video games (Yang et al. 2006). Implicit memory (tested with a word fragment completion task) and explicit memory (tested with a brand recognition task) were both higher for participants who played games in which the brands appeared as billboards or signage. This suggests that the mere presence of the brand in the game would be enough to spark nonconscious processing.

Brasel and Gips (2011) relied on supraliminal priming (sponsorship of a racecar in a video game) to test if the effects of exposure to a strong brand personality affect other metrics beyond choice, consumption, or self-expression. In their experiment, participants were asked to play a video racing game using identical cars sponsored by different brands. The strong brand personality, Red Bull (associated with speed and recklessness) affected racing performance without the conscious awareness of the participant. Drivers of cars branded with the Red Bull logo and colors recorded both the fastest times and the slowest times when driving. The Red Bull car rarely was the middle-performing car out of the five cars raced by every participant. These supraliminal exposures appeared to operate nonconsciously in the participants. Thus, exposure to brands with strong personality dimensions (Red Bull: speed and recklessness) had a double edged effect on consumers: their driving evidenced both speed and recklessness.

Motivation

Researchers have also investigated priming of subjects in their natural environment. Turk, Ewing and Newton (2006) used ambient media (posters) to test changes in knowledge of, attitude toward, and intention to use proactive HIV/AIDS prevention strategies. HIV/AIDS prevention posters were placed in washrooms of high-risk areas in Indonesia where patrons might engage in unprotected sex (bars and cafes). The posters carried a headline (I can get it, I can prevent it) above a mirrored surface with text below it explaining how the disease is spread and how to prevent its spread. The posters were placed above urinals in the men's room of bars and cafes.

Results of the study indicated that those exposed to the ambient media were more likely to report being at risk for AIDS transmission and to use condoms to prevent AIDS infection.

Incidental exposures to stimuli in the environment can also serve to prime consumers and activate different shopping goals (Chartrand et al. 2008). These goals will then nonconsciously influence the participant‘s subsequent choices in unrelated scenarios. Using a scrambled sentence task, the researchers activated prestige and thrift goals in participants who were then asked to choose between a prestige brand pair of socks with a high price and a thrift brand pair of socks. The participants chose the socks in accordance with their primed condition. The impact of the primes also increased with a time delay. In the same study, retail brands themselves (Nordstrom vs. Walmart) also served as primes for participants. Participants primed with the thrift retail brand preferred the thrifty option over the prestige option. In all of these experiments in this investigation, participants were unaware of the prime or of the prime’s effect; that is, decisions were made nonconsciously.

Nonconscious priming can even take the form of subtle exposures to novel stimuli of which people are not aware. Maimaran and Wheeler (2008) exposed people to variety and homogeneity arrays using geometric shapes. Exposure to variety arrays nonconsciously increased participant’s variety seeking nonconsciously. Exposing participants to arrays featuring a unique shape caused participants to choose unique objects over common objects and interacted with need for uniqueness. Uniqueness arrays had no effect on variety seeking, and variety arrays had no effect on uniqueness seeking. The researchers found that stimuli which had no existing association or

meaning could affect choice behavior. This suggests high-level concepts and associations are not necessary for people to extract their own categorization processes and implications from their environment.

Subliminal activation has been found to motivate need-related behavior when no need is present (Veltkamp et al. 2011). Subliminal conditioning was accomplished by subliminally priming a behavior (drinking water) and linking it to positive affect. The authors were able to increase water consumption using nonconscious conditioning in a low deprivation condition when the subliminally primed behavior was linked to positive affect. Motivation to drink water remained in effect even though participants have eaten high water content food (cucumbers). This suggests participants were motivated to perform the action that was subliminally primed and linked to positive affect. Thus, Veltkamp et al. (2011) show that subliminal conditioning can motivate consumers as if they were deprived. This finding conflicts with the traditional view of motivation wherein deprivation results in the need-related behavior.

Another form of motivation, variety-seeking and consistency behaviors, has been tested through priming (Fishbach et al. 2011). When participants were primed with a positively valenced evaluation task (variety versus consistency), subsequent choice criteria influenced participants' choices outside of their conscious awareness. This nonconsciously activated construal of consumption also affected participants' evaluations of their own choice and influenced the amount of variety in his or her choice of snacks.

Creativity can also be affected through priming nonconscious processing (Brown and Bhadury 2006). The investigators found that when no external primes (in the form

of product exemplars) were used, art directors designed a significantly larger number of creative ads. The authors posited that external primes create a “path of least resistance and produce less creative output … whereby some similarity to the examples shown to participants will be exhibited in the output” (Brown and Bhadury 2006, p. 22). Thus, when the analogies and exemplars used in the advertising design task are more remote, the creativity of the output will be greater.

Nonconscious processing can even result in belief formation. Priming subjects with a fictitious name brand can later create the belief in them that the brand actually exists (Holden and Vanhuele 1999). Implicit memory processes caused subjects to believe the brand existed because they were familiar with the brand. However, subjects could not recall when they had been exposed to the brand name. This false fame works because of a nonconscious memory process in which the participants are unaware of the actual source of the memory effect. Though they may be aware that the memory influences the behavior, they misattribute the memory to the wrong source. In effect, priming creates a new memory structure that is then considered part of the person’s set of structures.

Decision Making

Priming has also been found to activate knowledge structures and increase the likelihood of interpreting ambiguous product information in print advertising (Yi 1991). Participants were primed by showing them advertisements emphasizing the focal attributes. When exposed to the target brand with an ambiguous description, the subjects evaluated the brand using the same attributes for which they were primed.

Ethical judgments of marketing practices have also been influenced using priming (Kellaris et al. 1996). Kellaris et al. primed participants with a scenario featuring an unethical marketing practice. The same participants subsequently rated an ambiguous target scenario as more ethical. Those primed with an ethical marketing practice found the subsequent ambiguous target scenario as more unethical. Participants with a high need for cognition (NFC), who were unaware of the potential bias that could be induced with priming, exhibited a contrast effect. But when informed of the treatment, they were not influenced by the priming. Of interest, subjects low in NFC, who had been made aware of the bias from the priming treatment, exhibited the contrast effect.

Decision making can be affected when researchers use hypothetical questions to prime biasing (Fitzsimons and Shiv 2001). The researchers primed participants with web-content on two political candidates in another state. The control group received mildly supportive information for one or both candidates. The experiment group received the same information plus a negative information manipulation in the form of a hypothetical question (If you learned the candidate had been convicted for fraud, would your opinion decrease or increase?). Participants receiving the negative experimental treatment showed a substantial decrease in voting for the client. Hypothetical questions were found to increase the level of cognitive elaboration. The relevance of the information on the topic being questioned moderated the effect of the hypothetical question on the choice. When relevance was high, the impact of the hypothetical question was also high. When relevance was low, the hypothetical question did not have an impact.

Lee (2002) uses priming to develop the concept of implicit memory, a noncognitive memory inferred from an improvement on a subsequent task. Priming in an isolated context (word only) as opposed to in a meaningful context (within a sentence) increased perceptual priming and stimulus-based choice. Thus stimulus-based decisions required more perceptually driven processes than memory-based choices which relied on conceptually driven processes. The findings indicate that stimulus- and memory-based choices involve different processes, and they require different priming methods to elicit either perceptual fluency, for stimulus based conditions, or elaboration, for memory-based conditions.

Researchers have used priming to explore decision making. Carlson and Bond (2006) tested if decision makers who were preexposed to attribute levels would be less influenced by the context in which they made the decision. Using three different context effects (attribute priming, decision framing, and asymmetric dominance), the authors found that prior exposure through priming mitigated the effect of the context on the decision. Further, when participants generated their own list of attributes prior to the choice task, they reduced the level of influence of the context on the decision. Because the cognitive act of generating attributes from memory can diminish the priming effect, Carlson and Bond's findings support Kellaris et al's. (1996) discovery that people who are aware of the bias induced by the prime are not influenced by the prime.

Product labeling can also prime consumers. Using priming to test decision making, researchers have found that associating health-references with low-fat products actually leads consumers to over consume those products (Geyskens et al. 2007). They also found that when primed with health primes consumers had an altered perception of

their current weight: They thought they weighed less than they did. They were also more likely to report that the difference between their current weight and their ideal weight was smaller than participants who received a neutral prime.

Priming has been found to affect product preference. Labroo, Dahr and Schwarz (2008) found that priming participants with a visual identifier can affect product preference. By exposing a person to a visual identifier/concept (semantic priming) they increased the person's ability to perceive a physical feature on the label (perceptual fluency). This perceptual fluency increased participant liking of the product. For example, priming the concept of a frog will lead to higher liking of a product with a frog on its label. Thus the prime and the target need not have a meaningful association (mental representation or schema) to be meaningfully associated. This goes counter to the understanding that conceptual fluency requires that the semantic prime and the target belong to the same memory association.

Superstitious beliefs in judgment, product satisfaction and decision making under risk can also be affected by priming and nonconscious thought processes (Kramer and Block 2008). For example when products fail, consumers who hold positive superstitions about the product are not satisfied with the product; whereas those who hold negative superstitions about the product are satisfied with the product when it fails. Also when participants have a negative superstition that is salient, their choices are more risk-averse. However, the effect of the superstition is three times greater when they operate nonconsciously than when they operate consciously.

Kramer and Block (2011) relied on priming to investigate how peculiar beliefs (sympathetic magical thinking / superstition / contagion) in decision-making are affected

by conscious and nonconscious processes. Using a focal market of an online interactive auction, the authors tested the moderating role of experiential processors (nonconscious systems) against rational processors (conscious systems) on backward contagion on the sale of a teddy bear to a sex offender or a mother of a young child. When the buyer was a sex offender, those with greater experiential/nonconscious processing showed a lower willingness to accept the reservation bid amount and greater levels of reservation bid acceptance when the buyer was the mother of a child. No significance was found for rational processors (conscious systems). In effect, beliefs about backward contagion were found to operate nonconsciously but not consciously.

Life itself can be full of primes because people carry drinks, wear branded clothing, and choose other branded materials. Ferraro, Bettman and Chartrand (2009) have studied how these incidental consumer brand encounters (ICBEs) influence brand choice. By priming participants with pictures of people using different branded goods, the authors found that increased incidental exposure had a positive effect on target brand choice. While priming exposure to the brand influenced the choice of the brand, repeated exposures decreased the choice of the brand. It is thought that repeated exposure gives the participant enough information that he or she can diagnose the exposure and counteract it.

The prime of a person's group affiliation influenced how the ICBEs affected the participant's beverage choice. When the primed picture contained a person of the out-group using the product, all participants reacted negatively. However, when the primed picture contained a person of the in-group using the product the percentage choosing the target beverage increased with the number of exposures, when the participants

were independents. Thus when people see certain social groups using a certain brand, their positive or negative view of those users has a moderating effect based on the repeated exposures to that brand.

Liu and Smeesters (2010) used priming to investigate how consumers' preferences for foreign and domestic brands were affected by death-related media contexts. The researchers had participants view television news reports of either September 11 terror attacks (experimental condition) or a new dental technique for filling cavities (control condition). The researchers then tested brand liking and patriotism. They found that death related news sparked preferences for domestic brands. Patriotism was found to mediate the preference of the domestic brands in a delay condition.

Priming has been used to examine how individuals evaluate hybrid products. Rajagopal and Burnkrant (2009) primed people with either relational interpretations (a relationship is posited between the categories) or property interpretations (a property or attribute of one category [modifier] is attached to the second category [head]). The authors found that priming of properties prior to exposure to product information induced multiple category beliefs about the product in participants. The participants were found to hold beliefs about both the head and modifier categories of the products. Modifier category beliefs also predicted the attitude of respondents using the property-processing strategy. Priming of properties gave consumers faster access to attributes of the modifier category in the hybrid product than relational priming. The researchers also found that relative category knowledge can moderate the creation of multiple category beliefs.

Similar findings in measures of satisfaction when choosing from assortments support the power of nonconscious processing. Messner and Wanke (2011) found that distracting consumers before they chose from a large and small assortment of pralines increased their satisfaction of the choice. Consumers, who either deliberated before choosing or chose spontaneously, from a large assortment (versus a small assortment) of pralines reported lower levels of satisfaction. For both conditions, participants reported higher satisfaction from choosing from a smaller assortment (6 vs. 24). However when participants were distracted for 450 seconds prior to choosing, they reported higher satisfaction when choosing from the large assortment. Nonconscious processing (thinking) is thought to provide cognitive capacity to handle complex product information and simultaneous comparison.

Sleeth-Keppler and Wheeler (2011) found that consumer experiences can activate associations between different dimensions. These associations will in turn influence evaluations in subsequent contexts that are different. The researchers tested a multidimensional priming hypothesis to determine when accessible constructs will influence judgment. Exposure to products (e.g. Ferrari vs. Kia) activated constructs (e.g. expensive vs. economical). These activated constructs then affected how participants estimated the cost of drinks in a foreign restaurant. These effects were observed under different domains (wages of lawyers, real estate prices) even when the exposure to the product was incidental. However, if the primed construct was not salient (mismatched) to the associated activated construct, the participants failed to use the primed construct. Thus the additional associated construct must match the target construct to be effective: salience of the associated construct must match the judgment target.

Simple primes that are perceptually related can easily create automatic conceptual associations between different concepts and influence attitudes, beliefs and choices (Dimofte and Yalch 2011). Dimofte and Yalch showed that incidental exposure to information that shares a perceptual or semantic similarity to a target, but no logical relationship to the target, can affect consumer judgment and evaluation. The researchers found that participants could easily build conceptual associations between independent concepts by associating simple perceptually related primes. These conceptual associations were formed nonconsciously. To form these automatic conceptual associations, participants needed only to be familiar with the concept and have no explicit linkage between the concepts.

Nonconscious thought may be activated without priming by merely distracting conscious thought. Bos, Dijksterhuis and van Baaren (2011) found that nonconscious thought could create an automatic weighting system such that attributes that are important to the decision receive greater weight than unimportant attributes. They tested this by creating an experiment in which participants were asked to choose between "Quality Cars" and "Frequency Cars." The former had few important positive product attributes. The latter had many unimportant negative product attributes. The control group made their decisions immediately after reading the materials. The treatment group worked on an unrelated distraction task for five minutes prior deciding. In comparison with immediate decision makers, the unconscious (those who "slept on it") showed significantly more weighting. In a subsequent experiment, when the attributes were measured, quality was preferred over frequency; however, unconscious thinkers chose this significantly more than immediate decision makers. Thus unconscious

thought generates an automatic weighting process, yet the weighting process does not occur because of differences in free recall.

Thought Processes: A History of Bifurcation

Sigmund Freud (1923/1989) outlined his view of the unconscious in The Ego and the Id. He treated the unconscious as an outcome of his theory of repression. In this theory the ego (conscious mind) banishes painful or unwanted desires and impulses into the unconscious (the id) as a defense against thoughts that would be too difficult or painful for the conscious to bear. Freud based these insights on the observation that his clients were unaware of their repression (defensive processes). While Freud postulated that other parts of the unconscious may exist, he was primarily concerned with the part of the ego that caused repression (Cortina and Liotti 2007).

On the other hand, William James considered the unconscious as a sort of secondary consciousness that was cut off from normal consciousness, which he considered the main part of the brain (1890/1950). More importantly, he viewed the subconscious as a form of consciousness that could be reached and made to reveal itself. He also provided the first description of automaticity (Weinberger 2000). James (1890/1950) hypothesized that habitual behaviors occur because they do not require consciousness. James gave us some inkling of how the unconscious works. He described a fringe of relations around every conscious state. While not a direct representative of the conscious state, the fringe is the unconscious connotation of the person’s stream of thought which colors every thought and confers meaning to the

thought. James offered the first model of unconscious processing—with successive states of mind featuring overlapping fringes (Weinberger 2000).

Developing from these roots, two-factor theory of the mind posits that two paths exist through which information can be processed, coded, and stored. One path is called the implicit/procedural process. The other is known as the explicit/declarative process. These two processes begin with infant development (Fosshage 2005). Implicit/procedural systems feature four main characteristics. Knowledge is acquired slowly and incrementally through learning and practice. The knowledge is reliable in that once it is learned, it is difficult to forget. This knowledge is inflexible in that it is activated only when certain skills or patterns are necessary because they were previously associated with it. This knowledge cannot be consciously recalled. It is learned during infancy and become expectations that build up over time. Implicitly coded experiences are incredibly powerful and adapt to the social situation (Cortina and Liotti 2007). Explicit/declarative systems develop at the time infants begin to acquire language and symbolic systems.

Cortina and Liotti (2007) describe four main characteristics of explicit/declarative systems. This system is fast, as things can be learned in one try. It is fallible because memory degrades over time. This system is flexible in that it can translate into different contexts. It is available to the conscious mind.

Nonconscious processing is contrary to the received view of decision making in consumer research, in which decision making is treated as cognitive and reliant on explicit/declarative systems. The best known social cognition models in consumer research are Petty, Cacioppo and Schuman's (1983) elaboration likelihood model (ELM)

and Chaiken's (1980) heuristic-systematic model (HSM). Each information-processing model views decision making as conscious and deliberative.

ELM has two routes to persuasion and hence decision making, the central route and the peripheral route. The central route is clearly a cognitive route, "resulting from a person's diligent consideration of information that s/he feels is central to the true merits" (Petty et al. 1983, p. 135). Some might interpret the peripheral route as not cognitive because the person has not evaluated all the pros and cons of the situation. However, Petty et al. (1983) note that the person makes simple inferences and list a variety of factors that might influence a peripheral route. These factors include

- Attitudinal inferences based on observations of one's own behavior
- Whether the ad falls within the person's parameters for acceptance or rejection
- Whether some situational utility is relevant to decision
- Whether the inference is associated with secondary cues such as a pleasant picture.

These factors all entail some level of cognitive thought; although the cognitions are small compared to a pro and con comparison. Observing one's own behavior requires cognition: self-awareness. Drawing inferences from an argument also requires cognition; it requires deliberative thinking about the situation and its meanings. Judgment requires cognition. Judging whether an ad falls within the person's parameters for acceptance requires evaluation, another form of cognition. Decision making based on associating pleasurable or painful secondary cues also requires cognition. This act requires the person to explicitly say, I like this. Once the concept of "I" is bought into play, cognition is taking place. James (1890/1950) demonstrates this in his distinction between I and me. The "I" creates a metaphoric space for the "me" to

move through. The “I” sees the “me” as a protagonist in the action that is pictured (Hermans et al. 1992). This action requires awareness, the basis of conscious thought.

The problem with cognitive thought in ELM lies in its title: elaboration. The central route requires considerable effort toward cognition while the peripheral route requires less of it. The peripheral route is not automatic, nor is it nonconscious; it just requires less elaboration on the part of the subject. Thus the central route and the peripheral route each rely on conscious thought.

The heuristic-systematic model (HSM) is also a cognitive model. Chaiken (1980) posits that message recipients are concerned with assessing the validity of a message’s conclusion. People who use the systematic view bring to bear lots of cognitive effort; however, those who rely on the heuristic view expend little effort in judging. They tend to focus on simple rules or cognitive problem solving in understanding the meaning of messages. “Heuristic information processing may involve the use of relatively general rules (scripts, schemata) developed by individuals through past experiences and observation” (Chaiken 1980 p. 753).

The heuristic view relies on scripts and schemata, both of which are explicit/declarative systems that develop at the time of language and symbolic development. Last and most central to HSM is the assessment of conclusions, which is a deliberate form of thinking and thus of cognition. The use of simple rules and problem solving also require awareness. Whether a person uses the heuristic or systematic view makes little difference, Chaiken’s HSM can only be considered a cognitive model.

Neurological Underpinnings of Nonconscious Thought: A Brief Description

To understand the biology behind unconscious processing, a brief tour of and a short history of the brain are in order. One can trace the evolution of the human brain through its topography because each subsequent evolutionary improvement rests on the foundation of the previous structure. Neuroscientist Paul MacLean refers to this as the triune brain (Holden 1979). The lowest and oldest section of the brain is often referred to at the reptile brain, as it most resembles the brains of modern reptiles. It consists of the brainstem, medulla, and cerebellum. These areas of the brains control a person's breathing, heartbeat and blood pressure, the so-called vegetative states of being. These systems operate outside of human awareness.

Upon the foundation of the reptile brain sits the paleomammalian brain, which consists of the thalamus, the hypothalamus, and the limbic system. The limbic system is the generator of the body's emotions, appetites, and urges. These operate nonconsciously and are experienced by the person without awareness. The amygdala processes emotion and stores emotional reactions and basic emotions. The amygdala is part of the brain's limbic system and processes facial expressions, such as fear and disgust, and vocal expression, such as the tonal qualities. LeDoux (2000) observes that the amygdala's power stems from its ability to work "quick and dirty." Thus the only information it can handle must be simple, such as the elementary emotions (happiness, fear, disgust, anger and parental love). These systems of the paleomammalian brain also operate outside of human awareness.

The most recently evolved part of the brain, the neomammalian brain sits above the paleomammalian brain. It contains the cortex with its four lobes (listed back to

front)—occipital, parietal, temporal and frontal. The occipital lobe handles visual processing. The parietal lobe handles movement, orientation, and some forms of calculation. The temporal lobes deal with speech recognition and some forms of memory. Most important for this research are the frontal lobes, which are concerned with thinking, conceptualization, and planning. In short, the frontal lobes handle abstraction. The highest form of abstraction is conscious awareness, defined as "an organism's awareness of its own self and surroundings" (Damasio 1999). Conscious awareness is the key component in our bodies that allows us to have an experience of emotions, desires, and other personal states. Conscious awareness allows us to examine our lives; in short it allows us to think about ourselves. Other than the great apes, this self-awareness is the province only of humans (Guise et al. 2007).

Conscious awareness and abstraction have typically provided the areas within which research has been conducted. Most research in consumer behavior and decision-making has relied on what participants can tell us about themselves, their situation, and their decision-making processes. However, people often do not know or are unaware of these processes. Because their answers require language and self-reflection, people fall into a consciousness trap: they try to think why they did something and come up with an answer that makes sense (i.e. sounds logical). In effect, their self-awareness skews the truth about their process.

Beyond Conscious Thought: Damasio's Somatic Marker Hypothesis

Damasio's (1994; Damasio et al. 1996) somatic marker hypothesis (SMH) proposes that emotional processes within the brain can affect decision making. The

somatic marker hypothesis corrects some shortcomings of the received view of decision making, and the emotional processes it relies on operate outside of awareness.

The received view of decision making is that decision making is rational—cost-benefit analysis of sorts about a certain situation. It takes a long time because each factor must be closely examined and weighed. When the factors are manifold, processing time increases. Faced with complex and conflicting choices, decision-makers are often overwhelmed. Sometimes they even get lost in the process. In effect, decision makers cannot rely on solely on cognition and rationality to make the decision. Damasio posits that people must rely on somatic markers. These somatic markers occur in the body and reinforce the stimuli the decision-makers face. This reinforcement induces an emotional state in the person.

Two of the brain's structures are closely involved in the process: the amygdala and the orbitomedial prefrontal cortex. As explained earlier, the amygdala is part of the brain's limbic system, generates the body's emotions, appetites, and urges. Although people experience these emotions, appetites, and urges that the amygdala processes, they are unaware of them. The amygdala processes and store reactions to basic emotions (Morris et al. 1998). It sorts out facial expressions (Morris et al. 1999) and tonal qualities of voices in a basic and lightning-fast manner. The amygdala operates outside of human awareness. Its partner structure, the orbitomedial prefrontal cortex, is critically involved in processing the feeling of emotions (Heinzel and Northoff 2009). The feeling of emotions is the subjective perception of changes within one's own body of emotional experiences, such as the experience of revulsion or envy. Feeling an emotion is a two-way street. Not only can the feeling of the emotion create an affective (visible)

response, creating just the muscle facial muscle positioning will elicit the feeling of the emotion within the individual (Ekman 1992).

Though the orbitomedial prefrontal cortex handles the feeling of these emotions, the structure also serves as a clearinghouse for all the activities of the mind and body. These include information from the limbic system, which regulates processing of and reaction to basic emotions. By working together, the prefrontal cortices and the amygdala create an “as if” state that informs other parts of the brain to act on the stimuli (Damasio et al. 1996). This “as if” mechanism is socially tuned and relates closely to somatic states based on reward and punishment in infancy and early childhood (Papousek and Papousek 1992). Humans create somatic markers through socialization and education. Humans pair critical stimuli with feelings in the body as an adaptation to the environment. Because we are constantly learning, these somatic pairings continue to grow. Because people are unaware of the process, when they consider their actions after the fact, the acts are often labeled as intuition (Damasio 1994).

Damasio’s somatic marker hypothesis posits that these emotional processes focus the decision making processes that rely on reasoning and cognition. As humans begin their decision making processes, the key components on which they base these decisions enter the mind instantaneously, too fast for clear definition, and vaguely defined. At that moment, they get an unpleasant gut feeling, a somatic state. This forces them to immediately and unconsciously discard the option that elicited that unpleasant gut feeling. The remaining options are those we consciously choose from. In effect, somatic markers allow us to automatically qualify what options we will consider.

Damasio describes this process accordingly:

> Biological drives and the automated somatic marketer mechanism that relies on them are essential for some rational behaviors, especially in the personal and social domains, although they can be pernicious to rational decision-making in certain circumstances by creating an overriding bias against objective facts or even by interference with support mechanisms of decision making such as working memory. (Damasio 1994, p. 192)

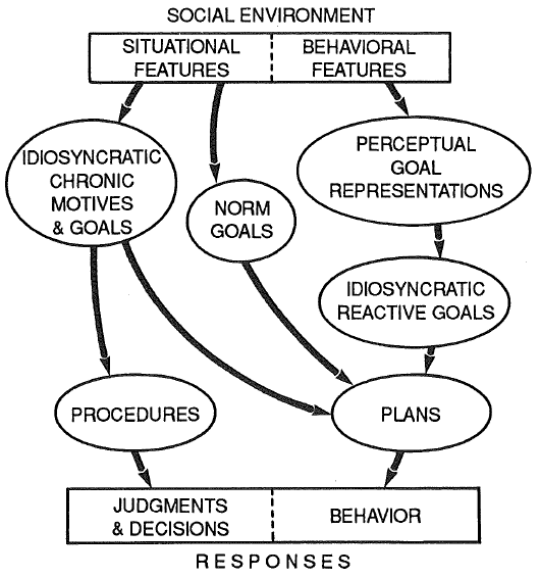
Development of Hypotheses

This section establishes the rationale behind each research question described in the previous chapter and outlines the specific hypotheses that will be tested in this dissertation.

In his examination of the past 25 years of priming research, Bargh (2006) notes that science has documented the pervasiveness of priming effects in many areas such as appraisal, motivation, goal-pursuit, perception, judgment and social behavior. He notes that science should move ahead into a second generation of questions. This dissertation aims to explore the most important of these second generation questions: How do we control primes in the activation of nonconscious processes?

Bargh's (1990) "auto-motive" model (Figure 1) provides a suitable framework to investigate these questions. The auto-motive model for nonconscious activation of posits the automatic associative links between mental representations of goals and motives and the mental representation of the social situations in which those goals and motives have been previously pursued. This associative link in memory is automatically activated when relevant triggers appear in the environment. Once activated, they guide the person's behavior "without the person's intention or awareness of the motive's guiding role" (Bargh 1990, p. 100).

FIGURE 1
Auto-Motive Model



Evidence supporting the individual's lack of intention or awareness in these processes comes from various sources. In the study of child development, children are observed to begin goal-directed behavior prior to developing the capacity for intentional behavior, with intentional behavior defined as the creation of goals without the external stimulus (Piaget 1952). Therefore goal directed behavior can occur without intent, which requires cognitive control. Several studies in neuroscience indicate that the brain fires to ready the body for voluntary action outside of conscious awareness (Libet 1999; Libet 2002; Libet 1985). This readiness for voluntary action occurs prior to conscious awareness of the intention to move. Taken together this evidence from child development and neuroscience lend strong support to automatic activation outside of conscious awareness.

Damasio's (1994; Damasio et al. 1996) somatic marker hypothesis builds on this, positing that emotional processes affect decision making and do so out of conscious

awareness. Specifically, people use somatic markers to reinforce the stimuli they must contend with to make decisions. Central to this process is the human amygdala, a brain structure that process and stores basic human emotions without conscious awareness (Öhman 2002). Working in concert with the amygdala, the orbitomedial prefrontal cortex creates an "as if" state in the brain when the stimulus appears totally outside of conscious awareness (Damasio et al. 1996). Thus these emotional processes focus conscious decision making in an almost instantaneously yet vaguely defined way. We often label it a "gut feeling."

Bargh's (1990) "auto-motive" model combined with Damasio's (1994; Damasio et al. 1996) somatic marker hypothesis create a robust framework for examining the effect of priming on nonconscious processes relevant to marketing.

The Question of the Control of Primes in the Activation of Nonconscious Processes

Bargh (2006) has called for investigators to determine how investigators can control or shape a prime. To date this problem has received only a negligible amount of investigation by social psychologists and none at all by marketing researchers. Therefore, this aspect of the effects of nonconscious activation merits exploration.

Marketing research examining the effects of priming emotions is still in its infancy. Yi (1990) primed groups with positive and negative affect and found that it influenced attitude toward the ad and purchase intent. A few others have used positive and or negative valence in conjunction with another task. Fishbach et al. (Fishbach et al. 2011) created valenced evaluation tasks to test choice outside of participants' conscious awareness. Fitzsimons & Shiv (2001) used negatively valenced hypothetical

information to test voting motivation. Liu and Smeesters (2010) relied on priming with death-related media contexts to test preferences between foreign and domestic brands. While these investigations may have used emotions or feelings, they have done so in an indirect manner.

Social psychology researchers have used affect in a more structured manner. Custer and Aarts (2005) primed participants with words depicting positive and neutral affect and found that the participants primed with the positive affect raised participant motivation in subsequent tasks and evaluation processes. Aarts et al. (2007) used printed words to prime negative affect and found that negative affect can moderate nonconscious goal priming when they are coactivated. Storbeck and Clore (2008) used classical music (without words) to prime positive and negative affect and found that negative affect inhibited both semantic and affective priming. Winkielman et al. (2005) subliminally primed participants with faces, valenced as happy or angry, to test how much of a beverage participants would pour and consume. The researchers found that those primed with smiles poured and drank more than those primed with frowns and were also willing to pay more for the beverage. Whereas Winkielman et al. (2005) have affected both consumption and product evaluation through priming, the question arises whether other behaviors central to marketing can be primed, specifically a prime to buy. Therefore it is logical to propose as follows:

> Hypothesis 1: After exposure to a nonconscious prime to buy, participants will exhibit higher product evaluation and higher purchase intent than participants primed with a nonconscious prime to walk.

Though the Winkielman et al. (2005) study uses faces (angry/frowning and happy/smiling) to test consumption, it leaves various other questions unanswered. It

does not test the faces of the other basic emotions (contempt, disgust, fear, sadness, and surprise). Secondly, the study does not test the effect of the facial prime in conjunction with a prime to buy. Last, it does not measure mood arousal post priming or intention to buy post priming.

Therefore, it is logical to propose as follows:

> Hypothesis 2A: Participants nonconsciously primed with the emotion of happiness will exhibit higher levels of happiness and higher levels of general activation arousal (GA) (energized) than those primed with the emotion of neutrality.

The findings from this hypothesis will extend the findings of Winkielman et al. (2005) that the happy face raises mood arousal and consumption. This experiment should find that the happy face increases positive (energized) lower mood arousal and higher levels of reported happiness than the neutral face.

> Hypothesis 2B: Participants nonconsciously primed with the emotion of anger will exhibit higher levels of anger and higher levels of high activation (HA) (negative) than those primed with the emotion of neutrality.

The findings from this hypothesis will corroborate and extend the findings of Winkielman et al. (2005) that the angry face raises mood arousal and consumption. This experiment should find that the angry face increase levels of high activation mood arousal (anxiety) and higher levels of reported anger than the neutral face.

> Hypothesis 2C: Participants nonconsciously primed with the emotion of surprise will exhibit higher levels of surprise and higher levels of general activation (GA) (positive) than those primed with the emotion of neutrality.

Seeing surprise on someone's face should spark attention and interest in the observer. To that end, the findings from this hypothesis should show that the face exhibiting surprise should intensify the effect of the buying prime and produce higher mood arousal and higher intention to buy than the neutral face. The rationale for this reaction

is that seeing the face of surprise should raise interest and evoke a similar feeling in the recipient of the prime. This heightened interest should arouse the desire in a person to buy.

> Hypothesis 2D: Participants nonconsciously primed with the emotion of contempt will exhibit higher levels of contempt and higher levels of high activation (HA) (negative) than those primed with the emotion of neutrality.

The face of contempt shows a deep dislike, even hatred. In many respects, the face of contempt has a similar effect as the face of anger. It distances the person who shows the contempt from the person the contempt is aimed at. Like anger, contempt pushes others away; therefore, the face of contempt should show similar effects as anger on mood arousal and consumption. This experiment should find that the contemptuous face raises the level of high activation arousal (anxiety) and raises the level of reported contempt than does the neutral face.

Because the Winkielman et al. (2005) study only primed and then measured consumption it poses another question. How can nonconsciously instigated influences (primes) be controlled and shaped? Can one prime affect another prime and will it have an effect on mood arousal and intention to buy?

Therefore, it is logical to propose as follows:

> Hypothesis 3A: The effect of behavioral primes (buy primes) will be moderated by the emotional prime of happiness. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of happiness will exhibit higher product evaluations and higher intention to buy than those participants primed with the emotion of neutrality.

The findings from this hypothesis will extend the findings of Winkielman et al. (2005) that the happy face raises down mood arousal and consumption. This experiment should find that the happy face in conjunction with a buy prime should raise the effect of

the buying prime and produce higher mood arousal and higher intention to buy than the neutral face.

> Hypothesis 3B: The effect of behavioral primes (buy primes) will be moderated by the emotional prime of anger. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of anger will exhibit lower product evaluations and lower intention to buy than those participants primed with the emotion of neutrality.

The findings from this hypothesis will extend the findings of Winkielman et al. (2005) that the angry face drives down mood arousal and consumption. This experiment should find that the angry face in conjunction with the buy prime should attenuate the effect of the buying prime and produce lower mood arousal and lower intention to buy than the neutral face.

> Hypothesis 3C: The effect of behavioral primes (buy primes) will be moderated by the emotional prime of surprise. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of surprise will exhibit higher product evaluations and higher intention to buy than those participants primed with the emotion of neutrality.

The findings from this hypothesis will extend the findings of Winkielman et al. (2005) that angry faces and happy faces can affect mood arousal and consumption. This experiment should find that the face of surprise in conjunction with the buy prime should amplify the effect of the buying prime and produce higher mood arousal and higher intention to buy than the neutral face.

> Hypothesis 3D: The effect of behavioral primes (buy primes) will be moderated by the emotional prime of contempt. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of contempt will exhibit lower product evaluations and lower intention to buy than those participants primed with the emotion of neutrality.

The findings from this hypothesis will extend the findings of Winkielman et al. (2005) that angry faces and happy faces can affect mood arousal and consumption. This

experiment should find that the face of contempt in conjunction with the buy prime should lower the effect of the buying prime and produce lower mood arousal and lower intention to buy than the neutral face.

By combining Bargh's (1990) "auto-motive" model for nonconscious activation with Damasio's (1994; Damasio et al. 1996) somatic marker hypothesis, this investigation should further demonstrate how primes can be controlled or shaped. Previous research has relied heavily on valence to test affect and priming (Aarts et al. 2007; Custers and Aarts 2005; Storbeck and Clore 2008; Winkielman et al. 2005; Yi 1990). The difficulty with valence is that it comprises only two positions and human activity recognizes many different emotions. Only Winkielman et al. (2005) relies on the use of faces to test priming effects, however they too rely on valence (happy = positive / angry = negative). This investigation should shed light on how emotion can shape priming.

Findings from this investigation have direct implications for personal selling and retailing. In personal selling the seller can prime the buyer to use, test, or buy the product. The product literature sellers that prepare for customers also serve as a prime. Likewise the salesperson's facial expressions also serve as a prime. Being able to understand how these two primes interact would be of great interest to sales managers. Retail managers would also benefit from understanding how their personnel's facial primes might affect the primes that customers receive from advertising, signage, and in-store announcements. Knowing how to control and shape these primes could help them increase sales and market share.

CHAPTER 3

METHODOLOGY

This section outlines the methodology used to explore the two research questions outlined in the previous chapters, namely: How can nonconsciously instigated influences (primes) be controlled and shaped by marketers? These research questions were investigated within the context of three discrete experiments.

Experiment 1 was structured to develop and test a 'buy prime' which was central to all subsequent experiments for addressing the two research questions. The associated hypothesis for Experiment 1 is as follows: after exposure to a nonconscious prime to buy, participants will exhibit a higher motivation to buy as evidenced by higher product evaluation and higher intention to buy than participants exposed to a nonconscious prime to walk.

Experiment 2 tested primed emotions that could directly affect a variety of attitudinal and behavioral outcomes, and that could also moderate the effects of the original buy prime. This was the essence of the second research question: can primes be shaped and controlled? In general, it was expected that these primed emotions (positive and negative) would have direct effects on select consumer beliefs, attitudes, and consumption-related behaviors. To this end, several types of emotion were pre-tested. Two positive emotions (happiness and surprise) and two negative emotions (anger and contempt) were tested. The proposed manipulation consisted of a series of facial expressions commonly associated with the selected emotional states. Each facial expression was compared against a neutral condition (facial expression of neutrality), which serves as a control. The specific details of this experiment are discussed later in

this chapter. Table 1 below outlines the expectations (framed as hypotheses) associated with this pre-test.

TABLE 1
Research Question and Associated Hypotheses for Experiment 2

How can nonconsciously instigated influences (primes) be controlled and shaped by marketers?	
Hypothesis 2A	Participants nonconsciously primed with the emotion of happiness will exhibit higher levels of happiness and higher levels of general activation (GA) (positive) than those primed with the emotion of neutrality.
Hypothesis 2B	Participants nonconsciously primed with the emotion of anger will exhibit higher levels of neutrality and higher levels of high activation (HA) (negative) than those primed with the emotion of neutrality.
Hypothesis 2C	Participants nonconsciously primed with the emotion of surprise will exhibit higher levels of surprise and higher levels of general activation (GA) (positive) than those primed with the emotion of neutrality.
Hypothesis 2D	Participants nonconsciously primed with the emotion of contempt will exhibit higher levels of contempt and higher levels of high activation (HA) (negative) than those primed with the emotion of neutrality.

Experiment 3 investigated the second research question (how can nonconsciously instigated influences (primes) be controlled and shaped by marketers?) and its associated hypotheses. The basic hypothesis of this experiment was that the effect of behavioral primes (buy primes) could be moderated by primed emotions. Specifically, primed positive emotions would enhance the effect of the behavioral prime

on both product evaluation and intention to buy. Primed negative emotions would reduce the effect of a behavioral prime on product evaluation and intention to buy. Two positive emotions (happiness and surprise) and two negative emotions (anger and contempt) were examined. The research question and tentative sub-hypotheses associated with the moderating effects of these specific emotions are shown in Table 2.

TABLE 2
Research Question and Associated Hypotheses for Experiment 3

How can nonconsciously instigated influences (primes) be controlled and shaped by marketers?	
Hypothesis 3A	The effect of behavioral primes (buy primes) will be moderated by the emotional prime of happiness. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of happiness will exhibit higher product evaluations and higher intention to buy than those participants primed with the emotion of neutrality.
Hypothesis 3B.	Hypothesis 3B The effect of behavioral primes (buy primes) will be moderated by the emotional prime of anger. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of anger will exhibit lower product evaluations and lower intention to buy than those participants primed with the emotion of neutrality.
Hypothesis 3C	The effect of behavioral primes (buy primes) will be moderated by the emotional prime of surprise. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of surprise will exhibit higher product evaluations and higher intention to buy than those participants primed with the emotion of neutrality.
Hypothesis 3D	The effect of behavioral primes (buy primes) will be moderated by the emotional prime of contempt. Specifically, participants exposed to a nonconscious prime to buy and then exposed to the emotion of contempt will exhibit lower product evaluations and lower intention to buy than those participants primed with the emotion of neutrality.

Because this dissertation explored a difficult and challenging matter, it required three separate investigations which built on each other. The first two experiments set the stage to investigate the main research question which was investigated in the third experiment. These discrete investigations required different methodologies, which are described in subsequent sections of this chapter.

Experiment 1: Developing the Buy Prime

Because prior research in nonconscious priming has occurred in social psychology, researchers have developed primes to activate social behaviors. Whereas Winkielman et al. (2005) have affected both consumption and product evaluation through priming, the question arises whether other behaviors of central importance to marketing researchers can be primed. To explore the first research question required a prime useful in a marketing context, i.e. the prime to buy. Accordingly, this section describes the development of an effective prime for shopping behavior that can be used to explore the first research question.

Because consumer behavior researchers have not developed a “buying prime,” this dissertation proposed to create a scrambled sentence task as a buy prime to use in Experiment 1. The scrambled sentence task developed by Srull and Wyer (1979) has been found to be effective for priming nonconscious processes (Bargh et al. 1996; Bargh et al. 2001; Chartrand et al. 2008). The scrambled sentence task has been used to prime behavioral goals (Bargh et al. 2001), information processing goals (Chartrand and Bargh 1996), and impression formation (Bargh et al. 1996).

To prime nonconscious processes in participants, researchers present the scrambled sentence task as a language test or a word comprehension test. Each item consists of a set of five words in random order. The participant must create grammatical, four-word sentences as quickly as possible. The sets are constructed so each sentence will describe a behavior related to the behavior being primed using either an adjective, adverb, or verb semantically linked to the context being primed. Bargh et al. (1996) suggest using 15 sets of words to prime the behavior.

To create a prime for buying behavior, a list of target words comprising adjectives, adverbs, and verbs that describe buying was extracted from a thesaurus and paired with four “filler” words from which the participants will be able to form sentences. To test the effectiveness of the buying prime, another list of target words comprising adjectives, adverbs, and verbs describing a neutral activity (walking) was also extracted from a thesaurus and paired with another set of four “filler” words. The total number of sets was 30, with 15 for the buying prime and 15 for the neutral (walking) prime.

To test the effectiveness of the buying prime, a pretest was conducted using a convenience sample of 60 undergraduate students at the University of North Texas who will receive partial course credit for participation. The pretest was a post-test only control group design (Campbell and Stanley 1963). Participants were randomly assigned to two groups.

Participants were primed and measured using an online survey. Participants were told that they are participating in a pretest for a part of another study and are taking part in a language task and answering some questions about shopping. Participants then received the scrambled sentence task either with the experimental

prime (shopping) or the control prime (walking). To form grammatically correct sentences, participants were required to reorder the words. After the scrambled sentence task, dependent variables for this pretest included product evaluation and willingness to purchase. Product evaluation and willingness to purchase were patterned after Winkielman et al. (2005) in which the researchers used a beverage as the focal product. However, this experiment used images of a variety of household, apparel, electronic, and personal items as the focal items. Participants were shown all four images. After being shown each image, participants were given the Baker and Churchill (1977) purchase intent scale. Inter-item reliability for this scale was reported as 0.89, 0.85, and 0.90 for males and 0.90, 0.89, and 0.86 for females. This three-item instrument was a Likert-type scale anchored at the extremes by (1) “no – definitely not” and (7) “yes – definitely.” The instrument asked the following questions:

- Would you like to try this product?
- Would you buy this product if you happened to see it in a store?
- Would you actively seek out this product in a store in order to purchase it?

The results were summed across the products.

The participants were also be given the Dean and Biswas (2001) product evaluation scale. The authors reported the scale reliability with a Cronbach’s alpha of 0.87.This four-item instrument was a Likert-type scale anchored at the extremes by (1) “strongly disagree” and (7) “strongly agree.” The instrument asked participants to rate the focal product based on the following statements:

- This product is superior.
- This product is the best in its class.

- This product will perform better than similar products.
- This product is definitely a quality product.

The results were summed across the products.

To test that participants were unaware of the priming task, participants were probed using a funnel debriefing pioneered by Chartrand and Bargh (1996). Participants were asked the following questions:

1. What do you believe the purpose of the experiment was?
2. Did you think any of the tasks were related?
3. Did anything you did in one task have an effect on the other task?
4. Have you ever done a Scrambled Sentence Task in an experiment before?
5. Do you remember any of the words or think any words were unusual?

Participants who displayed genuine awareness of the relation of the prime and experimental task were excluded from the analysis. Participants who were aware of the priming task would have confounded the findings because they would have been acting with conscious awareness rather than without conscious awareness.

It was expected that those participants who received the experimental prime (buying) would have higher scores for product evaluation and be more willing to purchase the items than participants who received the control prime (walking). Significance was determined by performing a one-way analysis of variance (ANOVA).

Experiment 2: Selecting the Emotion/Arousal Primes

The second experiment was intended to test if exposing participants to faces demonstrating feelings (neutral, happiness, anger, surprise, and contempt) would elicit

those same emotions and if such exposure also would affect states of arousal as defined by Thayer (1978) (general activation, general deactivation, deactivation sleep, and high activation). The purpose of this experiment was to select the appropriate manipulations for subsequent experiments that examined the moderating effects of emotional primes on the behavioral (buy) prime.

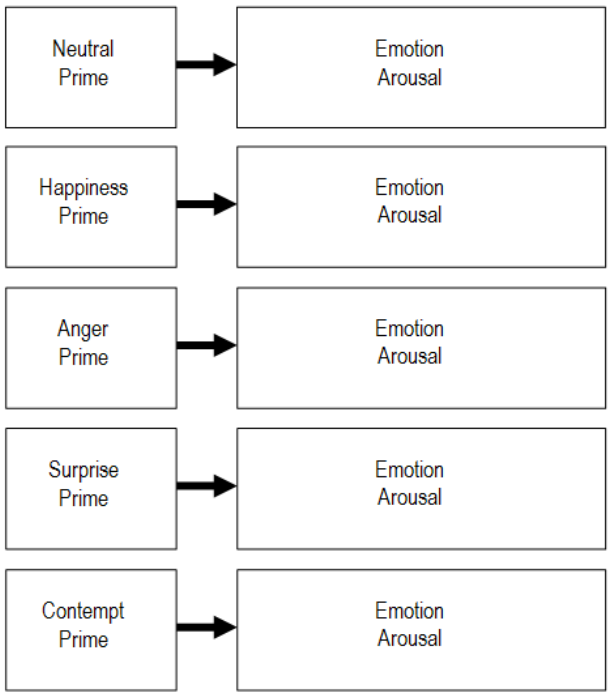
Research Design of Experiment 2

This experiment tested whether the faces to which participants were exposed would be capable of eliciting the hypothesized feelings (neutral, happiness, anger, surprise, and contempt) and states of arousal (general activation, general deactivation, deactivation sleep, and high activation). This step was essential for establishing that the 'faces' manipulation was capable of inducing the desired emotional states employed in Experiment 3. The objective of the experiment was to ensure that the facial images ultimately employed in Experiment 3 primarily elicited the intended emotion and not an alternative emotion. More will be said on this point when discussing the data analysis procedures for the experiment. This experiment was a post-only with control group design (Campbell and Stanley 1963) that featured a single factor consisting of facial expressions exhibiting neutrality, happiness, anger, surprise, and contempt.

Because the experiment called for investigating the effect of a single categorical independent variables on a series metric dependent variables, the resulting data was analyzed using multivariate analysis of variance (MANOVA). MANOVA allowed for the simultaneous assessment of group differences across multiple dependent variables

while controlling for the experiment-wise error rate. A diagram of the experiment is presented in Figure 2.

FIGURE 2
Diagram of Experiment 2



Sample

The experiment required a minimum of 100 participants with at least 20 participants per cell (Hair et al. 2006). Participants were chosen from the population of students at the University of North Texas. Students were offered partial course credit for participating in the experiment. Participants were told the experiment would be used to study “gender identification and its influence on reaction times, moods, and intentions.”

Independent Variable

The independent variable was a subliminally delivered prime of emotional expression (anger, happiness, surprise, contempt, and neutral) presented as facial images. All facial images originated from the Japanese and Caucasian Facial Expression of Emotion (JACFEE) developed by Matsumoto and Ekman (1988). Images are 8 cm x 8 cm and were shown in gray scale. Images were presented in the center of a 22-inch flat screen monitor using RTDirect Software.

Dependent Variables

The experiment relied on two categories of dependent variables. The first was the participants' level of emotion along the five types used in the experiment (anger, happiness, surprise, contempt, and neutrality). Participants were asked to rate their feelings for each of the emotions which were primed by answering "At this very moment, how do you feel right now?" The participants responded using a seven point Likert type scale anchored by (1) "definitely do not feel" and (7) "definitely feel."

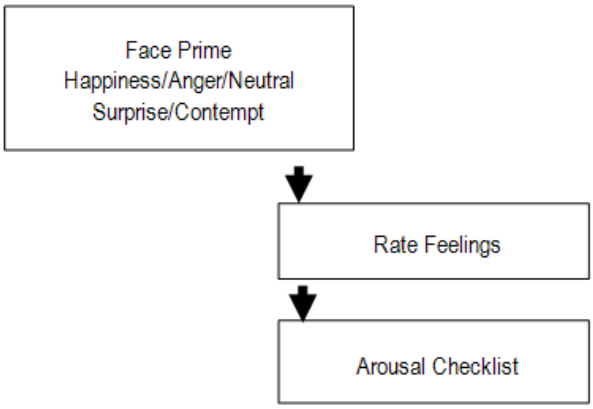
The second category of dependent variable was the level of arousal elicited by the facial primes. Arousal was measured using Thayer's (1978) Activation-Deactivation Adjective Checklist (AD-ACL), a 20-item short form that allowed for a participant self-report. The instrument used a list of adjectives and measures arousal across four dimensions: General Activation (Cronbach's $\alpha = 0.91$), General Deactivation (Cronbach's $\alpha = 0.84$), Deactivation Sleep (Cronbach's $\alpha = 0.89$), and High Activation (Cronbach's $\alpha = 0.84$). The participants responded using a seven point Likert type scale

anchored by (1) “definitely do not feel” and (7) “definitely feel.” Subscales consisted of summated measures on each of these four dimensions.

Procedure

The procedure for this experiment is captured in Figure 3. The face/emotion priming activity was presented within the context of a gender classification task in which subjects were shown pictures of human faces and were asked to classify the gender of these faces. The classification task was repeated eight times by each subject, i.e. each subject will classify eight different faces. Each trial began with a forward mask (50-millisecond), followed by a subliminal prime (16-millisecond expression), and immediately followed by a backward mask (400-millisecond neutral male or neutral female face). Each subject was presented with the same subliminal expression (anger, happiness, neutral, surprise, and contempt) in all eight trials. All facial expressions originated from the Japanese and Caucasian Facial Expressions of Emotion (JACFEE) developed by Matsumoto and Ekman (1988).

FIGURE 3
Procedure for Experiment 2



Images were 8 cm x 8 cm and were shown in gray scale. The images appeared in the center of a 22-inch flat screen monitor using RTDirect Software.

After exposure to the facial prime, participants rated their feelings along five dimensions (happiness, anger, surprise, contempt, and neutrality). The answer was recorded using a seven point Likert type scale anchored at the extremes by (1) “definitely do not feel” and (7) “definitely feel.” Participants then completed Thayer’s (1978) Activation-Deactivation Adjective Checklist (AD-ACL) to measure their level of arousal. The 20-item short form used a list of adjectives and measures arousal across four dimensions: general activation (Cronbach’s $\alpha = 0.91$), general deactivation (Cronbach’s $\alpha = 0.84$), deactivation sleep (Cronbach’s $\alpha = 0.89$), and high activation (Cronbach’s $\alpha = 0.84$). The participants responded using a 7-point Likert type scale anchored at the extremes by (1) “definitely do not feel” and (7) “definitely feel.” To control for order effects, the order of presentation of categories of dependent variables was alternated, such that one half of subjects received the Thayer scale first while one half received it last.

Data Analysis

Data was analyzed via multivariate analysis of variance (MANOVA). MANOVA was appropriate because it allowed for the measurement of two or more metric dependent variables which may be interrelated and vary as a function of the independent variables. MANOVA also allowed for the control of family-wise error rate which is intrinsic to the use of multiple analyses of variance.

Prior to performing the MANOVA, assumptions necessary for using the technique were checked. To assure multivariate normality, Mahalanobis distance was compared to the critical value. To assure independence among the observations, participants took part in the experiment in a quiet computer lab. Individuals were screened from each other, so they would not be able to see the screens of other participants. They received instructions via computer. Prior to testing for homogeneity of variance, first the Shapiro-Wilks test was used to test if the assumption of normality for the variables held. This marginal normality of the individual variables was deemed sufficient to ensure homogeneity of variance (Stevens 2002). Because the groups were approximately the same size, problems with equality of variance would have been minimal. Multivariate normality is difficult to assess. Mardia (1971) noted that provided the smallest cell contains at least 20 observations the normality should hold. Secondly, while univariate normality tests do not guarantee multivariate normality, differences in multivariate normality would be negligible if all variables were found to meet normality requirements of the univariate tests (Hair et al. 2006).

Though Wilks' lambda is often the preferred measure for significance testing, this investigation used Pillai's criterion as the statistical measure. Pillai's criterion is more robust that Wilks' lambda (Olson 1979). This is particularly true when sample size decreases. Though this experiment stipulated that each cell will contain at least 20 participants, this number has been considered a minimum number for a MANOVA of this size. Using Pillai's criterion for significance testing allowed for an extra measure of safety in testing significance.

To determine the differences between specific cells consistent with the proposed hypothesis, a priori contrasts were employed. Planned contrasts specified exactly which groups would be compared rather than comparing the entire model in a post hoc comparison such as the Scheffé method. This exact specification resulted in a greater level of power (Hair et al. 2006). Power analysis was conducted to determine the actual power associated with the sample.

Experiment 3: Exploring the Control of Priming

To begin to understand how to control nonconscious processing, this dissertation explored how social scientists may be able to shape and control primes to which participants are exposed. To accomplish this task, this dissertation used a series of experiments based on a study conducted by Winkielman et al. (2005). Building on experiments 1 and 2, experiment 3 tested whether buying primes and facial primes (as described in Experiment 2) would affect buying intention and product evaluation.

Research Design of Experiment 3

Experiment 3 was a post-only with control group design (Campbell and Stanley 1963), featuring a 2 x 5 design. The first factor consisted of two levels of the behavioral prime (buy vs. walk) and five levels of emotional primes, i.e. neutral facial prime, two negative emotional facial primes (anger and contempt) and two positive emotional facial primes (happiness and surprise). The walking prime and neutral primes served as controls. A diagram of the experiment is presented in Figure 4.

FIGURE 4
Diagram of Experiment 3

	Neutral Facial Expression	Happiness Facial Expression	Anger Facial Expression	Surprise Facial Expression	Contempt Facial Expression
Buying Prime	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention
Walking Prime (Control)	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention	• Emotion • Arousal • Product Evaluation • Purchase Intention

Because the experiment called for investigating the effect of multiple categorical independent variables on five metric independent variables, the resulting data was analyzed using multivariate analysis of variance (MANOVA). MANOVA allowed for the simultaneous assessment of group differences across several dependent variables while controlling for the experiment-wise error rate. The interaction effects and main effects were tested using Pillai's criterion. To examine the differences between groups, contrast coding was used.

Sample

This experiment required a minimum of 480 participants with at least 20 participants per cell (Hair et al. 2006). Participants were chosen from the population of students at the University of North Texas. Students were offered partial course credit for

participating in the experiment. Participants were told the experiment would be used to study “biological rhythms influencing reaction times, moods, and intentions.”

Independent Variables

The major independent variable in this experiment was the manipulated buying prime presented as a scrambled sentence task. The scrambled sentence task to prime shopping behavior and to prime walking was explained previously in the methodological explanation for Experiment 1.

The second independent variable, the subliminal prime of emotional expression (anger vs. happiness; surprise vs. contempt; and neutral) was presented as a series of facial images. As discussed earlier, these facial images all originated from the Japanese and Caucasian Facial Expression of Emotion (JACFEE) developed by Matsumoto and Ekman (1988). As in the previous experiment (Experiment 2), images were consistent in size (8 cm x 8 cm) and were shown in gray scale in the center of a 22-inch flat screen monitor.

Because it was anticipated that the order in which the primes were presented would affect the outcome, half of the participants first received the facial prime followed by the buy prime. The remaining fifty percent of participants were shown the primes in the opposite order, i.e. the buy prime followed by the facial prime.

Dependent Variables and Manipulation Checks

The two dependent variables for this experiment were product evaluation and willingness to buy. In contrast with the last experiment, level of emotion and arousal

level were employed here as manipulation checks to confirm the successful priming of the intended emotions and / or levels of arousal. As in the last experiment, the five emotional states were anger, happiness, surprise, contempt, and neutrality. Participants were asked to rate their feelings by answering "At this very moment, how do you feel right now?" The participants responded using a seven point Likert type scale anchored by (1) “definitely do not feel” and (7) “definitely feel.”

Arousal was measured using Thayer’s (1978) Activation-Deactivation Adjective Checklist (AD-ACL), a 20-item short form that allowed for a participant self-report. The instrument used a list of adjectives and measures arousal across four dimensions: General Activation (Cronbach’s $\alpha = 0.91$), General Deactivation (Cronbach’s $\alpha = 0.84$), Deactivation Sleep (Cronbach’s $\alpha = 0.89$), and High Activation (Cronbach’s $\alpha = 0.84$). The participants responded using a seven point Likert type scale anchored by (1) “definitely do not feel” and (7) “definitely feel.” The manipulation checks were administered just prior to requesting respondents’ demographic information at the end of the questionnaire.

The dependent variables of product evaluation and willingness to buy were patterned after those employed by Winkielman et al. (2005) in which the researchers used a beverage as the focal product. However this experiment used images of a variety of household, apparel, electronic, and personal items as focal items. Participants were shown all four images. After being shown each image, participants were given the Baker and Churchill (1977) purchase intent scale. Inter-item reliability for this scale was reported as 0.89, 0.85, and 0.90 for males and 0.90, 0.89, and 0.86 for females. This

three-item instrument was a Likert-type scale anchored at the extremes by (1) “no – definitely not” and (7) “yes – definitely.” The instrument asked the following questions:

- Would you like to try this product?
- Would you buy this product if you happened to see it in a store?
- Would you actively seek out this product in a store in order to purchase it?

The results were summed across the products.

The participants were also given the Dean and Biswas (2001) product evaluation scale. The authors reported the scale reliability with a Cronbach’s alpha of 0.87. This four-item instrument was a Likert-type scale anchored at the extremes by (1) “strongly disagree” and (7) “strongly agree.” The instrument asked participants to rate the focal product based on the following statements:

- This product is superior.
- This product is the best in its class.
- This product will perform better than similar products.
- This product is definitely a quality product.

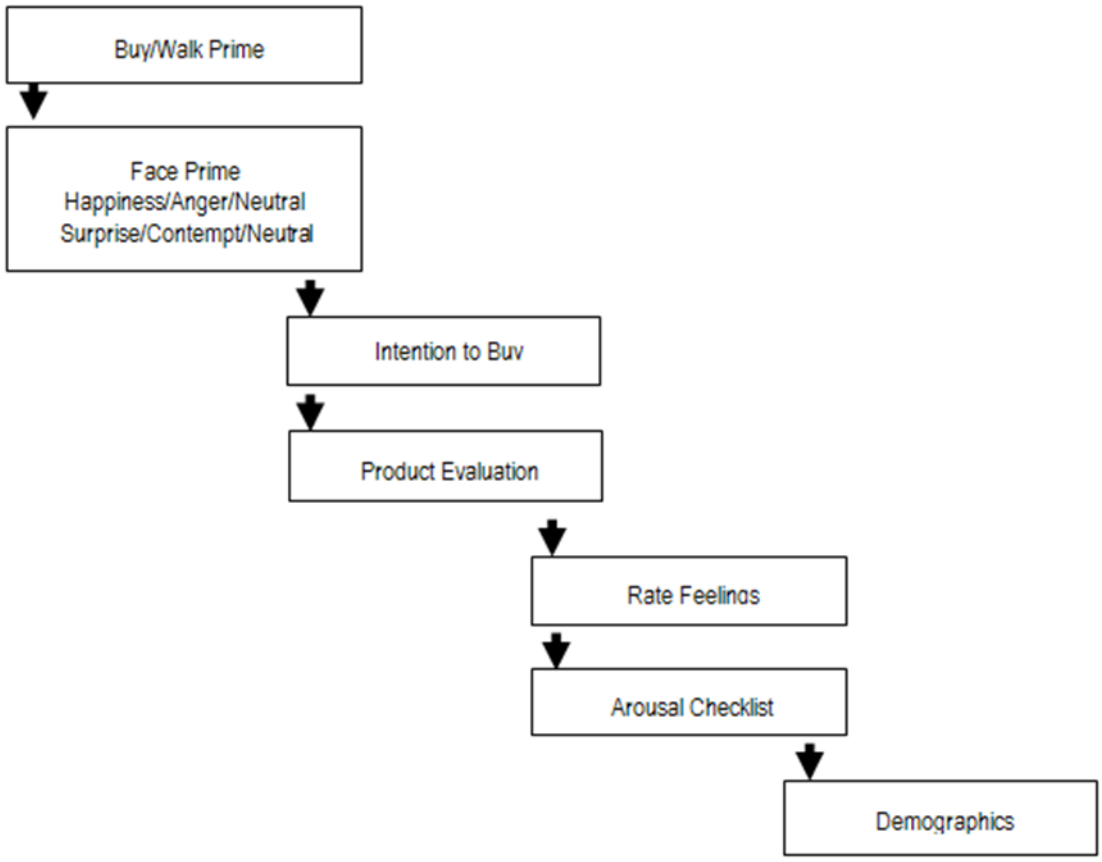
The results were summed across the products.

Procedure

To facilitate understanding of the procedure for this experiment, a diagram illustrating the individual steps appears in Figure 5. Participants were first told they would first take part in a language exercise to clear their minds. They were then assigned a scrambled sentence task, which was actually a prime to buy. The scrambled sentence task consisted of 12 rows of five words. Participants would choose four of the

words to make a grammatically correct sentence. Each of the sentences contained cues that when taken together contained the concept of shopping and buying.

FIGURE 5
Procedure for Experiment 3



Participants then proceeded to the second priming activity—facial priming. As in Experiment 2, this task was presented as a gender classification task in which subjects were shown a series of eight faces and were asked to classify the gender of those faces. The gender classification task was, therefore, repeated eight times for each subject. Different human faces were used in each classification trial. Each trial began with a forward mask (50-millisecond), followed by a subliminal prime (16-millisecond

expression), and immediately followed by a backward mask (400-millisecond neutral male or neutral female face). Each trial featured the same subliminal facial expression (anger, happiness, neutral, surprise, and contempt). All facial images originated from the Japanese and Caucasian Facial Expressions of Emotion (JACFEE) developed by Matsumoto and Ekman (1988). Images were 8 cm x 8 cm, shown in gray scale. The images appeared in the center of a 22-inch flat screen monitor using RTDirect Software.

The first dependent variable was a measure of the participants' level of emotion along the five types used in the experiment (anger, happiness, surprise, contempt, and neutrality). Participants were then be asked to rate their feelings by answering "At this very moment, how do you feel right now?" The participants responded using a seven point Likert type scale anchored at the extremes by (1) "definitely do not feel" and (7) "definitely feel." Participants would then complete Thayer's (1978) Activation-Deactivation Adjective Checklist (AD-ACL) to measure their level of arousal.

Participants next proceeded to the shopping activity. They were shown images of a variety of household, apparel, electronic, and personal items. Participants were shown all four images. After being shown each image, participants were given the Baker and Churchill (1977) purchase intent scale. Inter-item reliability for this scale was reported as 0.89, 0.85, and 0.90 for males and 0.90, 0.89, and 0.86 for females. This three-item instrument was a Likert-type scale anchored at the extremes by (1) "no – definitely not" and (7) "yes – definitely." The instrument asked the following questions:

- Would you like to try this product?
- Would you buy this product if you happened to see it in a store?
- Would you actively seek out this product in a store in order to purchase it?

The results were summed across the products.

The participants were also given the Dean and Biswas (2001) product evaluation scale. The authors reported the scale's reliability with a Cronbach's alpha of 0.87.This four-item instrument was a Likert-type scale anchored at the extremes by (1) "strongly disagree" and (7) "strongly agree." The instrument asked participants to rate the focal product based on the following statements:

- This product is superior.
- This product is the best in its class.
- This product will perform better than similar products.
- This product is definitely a quality product.

The results were summed across the products.

Participants then filled out demographic information including gender, age, ethnicity, number of hours in school, number of hours worked per week, and living arrangement.

Data Analysis

Data was analyzed via multivariate analysis of variance (MANOVA). MANOVA was appropriate because it allowed for the measurement of two or more metric dependent variables which may be interrelated and vary as a function of the independent variables. MANOVA also allowed for the control of family-wise error rate which is intrinsic to the use of multiple analyses of variance.

The interaction effects and main effects were tested using Pillai's criterion. P-values less than 0.05 were deemed significant. Though Wilks' lambda is often the

preferred measure for significance testing, this investigation used Pillai's criterion as the statistical measure. Pillai's criterion is more robust that Wilks' lambda (Olson 1979). This is particularly true when sample size decreases. Though this experiment stipulated that each group will contain 20 participants, this number was considered a minimum number for a MANOVA of this size. Using Pillai's criterion for significance testing allowed for an extra measure of safety in testing significance.

To determine the differences between specific cells, a priori contrasts were employed. Planned contrasts specified exactly which groups would be compared rather than comparing the entire model in a post hoc comparison such as the Scheffé method. This exact specification would result in a greater level of power (Hair et al. 2006). Power analysis was conducted to determine the actual power associated with the sample.

Prior to performing the MANOVA, assumptions necessary for using the technique were checked. To assure multivariate normality, Mahalanobis distance was compared to the critical value. To assure independence among the observations, participants took part in the experiment in a quiet computer lab. Individuals were screened from each other, so they would not be able to see the screens of other participants. They received instructions via computer. Prior to testing for homogeneity of variance, first the Shapiro-Wilks test was used to test if the assumption of normality for the variables held. This marginal normality of the individual variables was deemed sufficient to ensure homogeneity of variance (Stevens 2002). Because the groups were approximately the same size, problems with equality of variance should have been minimal. Multivariate normality has been known to be difficult to assess. Mardia (1971) has noted that provided the smallest cell contains at least 20 observations the normality should hold.

Secondly, while univariate normality tests do not guarantee multivariate normality, differences in multivariate normality are considered negligible if all variables are found to meet normality requirements of the univariate tests (Hair et al. 2006).

CHAPTER 4

ANALYSIS AND RESULTS

Experiment 1

To explore impact of the buying prime on buying intent and product evaluation and to select the best focal product, four one way analyses of variance (ANOVA) (between-groups) were conducted on four different focal products (a backpack, an espresso maker, a jacket, and a tablet computer). Eighty-eight participants were randomly assigned to two conditions, buying prime (experimental group, n = 42) and walking prime (control group, n=46). After priming, each participant responded to questions on all four focal products. The presentation order of the four focal products was systematically rotated to prevent order effects. Dependent variables were intent to purchase and product evaluation

Overall, test of assumptions indicated that the data were not normally distributed. Kolmogorov-Smirnov statistic, shown in Table 3, indicated that only tablet variable was normally distributed $p > 0.05$. Levene's test indicated that only in the tablet condition did the criterion variables not meet homogeneity of variance assumptions (Table 4). Table 5 presents the results for buying intentions across all four test products. No significant differences between the buy and the walking primes were detected for any focal product at the $p. < 0.05$ level. Therefore, the results fail to support the second part of Hypothesis 1 that participants will exhibit a higher intention to buy than those exposed to the walk prime.

TABLE 3
Assumptions of Normal Distribution

Kolmogorov-Smirnov[a]				
	Cond	Statistic	df	Sig.
Backpack Intent	Walk	0.148	42	0.021
	Buy	0.131	46	0.047
Backpack Eval.	Walk	0.184	42	0.001
	Buy	0.219	46	0.000
Espresso Intent	Walk	0.14	42	0.039
	Buy	0.122	46	0.082
Espresso Eval.	Walk	0.238	42	0.000
	Buy	0.186	46	0.000
Jacket Intent	Walk	0.165	42	0.006
	Buy	0.174	46	0.001
Jacket Eval.	Walk	0.238	42	0.000
	Buy	0.184	46	0.000
Tablet Intent	Walk	0.106	42	0.200*
	Buy	0.139	46	0.026
Tablet Eval.	Walk	0.108	42	0.200*
	Buy	0.16	46	0.005

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

TABLE 4
Homogeneity of Variance

	F	df1	df2	Sig.
Backpack Intent	1.777	1	86	0.186
Backpack Evaluation	1.769	1	86	0.187
Espresso Intent	0.062	1	86	0.804
Espresso Evaluation	0.547	1	86	0.462
Jacket Intent	2.407	1	86	0.124
Jacket Evaluation	0.001	1	86	0.970
Tablet Intent	0.022	1	86	0.882
Tablet Evaluation	4.500	1	86	0.037

TABLE 5
ANOVA of Buying Intent

		Sum of Sq.	df	Mean Sq.	F	Sig.	Eta Sq.
Backpack	Between Grp	2.932	1	2.932	0.123	0.726	0.0014
	Within Grp	2043.057	86	23.756			
	Total	2045.989	87				
Espresso	Between Grp	3.134	1	3.134	0.096	0.758	0.0011
	Within Grp	2812.945	86	32.709			
	Total	2816.08	87				
Jacket	Between Grp	20.877	1	20.877	0.982	0.324	0.0114
	Within Grp	1827.441	86	21.249			
	Total	1848.318	87				
Tablet	Between Grp	17.038	1	17.038	0.997	0.321	0.0116
	Within Grp	1470.405	86	17.098			
	Total	1487.443	87				

Table 6 presents results for product evaluation. Again, no significant findings at the $p. < 0.05$ level were detected between the buy prime and walking prime conditions for the backpack, the espresso maker or the jacket. However, product evaluation of the tablet computer did reveal significant differences between the buying and walking primes, at the $p. < 0.05$ level: $F (1, 86) = 4.003$, $p. = 0.049$. Specifically the mean product evaluation in the buy prime condition was $M = 21.89$ whereas that in the control walking prime condition was $M = 19.43$. The overall effect size was low at $\eta^2 = 0.047$. Because of these findings, the tablet computer was selected as the focal product in Experiment 3. These findings indicate some support for Hypothesis 1 that participants exposed to the buy prime will exhibit higher product evaluation than those exposed to the control walking prime.

TABLE 6
ANOVA of Product Evaluation

		Sum of Sq.	Df	Mean Sq.	F	Sig.	Eta Sq.
Backpack	Between Grp	2.424	1	2.424	0.093	0.761	0.0011
	Within Grp	2241.655	86	26.066			
	Total	2244.08	87				
Espresso	Between Grp	0.374	1	0.374	0.011	0.916	0.0001
	Within Grp	2837.217	86	32.991			
	Total	2837.591	87				
Jacket	Between Grp	8.162	1	8.162	0.308	0.58	0.0036
	Within Grp	2275.554	86	26.46			
	Total	2283.716	87				
Tablet	Between Grp	133.155	1	133.155	4.003	0.049	0.0465
	Within Grp	2860.742	86	33.264			
	Total	2993.898	87				

Experiment 2

The purpose of Experiment 2 was three-fold. First, the experiment was to confirm that priming with faces exhibiting select emotions would indeed elicit those same emotions in participants. Second, the experiment was to determine the ability of the emotional facial primes to affect subjects' general states of activation or deactivation. Finally, the experiment was used to select the specific facial expressions to carry into Experiment 3. A one-way multivariate analysis of variance (MANOVA) (between groups) was performed to test if exposure to the facial expression demonstrating feelings of neutrality, happiness, anger, surprise, and contempt could elicit those same emotions. One hundred sixty-nine participants were randomly assigned to five conditions, neutral prime (n=33), anger prime (n=30), happiness prime (n=26), contempt prime (n=25), and surprise prime (n=29). After priming, each participant responded to questions asking the

level of his or her neutrality, anger, happiness, surprise, and contempt. Participants were asked to rate their feelings for each of the intended primed emotions which were primed by answering "At this very moment, how do you feel right now?" The participants responded using a seven point Likert type scale anchored at the extremes by (1) "definitely do not feel" and (7) "definitely feel." Preliminary examination of the means, shown below in Table 5, suggests that the primed emotions did not elicit the intended emotions of happiness, neutrality, contempt, and surprise. For example, expressed feelings of anger were expected to be significantly higher for those subjects exposed to the 'angry' face. Clearly, the resulting mean values in Table 7 do not support this proposition. The mean values are uniformly low across all 'facial" conditions. Similar reasoning holds for the remaining emotions of happiness, neutrality, contempt, and surprise.

TABLE 7
Examination of Means for Feelings

	Neutral Face		**Anger Face**		**Happiness Face**		**Contempt Face**		**Surprise Face**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
ANGER, feeling of	1.970	1.571	1.833	1.367	1.269	0.604	1.360	0.757	1.276	0.528
HAPPINESS, feeling of	4.818	1.758	4.600	1.694	5.192	1.266	4.800	1.414	4.448	1.549
NEUTRAL, feeling of	4.727	1.485	5.467	1.383	4.192	1.833	4.680	1.145	5.172	1.649
CONTEMPT, feeling of	4.424	1.768	4.567	1.977	4.154	2.185	3.600	1.658	4.345	1.987
SURPRISE, feeling of	2.333	1.575	2.567	1.716	2.385	1.444	2.760	1.786	2.552	1.764

The pattern of mean responses was further analyzed via MANOVA. The fixed factor consisted of facial 'conditions' (the faces showing the emotion i.e., anger, happiness, contempt, surprise and neutral). The five reported emotions (anger, happiness, contempt, surprise and neutral) comprised the dependent variables. Results

of the overall multivariate test indicated no significant differences between conditions on the combined dependent variables (F (20, 548) = 1.526, p. = 0.067 Pillai's Trace = 0.211, η^2 = 0.053). However, as shown in Table 8, there is a significant difference between the primed faces (condition) for the reported feelings of anger (F (4,138) = 2.804; p. = 0.028, η^2 = 0.075) and for the reported feeling of neutrality (F (4,138) = 2.916; p. = 0.024, η^2 = 0.078). Scheffé post hoc comparison (Table 9) indicated a significant difference in subject's felt levels of neutrality when exposed to the happiness facial prime (M= 5.466) versus the primed face of contempt (M = 4.192) (Mean difference 1.274, p. = 0.048).

Thus it would appear that when people face someone with a look of contempt, they tend to feel less neutral toward that person than if the person were to display a happy face. In other words, when someone is contemptuous toward a participant, the participant will have some feeling toward that person, i.e., they will be less neutral. Though results discussed above do indicate that priming with happy (positive emotional prime) and contemptuous (negative emotional prime) faces did elicit a difference in the level of neutrality, the results fail to provide support for Hypotheses 2a, 2b, 2c, and 2d, that priming participants with the faces of emotion will elicit higher levels of those emotions than would priming with the face of neutrality.

TABLE 8
Overall MANOVA for Condition (Face Prime)

Dependent Variable	Type III SS	df	Mean Sq.	F	Sig.	Eta Sq.
ANGER, feeling of	13.314	4	3.329	2.804	0.028	0.075
HAPPINESS, feeling of	8.596	4	2.149	0.879	0.478	0.025
NEUTRAL, feeling of	26.847	4	6.712	2.916	0.024	0.078
CONTEMPT, feeling of	15.07	4	3.767	1.021	0.399	0.029
SURPRISE, feeling of	3.148	4	0.787	0.285	0.887	0.008

TABLE 9
Scheffé Post Hoc Comparison for Feelings

Tests of Between-Subjects Effects							
Source	Dependent Variable	Type III Sum of Sq.	df	Mean Sq.	F	Sig.	Partial Eta Sq.
Corrected Model	Anger	13.314a	4	3.329	2.804	0.028	0.075
	Neutrality	26.847b	4	6.712	2.916	0.024	0.078
Intercept	Anger	336.476	1	336.476	283.47	0.000	0.673
	Neutrality	3327.163	1	3327.163	1445.552	0.000	0.913
Cond	Anger	13.314	4	3.329	2.804	0.028	0.075
	Neutrality	26.847	4	6.712	2.916	0.024	0.078
Error	Anger	163.805	138	1.187			
	Neutrality	317.629	138	2.302			
Total	Anger	528	143				
	Neutrality	3732	143				
Corrected Total	Anger	177.119	142				
	Neutrality	344.476	142				

a. R Squared = .075 (Adjusted R Squared = .048)
b. R Squared = .078 (Adjusted R Squared = .051)

The second objective of experiment 2 was to examine the ability of emotional facial primes to affect participants' general states of arousal. A one-way multivariate analysis of variance (MANOVA) (between groups) was performed to test this conjecture. One hundred sixty-nine participants were randomly assigned to five emotional face primes, anger prime (n = 33), happiness prime (n = 30), contempt prime (n = 26), surprise prime (n = 25), and neutral prime (n = 29). Subsequent to receiving the manipulated facial prime, each participant responded to the Thayer (1978) arousal checklist. As discussed in the last chapter, the scale consisted of 20 items intended to scale four dimensions: general activation (feelings of being energized), general deactivation (feeling placid), deactivation sleep (feeling tired), and high activation (feeling nervous). Items in each of the four subscales consisted of 5 seven point Likert-

type scales anchored at the extremes by (1) “definitely do not feel” and (7) “definitely feel.” Items in each respective subscale were summed to provide a separate, single score of each subscale. The overall multivariate test indicated nonsignficance (F (16, 522) = 1.264; p. = 0.215; Pillai’s Trace = 0.141); however tests of between-subject’s effects shown in Table 10 showed marginal significance.

TABLE 10
MANOVA of the Four Dimensions of Arousal

Dependent Variable	Type III SS	df	Mean Sq.	F	Sig.	Eta Sq.
G. Activation	366.174	4	91.544	1.991	0.099	0.055
D. Deactivation	305.658	4	76.415	1.752	0.142	0.048
Sleep Deactivation	165.016	4	41.254	1.685	0.157	0.047
High Deactivation	84.993	4	21.248	0.577	0.680	0.016

A marginally significant difference was found between the five facial conditions (neutral, happiness, anger, surprise, and contempt) only for the dependent variable general activation arousal (i.e., energized) F (4, 143) = 1.991, p = 0.099; Pillai’s Trace 0.141; $\eta^2 = 0.055$. However, Scheffé post hoc comparisons showed no significant differences between the specific combinations of facial primes.

When the effect of gender was controlled, the results indicated that gender is a significant covariate (F (1, 137) = 11.481, p = 0.001; partial $\eta^2 = 0.077$) for general activation arousal (feelings of being energized). The results of the MANCOVA (with gender as a covariate) indicated that there was a marginally significant difference F (4, 137) = 2.195, p = 0.073; $\eta^2 = 0.060$ between the emotional face prime condition (anger, happiness, contempt, surprise, and neutral) for general activation arousal (energized). These findings suggest that the effect of facial priming on general activation is only

marginally significant across the facial priming conditions (anger, happiness, contempt, surprise, and neutral). These results appear in Table 11.

TABLE 11
MANOVA with Gender as a Covariate

Source	Dependent Variable	Type III SS	df	Mean Sq.	F	Sig.	Partial Eta Sq.
Corrected Model	G. Activation	854.413	5	170.883	3.996	0.002	0.127
	G. Deactivation	357.712	5	71.542	1.643	0.153	0.057
	Sleep Deactivation	192.144	5	38.429	1.571	0.172	0.054
	High Deactivation	126.764	5	25.353	0.689	0.633	0.025
Intercept	G. Activation	8544.161	1	8544.161	199.819	0.000	0.593
	G. Deactivation	8417.916	1	8417.916	193.269	0.000	0.585
	Sleep Deactivation	1295.871	1	1295.871	52.976	0.000	0.279
	High Deactivation	2815.046	1	2815.046	76.468	0.000	0.358
Gender	G. Activation	488.239	1	488.239	11.418	0.001	0.077
	G. Deactivation	52.054	1	52.054	1.195	0.276	0.009
	Sleep Deactivation	27.127	1	27.127	1.109	0.294	0.008
	High Deactivation	41.771	1	41.771	1.135	0.289	0.008
Cond	G. Activation	375.49	4	93.872	2.195	0.073	0.060
	G. Deactivation	312.225	4	78.056	1.792	0.134	0.050
	Sleep Deactivation	163.603	4	40.901	1.672	0.160	0.047
	High Deactivation	93.152	4	23.288	0.633	0.640	0.018
Error	G. Activation	5858.048	137	42.759			
	G. Deactivation	5967.1	137	43.555			
	Sleep Deactivation	3351.241	137	24.462			
	High Deactivation	5043.446	137	36.813			
Total	G. Activation	56677	143				
	G. Deactivation	77308	143				
	Sleep Deactivation	20128	143				
	High Deactivation	26955	143				
Cor. Total	G. Activation	6712.462	142				
	G. Deactivation	6324.811	142				
	Sleep Deactivation	3543.385	142				
	High Deactivation	5170.21	142				

Scheffé post hoc analysis indicated that the largest differences in general activation occurred between Conditions 2 (happiness) and 4 (contempt) ($p = 0.119$). While the use of facial primes to affect levels of arousal was marginally supported only for general activation arousal (i.e., energized), Hypotheses H2a, H2b, H2c, and H2d were not supported in that priming with faces exhibiting happiness, anger, surprise and contempt were not significantly different from priming with faces exhibiting neutrality.

Experiment 3

Experiments 1 and 2 generally do not support any direct effects of behavioral priming and emotional facial priming on criterion variables. However, a significant interaction between the two primes may still exist. To this end, a two-way multivariate analysis of variance (MANOVA) (between groups) was performed to establish the existence of any significant interaction between exposure to facially primed emotions (neutral, happiness, anger, surprise, and contempt). All facial primes were included in this experiment because facial primes in Experiment 2 were found to marginally raise levels of arousal. The criterion variables included in this experiment were the two states of arousal as defined by Thayer (1978) (general activation, general deactivation), and subjective product evaluation as defined by Dean and Biswas (2001). Two-hundred eight participants were randomly assigned to two conditions, buying prime (experimental group, n = 99) and walking prime (control group, n = 109). The same participants received one of the five emotional (neutral, n = 28; anger, n = 62; happiness, n = 33; contempt, n = 41; surprise, n = 44) primes. After priming, each participant responded to questions on the previously tested focal product which had elicited the most significant response—a tablet computer.

Data were analyzed via a two-way multivariate analysis of variance (MANOVA) (between groups). The results are summarized in Table 12. No significant direct effects for either type of prime (behavioral or emotional) nor for a significant interaction between them, was identified for any of the three criterion variables, general activation arousal (energized), general deactivation arousal (placid), and product evaluation.

TABLE 12
Overall MANOVA of Experiment 3

Effect		Value	F	Hypothesis df	Error Df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.975	4374.294	3.000	330.000	.000	.975
	Wilks' Lambda	.025	4374.294	3.000	330.000	.000	.975
	Hotelling's Trace	39.766	4374.294	3.000	330.000	.000	.975
	Roy's Largest Root	39.766	4374.294	3.000	330.000	.000	.975
Condition	Pillai's Trace	.002	.169	3.000	330.000	.917	.002
	Wilks' Lambda	.998	.169	3.000	330.000	.917	.002
	Hotelling's Trace	.002	.169	3.000	330.000	.917	.002
	Roy's Largest Root	.002	.169	3.000	330.000	.917	.002
Emotion	Pillai's Trace	.028	.775	12.000	996.000	.676	.009
	Wilks' Lambda	.972	.775	12.000	873.389	.677	.009
	Hotelling's Trace	.028	.774	12.000	986.000	.678	.009
	Roy's Largest Root	.022	1.805	4.000	332.000	.128	.021
Condition * Emotion	Pillai's Trace	.027	.759	12.000	996.000	.694	.009
	Wilks' Lambda	.973	.758	12.000	873.389	.694	.009
	Hotelling's Trace	.028	.758	12.000	986.000	.694	.009
	Roy's Largest Root	.022	1.837	4.000	332.000	.121	.022

Thus Hypotheses 3A, 3B, 3C, and 3D could not be supported. Most relevant to this experiment is that there is not an apparent interaction between emotional facial priming and behavioral priming (buy prime).

However, as with Experiment 2, when gender was introduced as a covariate, results of the overall multivariate test revealed a marginally significant difference for gender F (3, 195) = 2.241, p = 0.085; Pillai's Trace 0.33, partial η^2 = 0.024. Results are shown in Table 13.

TABLE 13
Overall Multivariate Test with Gender as a a Covariate

Effect		Value	F	Hypothesis df	Error Df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.832	321.250	3.000	195.000	.000	.832
	Wilks' Lambda	.168	321.250	3.000	195.000	.000	.832
	Hotelling's Trace	4.942	321.250	3.000	195.000	.000	.832
	Roy's Largest Root	4.942	321.250	3.000	195.000	.000	.832
Gender	Pillai's Trace	.033	2.241	3.000	195.000	.085	.033
	Wilks' Lambda	.967	2.241	3.000	195.000	.085	.033
	Hotelling's Trace	.034	2.241	3.000	195.000	.085	.033
	Roy's Largest Root	.034	2.241	3.000	195.000	.085	.033
Condition	Pillai's Trace	.014	.928	3.000	195.000	.428	.014
	Wilks' Lambda	.986	.928	3.000	195.000	.428	.014
	Hotelling's Trace	.014	.928	3.000	195.000	.428	.014
	Roy's Largest Root	.014	.928	3.000	195.000	.428	.014
Emotion	Pillai's Trace	.055	.919	12.000	591.000	.527	.018
	Wilks' Lambda	.946	.916	12.000	516.213	.531	.018
	Hotelling's Trace	.056	.912	12.000	581.000	.535	.018
	Roy's Largest Root	.037	1.798	4.000	197.000	.131	.035
Condition * Emotion	Pillai's Trace	.090	1.518	12.000	591.000	.113	.030
	Wilks' Lambda	.913	1.511	12.000	516.213	.116	.030
	Hotelling's Trace	.093	1.501	12.000	581.000	.119	.030
	Roy's Largest Root	.047	2.305	4.000	197.000	.060	.045

In the between subjects tests, a significant difference was found only for product evaluation F (1, 143) = 4.887, p = 0.028; Pillai's Trace 0.033; partial η^2 = 0.024. Results are shown in Table 14.

TABLE 14
Test of Between-Subjects Effects with Gender as a Covariate

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	G.Activation	497.847	10	49.785	.957	.482	.046
	G.Deactivation	472.447	10	47.245	1.539	.128	.072
	Eval.	546.673	10	54.667	1.406	.180	.067
Intercept	G.Activation	9550.961	1	9550.961	183.674	.000	.482
	G.Deactivation	12423.366	1	12423.366	404.797	.000	.673
	Eval	6926.287	1	6926.287	178.193	.000	.475
Gender	G.Activation	41.219	1	41.219	.793	.374	.004
	G.Deactivation	25.051	1	25.051	.816	.367	.004
	Eval	189.946	1	189.946	4.887	.028	.024
Condition	G.Activation	31.169	1	31.169	.599	.440	.003
	G.Deactivation	33.691	1	33.691	1.098	.296	.006
	Eval	50.551	1	50.551	1.301	.256	.007
Emotion	G.Activation	146.245	4	36.561	.703	.591	.014
	G.Deactivation	220.043	4	55.011	1.792	.132	.035
	Eval	56.722	4	14.181	.365	.833	.007
Condition * Emotion	G.Activation	336.943	4	84.236	1.620	.171	.032
	G.Deactivation	188.331	4	47.083	1.534	.194	.030
	Eval	193.370	4	48.342	1.244	.294	.025
Error	G.Activation	10243.922	197	52.000			
	G.Deactivation	6045.996	197	30.690			
	Eval	7657.322	197	38.870			
Total	G.Activation	92508.000	208				
	G.Deactivation	120542.000	208				
	Eval	98885.000	208				
Corrected Total	G.Activation	10741.769	207				
	G.Deactivation	6518.442	207				
	Eval	8203.995	207				

Females had higher product evaluation (M = 21.54) than males (M = 20.28).

Separate MANOVAs for each gender were run, and no significant interaction was found.

Taken in sum, these findings suggest that whereas gender does correlate with product evaluation the differences between male and female responses are small.

CHAPTER 5

DISCUSSION AND IMPLICATIONS

The purpose of this research was to explore the extension of nonconscious processing from social psychology to marketing with the future intention of moving the study of nonconscious processing from the laboratory into the field. To begin this exploration, three experiments, which were designed to build on one another, were proposed to lay the groundwork necessary for future field studies. Experiment 1 sought to learn if participants could be primed to engage with a shopping-related behavior. Experiment 2 sought to discover if faces displaying particular emotions could elicit those emotions in participants and change, affect shopping-related behaviors, and increase arousal. Experiment 3 explored the possibility of controlling the effects of the buying prime, specifically could the primed of faces modify (interact with) the effects of a behavioral prime to buy.

Embedded in these experiments was the understanding that the findings of the extant research on nonconscious processing from social psychology would need to be replicated to support this dissertation. Because of its ambitious nature, cross-disciplinary research is always highly speculative. Definitions, methodologies, measures, and statistical analyses, which must be agreed on a priori, can often be sources of contention between the two fields of study, particularly when one school or research paradigm prizes highly-controlled, laboratory experiments and another holds the applicability gained from field studies as the gold standard. Like translations in literature and theater, meaning in science can be lost in the translation between schools of thought. To mitigate this possibility, the methodologies used in social psychology

research were used in this investigation, including controlled laboratory settings, seemingly proven stimulus materials, and accepted measurement software.

Because the experiments in this investigation were designed to build on one another, the following discussion of the results is presented in a similar fashion. Like a narrative, each experiment sets the stage for the next, leading to the climax followed by an explication of the limitations and conclusion. However, like many a good novel, this story contains the seed of another plot which must be continued in a sequel.

Experiment 1

In the aftermath of the experiment, the difference between the experimental buy prime and the control walking prime on the intent to buy was not significant for any of the four focal products. Likewise product evaluation of the four focal products was not affected by the buy prime—with one solitary exception—the tablet computer. Participants exposed to the buy prime did exhibit higher product evaluation than those exposed to the control walking prime.

Though this finding was statistically significant $F(1, 86) = 4.003$, $p. = 0.049$, $\eta^2 = 0.044$, the strength of this association calls into question the magnitude of the real differences between the two groups. The value of η^2 falls below the threshold for a medium effect as described by Cohen (1988) and suggests that priming shopping behavior with a scrambled sentence task does not work as effectively as suggested by social scientists (Smeesters et al. 2009; Wiggins and Pincus 1992). Though many studies use the scrambled sentence task few report the magnitude of the effect. One exception is Custers et al. (2008) who used a scrambled sentence task to prime helping

behavior (picking up soiled tissues). Custers et al. reported a significant difference in helping behavior with $F(1,89) = 7.61$, $p. < .01$). However, as in the current study, the value of $\eta^2 = .08$ was relatively small, still well below Cohen's (1955) threshold for the medium effect (i.e., $\eta^2 > 0.13$). While statistical significance may be achieved when participants are primed with a scrambled sentence task, the practical significance appears to be too small to make a difference. The weakness of the priming effect demonstrated in this experiment casts a pall over the possibility that marketers may be able to use this type of priming to affect nonconscious processing in marketing.

Given the small apparent effect, the practicality of priming buying behavior merits further questioning. Part of this weakness may stem from the amount of priming that the participants received in this study. In this study, participants received only 15 scrambled sentences. However, the number of scrambled sentences necessary has varied. The originators of the scrambled sentence task gave participants 30-60 scrambled sentences to prime (Srull and Wyer 1979). Bargh et al. (1996) used 30 scrambled sentences to prime rudeness and politeness. Geers et al. (2005) used 20 scrambled sentences, and Chartrand and Bargh (1996) used 15 sentences. However, none of the previously mentioned research reported the effect sizes associated with their manipulations.

The lack of reporting of eta-squared and effect sizes may also be due in to the timing of changes in the field of psychology. Whereas the *Publication Manual of the American Psychological Association* (2009) called for authors to report the strength of association so as to advise the reader of the importance of the relationship, reviewers and journal editors may have been slow to require it in their publications. Second, as

new requirements for reporting are brought forth, oftentimes authors unsure of their statistical software and the nature of the strength of association tests may misreport partial eta-squared as eta-squared that creates an inflated value for the strength of association (Mandel 2003). Thus, if Pierce et al.'s (2004) findings hold true, in those few studies that report the eta-square values may suffer from inflated reporting. Without being able to look at the previous researchers' raw data, the true effect sizes cannot be ascertained, shedding further doubt on the efficacy of the priming techniques employed.

It is also likely that a scrambled sentence task simply is not powerful enough to elicit the desired results. Alternative priming techniques such as parafoveal vision, supraliminal video primes, or music primes are likely to be more effective. As the comparison of the effectiveness of the scrambled sentence task in relation to other priming is beyond the scope of this dissertation (which was to find if shopping behavior could be primed) finding the best way to effectively prime shopping behavior would be a natural extension of this investigation. Several different methods which may prove successful include videos and music which would be played in the background.

Regardless of the weak effect size, this experiment did show that shopping behavior could be subliminally primed using a scrambled sentence task to affect product evaluation. Therefore, justification existed for employing this behavioral prime in Experiment 3. However, because the behavioral primes had no effect on purchase intent, this dependent variable was not carried into Experiment 3.

Experiment 2

In Experiment 2, participants were primed with faces exhibiting certain emotions first to ascertain if priming could elicit the same emotions in participants, second to learn if priming could elicit changes in arousal, and last to aid in selection of the specific facial primes that would be carried into Experiment 3. Regarding the first objective, results failed to support the ability of any of the facial primes to elicit their intended emotional responses, Thus, Hypotheses 2a, 2b, 2c, and 2d were rejected.

However, the results did reveal something curious: priming with happy faces (positive emotion) and contemptuous faces (negative emotion) did elicit a difference in the participant's level of expressed neutrality. Prior to discussing these curious findings, the failure to support Hypotheses 2a, 2b, 2c, and 2d will be examined to understand why emotional facial priming generally failed to elicit higher levels of those emotions.

Several reasons may exist. First, both studies used a similar cover story stating that participants were part of a gender identification test. However, this study was set up in a much more controlled manner than the Winkielman et al. (2005) study. In their study, the initial facial prime (shown at an exposure rate of 16 msec) was one person's face and the neutral mask that appeared afterward (shown at 400 msec) consisted of a different person's face. In some cases, Winkielman et al. even switched the gender of the face between the prime and the neutral mask that followed it. To provide more rigorous control this study used the pictures of the same person's face for both the emotion prime and for the neutral mask that followed it. Using the same person's face for the prime and backward mask may have influenced the participants toward neutrality for this reason: if one experiences an angry face and then that face becomes neutral,

then the issue of the anger may have been resolved and is no longer an issue. Thus if the participant experiences an emotion-laden facial prime which then turns into a neutral face, each person may have been left with a feeling of neutrality. This hypothesized effect will have to be tested in a future study. Yet it raises certain issues about its applicability to marketing. In a retail or personal selling situation, sales people remain the same. While they may exhibit a microexpression of anger, if they follow it with an expression of neutrality their current state should be experienced as a state of neutrality because the momentary indication of anger was potentially cancelled out.

Second, in the Winkielman et al. (2005) study participants only had to pour and taste a beverage before answering five questions. The variety of the tasks, not to mention the aftertaste of the lemon-lime flavored Kool-Aid, which itself could be viewed as a prime, may have better captured the participants' interest. In this study, participants did not physically interact with the focal products. Participants merely viewed them on a computer screen. They could not experience the taste, touch, and smell of the product as was possible with the drink employed in the Winkielman et al. study. Moreover the use of drinks in the Winkielman et al. (2005) study may have had confounding effects stemming from any pre-existing pleasant associations with such drinks. Participants in this study were asked to rate their level of feelings and arousal based on viewing faces alone. Furthermore, participants in this study were asked to answer 25 different questions. Having to answer five times as many questions as those in Winkielman et al. (2005) may have precipitated participant fatigue or boredom.

Third, like Winkielman et al. (2005), this study relied on eight baseline neutral trials and eight gender classification trials. Considering that this study required

participants to answer 25 questions about their feelings and arousal level, it is possible that too few primes were used in this study. It might merit investigation to test the facial priming with 16 or 24 gender classification trials. In effect, this study may not have primed the participants enough to make a difference.

Fourth, this study required participants to self-report their feelings. Reporting negative feelings such as contempt and anger may have led to a self-presentation bias in that participants would not like to admit to others that they felt angry or that they felt contemp. Furthermore, asking participants to report their feelings presupposes that they were aware of their feelings and could identify them as such. Remembering and naming a feeling is a cognitive act and therefore one that can be potentially censored by the participant.

Experiment 2 also contained an additional focus—to examine if priming with faces exhibiting certain emotions would create different levels of arousal in participants. Arousal was measured using Thayer's (1978) Activation-Deactivation Adjective Check List that consists of four dimensions general activation (energized), general deactivation (placid), deactivation sleep (tired), and high activation (anxious). Though support was not found for Hypotheses H2a, H2b, H2c, and H2d that priming with faces exhibiting happiness, anger, surprise, and contempt would affect general activation (energized) more so than priming with the faces exhibiting neutrality, Scheffé post hoc comparisons revealed a marginal difference ($p = 0.119$) between the happiness and contempt conditions.

This raises some interesting issues. The marginal difference that is revealed occurs between happiness and contempt rather than between happiness and neutrality

or between neutrality and contempt. Conventional wisdom suggests that anger and happiness should be at opposite poles of the continuum and that contempt should be at the opposite end of the continuum from surprise. For example, to produce positive and negative affect, Winkielman et al. (2005) relied on faces displaying happiness and anger. Happiness and anger have both been recognized as associated with positive and negative affect, respectively (Digman 1990), and are stable across cultures (Verplanken and Holland 2002). Yet results from this investigation found that the significant differences occurred between happiness and contempt rather than between happiness and anger, which suggests that the opposition of the primes and emotions may not be as direct as previously supported. However, there is still an apparent distinction between positive emotion (happiness) and a negative emotion (contempt).

Further review of the facial primes suggested another social aspect might be at work. Facial expressions are known as outward expressions of an inner state. Yet facial expressions also serve as communication signals aimed by the sender at a recipient. In the case of faces displaying contempt or surprise, these expressions convey the judgment of the sender toward the recipient: the recipient stands outside the norms set by the sender. However anger and happiness are different than these faces of social judgment. Without the social context, the recipient cannot understand the meaning behind the anger or happiness displayed. Without the social context, happiness or anger could be aimed at the recipient, or it may be an indication reflective of the sender's inner state based on a different incident which was not caused by the viewer.

To explore this possibility that reactions to the priming with faces expressing emotions might be broader and therefore more general, the extant conditions and

dependent variables were re-coded and reanalyzed. Because a significant difference had been found between happiness and contempt, the conditions (primes with faces displaying the emotions of anger, happiness, contempt, surprise, and neutrality) were re-coded into a new variable, Total Emotion (Total EMO). Total EMO collapsed the number of facial conditions from five to three in this manner: facial conditions of contempt and surprise were coded as judgmental. Conditions with faces exhibiting happiness and anger were coded as reflective. Faces exhibiting neutrality were left as neutral to serve as a control.

Second, the dependent variables were also recoded. Originally, participants were asked to identify how they felt after the priming based on the five different emotions that had been primed (anger, happiness, contempt, surprise, and neutrality. These questions were seven-point, Likert-type scales anchored by (1) “definitely do not feel” and (7) “definitely feel.” Contempt and anger were considered negative emotions at the other end of the emotional continuum from happiness and surprise. To that end the contempt and anger scores were re-coded as negative numbers. In this manner the changes between reflective and judgment conditions could be easily compared. Preliminary examination of the means is shown below in Table 15.

TABLE 15
Examination of Means

Descriptives												
	Reflective				Judgement					Neutral		
	Grp	N	Mean	SD	Grp	N	Mean	SD	Grp	N	Mean	SD
ANGERFeeling1	1	63	-1.905	1.467	2	51	-1.314	0.678	3	29	-1.276	0.528
CONTEMPTFeeling4	1	63	-4.492	1.857	2	51	-3.882	1.946	3	29	-4.345	1.987
NEUTRALFeeling3	1	63	5.079	1.473	2	51	4.431	1.540	3	29	5.172	1.649
HAPPYFeeling2	1	63	4.714	1.717	2	51	5.000	1.342	3	29	4.448	1.549
SURPRISEFeeling5	1	63	2.444	1.634	2	51	2.569	1.616	3	29	2.552	1.764
Differences (pos/neg feelings)			0.762				2.373				1.379	

This comparison of means shows that priming with a neutral face lies close to the midpoint between priming with the faces of judgment (difference of means = 2.373) and faces reflective of internal feelings (difference of means = 0.762).

The judgment, reflective and neutral prime groups were compared with a one-way, between-groups ANOVA. A significant difference was found between the groups F (2,140) = 4.286; p. = .016, eta squared =0.061. Post hoc analysis using Scheffé revealed a significant difference between the means of the judgmental faces condition (contempt and surprise) and the reflective condition (anger and happiness) with a p value of .016. This post hoc investigation suggests that faces displaying judgment (contempt and surprise) have a greater effect on emotion than do faces exhibiting the reflection of the sender's inner state. In other words, participants who see faces of judgment feel more than those who see faces reflective of the inner state of the sender.

This post hoc investigation has many limitations, most of which have been mentioned before. The findings rely on self reports which may harbor biases based on certain suppositions: the participants can identify those feelings and they will report them truthfully. Second, as a laboratory study that relies of still pictures instead of video, the investigation takes us another step further away from the practicalities uncovered with a field study.

Experiment 3

The purpose of Experiment 3 was to explore if exposure to faces demonstrating feelings (neutral, happiness, anger, surprise, and contempt) to the buying prime and the walking primes affects two states of arousal as defined by Thayer (1978), i.e. general

activation, general deactivation, and how it affects product evaluation as defined by Dean and Biswas (2001). Because no significant difference was found for either general activation arousal (energized), for general deactivation arousal (placid), or for product evaluation, Hypotheses 3A, 3B, 3C, and 3D could not be supported. The findings indicated that priming using faces displaying emotional priming has no effect on the prime to buy. However, when differences between male and female respondents were controlled for by making gender a covariate, a significant difference was found only for product evaluation F (1, 143) = 4.887, p =. 028; Pillai's Trace 0.033; eta squared = 0.024. This suggests that if differences in the responses of the different genders are taken into account, a buy prime and priming with a face displaying emotions can affect product evaluation. However as noted previously, the value of eta squared indicates a very small effect size which renders the findings while statistically significant of little practical consequence.

To further the investigation of Experiment 2's post investigation analysis, a two-way between-groups multivariate analysis of variance (MANOVA) was conducted to investigate the direct effects of the behavioral prime (buy prime and walking prime) and redefined emotional primes (judgmental vs. reflective facial primes), as well as the interaction them on the dependent variables of general activation arousal (energized), general deactivation arousal (placid), and product evaluation of a tablet computer. Three hundred participants were randomly assigned to two factor levels buy/walk prime (n= 67/n=83) and reflective/judgmental face primes (n=78/n=72). After priming the participants, they were asked to report their level of general activation arousal (energized), their level of general deactivation arousal (placid), and their evaluation of

the tablet computer. Results of the MANOVA indicated no significant main effects on the dependent variables at the p. < 0.05 level for either the walk and buy prime or for the judgmental face and reflective face primes. These findings show that neither the walk/buy prime nor the judgmental/reflective face primes had any direct effect on the general activation arousal (energized), general deactivation arousal (placid), and product evaluation of a tablet computer.

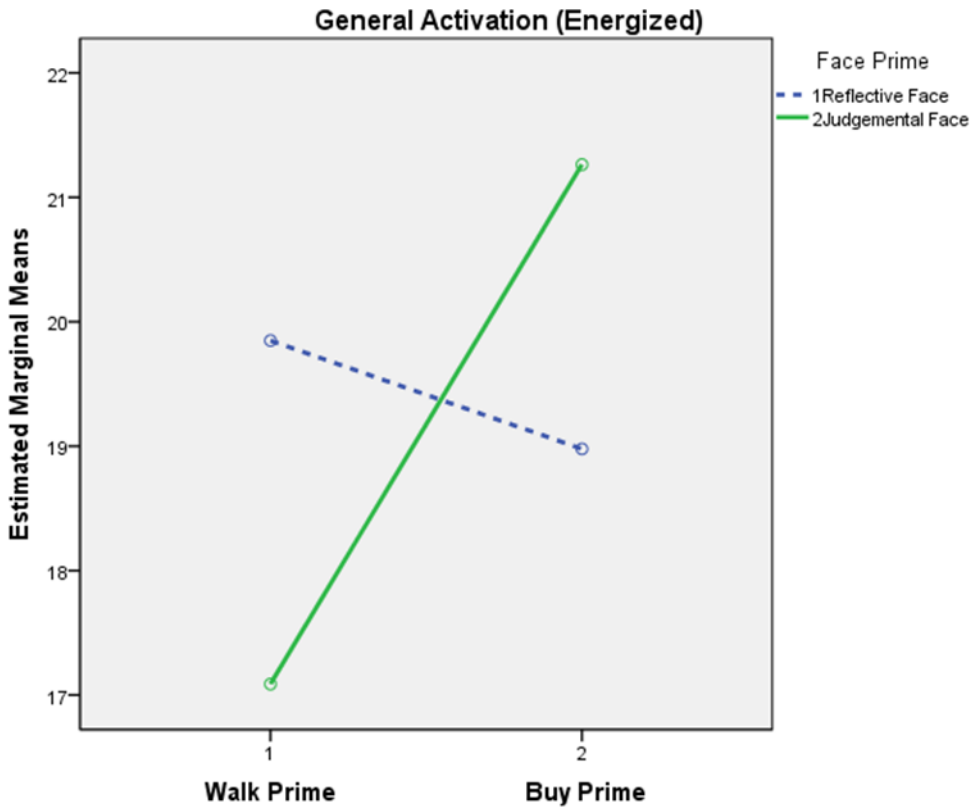
However, significant interaction effects were found between the walk/buy primes and the reflective/judgmental face primes on the following dependent variables. For general activation (energized), a significant effect was found F (1, 150) = 4.173; p = 0.043; partial η^2 = 0.028). For product evaluation, a marginally significant effect was found F (1, 150) = 2.676; p = 0.104; η^2 = 0.018). No significant effect was found for general deactivation (placid). These interaction effects are discussed in detail below.

Interaction Effects of General Activation (Energized)

The moderating effect of emotional facial primes on the behavioral prime can be further explicated by graphically examining the nature of the interactions (Figure 8) and conducting separate one-way ANOVAs for each category of emotional facial prime. In these ANOVAs the behavior prime (buy vs. walk) is the condition and GA (energized) is the criterion. Figure 6 plots the interaction. When exposed to judgmental faces (contempt and surprise), there is a significant difference in individual's level of general activation (being energized) F (1, 71) = 5.582; p. = 0.021; η^2 =0.079 when examining the tablet between the walk prime (M = 17.088) and the buy prime (M= 21.263). However, for reflective faces (anger and happiness), there is no significant difference

between the levels of the behavioral prime (walk vs. buy) F (1, 77) = 0.255; p. = 0.615; η^2 = 0.003.

FIGURE 6
Interaction of General Activation



These findings suggest that once participants received the buy/walk prime, if they are primed with a judgmental face prime (contempt/surprise), their level of general activation (feeling energized) is higher for those receiving the buy prime than those receiving the walk prime. In effect, those primed to buy become more energized when seeing a face that is judgmental of them. In this case general activation (energized) describes their level of arousal based on their ratings of their levels of feeling energetic, full of pep, active, vigorous, and lively. Whereas the level of activation increases with

the buy prime, this only indicates that arousal or excitation is raised by judgment faces but fails to explain why participants become energized. On one hand it might be that faces of judgment energize participants to move toward the product and buy it, and on the other hand, it may energize the participant to move away from the product and avoid it. The directionality of this arousal should be studied in future investigations. Second these findings do not illustrate if this level of activation has a positive consequence (leading toward purchase) or a negative consequence (refusal to purchase). Further investigation into the effect of judgmental faces on arousal levels would be of great interest in marketing sub-fields of retailing, service, and personal sales.

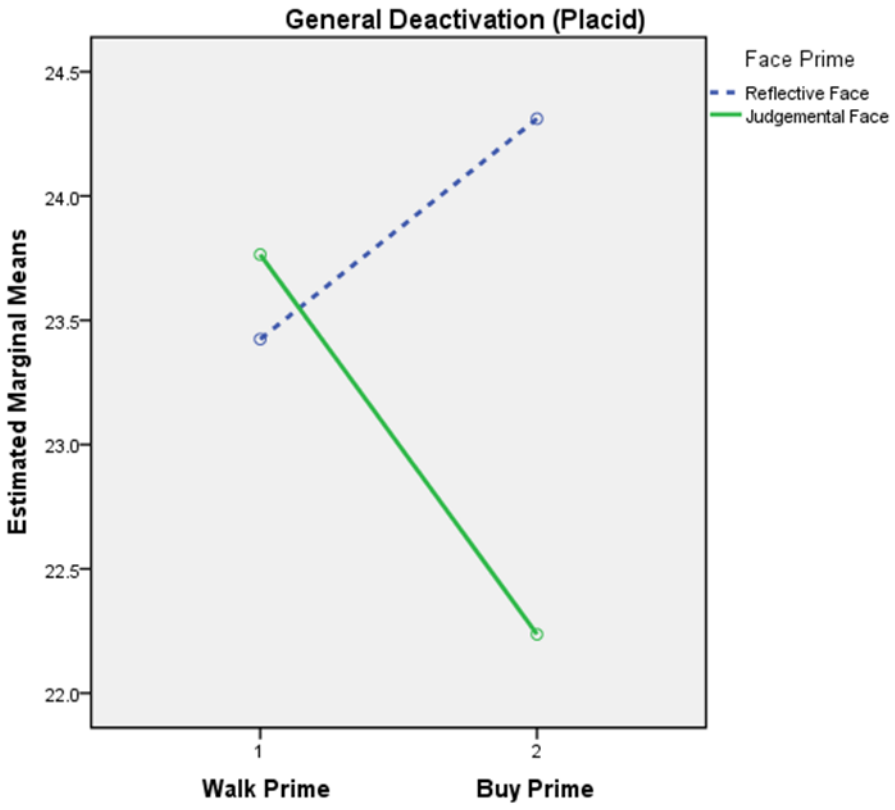
Interaction Effects on General Deactivation (Placid)

When exposed to judgmental or reflective faces there is no significant difference between the buy and walk primes ($F(1, 77) = 0.514$; $p. = 0.473$; $\eta^2 = 0.006$). Although not significant, it is useful to further explore the nature of this interaction. Figure 7 further plots the interaction between the behavioral and emotional primes as it may impact General Deactivation (placid).

Though this interaction is not statistically significant, it is directionally correct. The slopes of the lines for the interaction are exactly opposite the slopes of the lines in the general activation interaction. This is to be expected because general activation is described as feeling energetic, full of pep, active, vigorous, energetic, lively, peppy, and activated whereas general deactivation (placid) is described as feeling placid leisurely at-rest, quiescent, calm, still, quiet. General activation (energized) and general

deactivation (placid) are mirror images of each other: as deactivation arousal (placid) drops for the buy prime, activation arousal (energized) must rise.

FIGURE 7
Interaction of General Deactivation



Interaction Effects on Product Evaluation

When exposed to judgmental faces (contempt and surprise), there is no significant difference in individuals evaluations of the tablet, regardless of the walk or buy prime (F (1, 71) = 0.406; p. = 0.526; η^2 = 0.005). However, as above, near significant interactions emerged (Figure 8). When exposed to reflective faces (anger and happiness), there is a marginally significant difference in the individual's evaluations of the tablet depending on the prime (either walk or buy) F (1, 76) = 2.752; p = 0.101; η^2

= 0.036. The evaluation was higher (M =22.09) when they received the buy prime compared to the walk prime (M = 19.70).

These findings raise several interesting issues. First, though the findings were not statistically significant, the slope of the judgmental lines conforms to the generally accepted belief: when judgment is directed at a person, they are less likely to be positive and provide a positive evaluation. Second, when participants received the reflective face prime (happiness/anger), they provided a more favorable evaluation of the tablet computer than when primed to buy in contrast with those that received the control prime (walk). Though this difference is marginally significant in this study, it suggests that further investigation should be required. For example, reflective faces include both displays of anger and happiness. As previously noted, anger and happiness have been opposed negative and positive valences.

FIGURE 8
Interaction of Product Evaluation

Limitations

As with any research, this investigation has limitations that affect the results. The major limitations include the population sampled, the method of investigation, the choice of focal products, the strength of the prime, and the effect size of the results.

The sample chosen for investigation was students. While this sample is a convenient and not unusual for researchers in academe, it is but one narrow subset of the entire population. Though it was deemed sufficient for this exploratory, cross-disciplinary study, it may not be generalizable to the general population. Therefore, further research using a sample which is more similar to the general population should be carried out.

The method of investigation also produces a certain limitations. This study required highly controlled laboratory experiments to achieve its goals—bringing nonconscious processing from social psychology into the field of marketing. First, the social psychology studies needed to be duplicated in a marketing context. Because these social psychology studies were all laboratory studies, laboratory studies were used in this marketing investigation. However, laboratory studies while highly controllable do not offer themselves to the generalizability of a field study. Often, what happens in the lab, only happens in the lab. Yet, the field of marketing begs for field studies.

The choice of focal products also creates a limitation—the results are only accurate for the tablet computer. It is not known if this is true with other products. Though the four focal products which appeared in Experiment 1 were first suggested by

the student population and then carefully pretested, only the tablet computer held enough interest. It is not known how priming will work with other products.

The strength of the prime itself is another limitation. It is not know how the scrambled sentence task compares to other methods of priming such as background videos, background music, or parafoveal vision. Thus, this research only allows us to postulate what might be done only with a scrambled sentence task. Though this method is well-known in the priming literature, it has two limitations. First, it is practical only within a laboratory setting. Second, it requires concentration on the part of the participants. Therefore it is not known what might be achieved with other methods of priming and if those other methods of priming are stronger or weaker than a scrambled sentence task.

The effect size of the results is also a limitation. Of the significant and marginally significant results from this investigation, the η^2 values all indicated small effect sizes. Thus while priming with behavioral primes (scrambled sentence tasks) and emotional primes (faces) may have achieved a marginal statistical significance, its effect was too more often too small to be of practical significance. This presents problems for moving the investigation of priming from that laboratory to the field.

Further Research

This dissertation provides manifold pathways for further research into the priming of nonconscious behavior in marketing.

Because this research was highly speculative, it required controlled laboratory studies which featured a scrambled sentence task of 15 sentences as the nonconscious

prime. Though this dissertation relied on the scrambled sentence task to prime shopping behavior, it is not yet know what other methods may be more effective. To continue this thread it would be useful to compare the different modes of priming to see which is most effective. From a managerial standpoint, there priming methods would need to be applicable in a real world setting, such as a store or during a sales presentation. Several alternatives have been suggested previously such as supraliminal videos, supraliminal music, or parafoveal vision. Though shopping behavior can be primed, the most effective way to do so should be determined in future research.

Experiment 2 revealed that priming with faces of contempt and happiness elicited different levels of neutrality in the participants. Because this finding was unexpected, a careful study of neutrality in priming should be considered for future research. This investigation relied on self-reports of felt emotion; it assumed that participants would be able to feel those emotions within themselves, report those feelings accurately, and report them truthfully. It may be that participants may feel their emotions differently or only view emotions as peak experiences (joy and rage). It may be that their level of feeling is more often neutral. All of these points bear investigation. Furthermore, self-reports on feelings require evaluation on the part of the participants, and self-reporting requires cognition. Future research in the study of neutrality should rely on direct body measurements such as blood pressure, pulse, galvanic skin response, breathing, and possibly brain activity using an electroencephalograph (EEG).

The third, and most important, aspect of future research engendered by this dissertation should be developing an understanding of how faces displaying judgment (feelings of contempt or surprise) and reflectiveness (anger and happiness) affect

consumer behavior. If faces displaying contempt or surprise have a greater effect on general activation arousal (feeling energized), the directionality of that arousal should be determined. The consequence of that arousal has direct managerial impact particularly in personal selling, customer service, and retailing. It begs the question: do these faces of judgment have a positive consequence (leading toward a purchase) or a negative one (hindering a purchase)? Future research should examine this.

Conclusions

The findings of Experiments 1, 2 and 3 call into question many of the previous findings which have entered the cannon of nonconscious processing. Though Bargh (2006) has sounded the call for social psychologists to move nonconscious processing into marketing, several issues must be addressed before the study of and the manipulation of nonconscious processing can succeed. In fact the field of marketing may hold the key in the quest for the true mastery of the power of nonconscious processing—practicality.

First, social psychologists have long relied on extremely controlled laboratory settings to test their understandings of nonconscious processing. While they have achieve statistical significance in their published investigations, this dissertation relied on one of their oldest and most proven methods to prime nonconscious behavior—the scrambled sentence task. Yet the experiments of these researchers have shown that nonconscious processing can be primed to affect social behaviors; they have done away with the chimera of practicality. They often publish without reporting the effect size

of their significance. Most often when the effect size is reported it is often so small as to have little practical value.

Second, the social science researchers have designed well-constructed experiments with incredibly tight controls. They have relied on soundproof booths, specialized software to time stimuli appearance and responses, computer equipment located in dedicated labs, and lab monitors with elaborate scripts for cover stories. This investigation has attempted to replicate these same conditions, particularly by duplicating the main parts of Winkielman et al.(2005). Like the authors, this study used a dedicated lab, the same software to time stimuli and responses, and a monitor with a cover story. Given the high degree of commonality between all three studies, they should have yielded similar results. They did not. This calls into question the potency of facial priming advocated by Winkielman et al. (2005).

Third, in the Winkielman et al. (2005) study, the authors relied on different faces for the 16 msec. priming stimulus and for the 400msec backward mask. For example, a a participant was exposed to a male Japanese face displaying anger for 16 msec. followed by a blonde Caucasian female as the neutral backward mask at 400 msec. The authors did report significant results. It may be possible that the different faces might have created the effect. However in this dissertation, the face of the same person was used for both the 16 msec. emotional facial prime (e.g., anger) and the following 400msec neutral backward mask. This may have skewed the results because the facial expression of emotions is fluid. One moves from one emotion to another. Both the prime picture and the backward mask picture were the same size, same black and white color, and positioned in the same place on the screen. Though these pictures were static, the

quick succession going from an emotion (e.g., anger) to neutrality may have mimicked the fluidity of emotion we experience with people. Because the amygdala works in hard-wired quick and dirty sorting at a nonconscious level, it may have detected the change from angry to neutral and filed it as a reduction of a possible threat. In other words, if someone is angry and then becomes neutral, the threat of the anger is past. This must be tested out in future experiments, possibly by using an inanimate object as the backward mask as a control.

A fourth question raised by this dissertation is the reliance on cognitive answers by the participants as the dependent variables. We begin with the supposition that the participants can and will correctly describe their internal processes and feelings. While they may cognitively understand what surprise and contempt are, they may not be able to identify what surprise and contempt actually feel like. Furthermore, cognitive responses rely on people answering truthfully. Admitting that one has feelings which may not be socially appropriate, such as contempt, surprise, or anger, may have created a social conformity effect on the participants. In retrospect, better evidence for arousal could have been collected with physiological data collected from the participant, such as blood pressure, pulse, breathing rate, and galvanic skin response. Direct measurement would have precluded any biases due to cognition or ego.

A fifth question stemming from this dissertation concerns emotional priming and its valence. In the past studies have attached a positive valence to happiness and a negative valence to anger. However the results of this dissertation indicate that anger and happiness may not be diametrically opposed. In the animal world, anger is considered a threat display to warn others away. On the other hand, happiness should

signal a threat-free situation such as relaxation or enjoyment. Because of this arrangement, it was understood that contempt would be negative because the person sending the signal would look down on the receiver and surprise would be positive because the face of surprise was pure surprise as opposed to surprise mixed with disgust or fear. However, the data showed otherwise. It was found that faces reflective of the sender's inner feelings (anger/happiness) were quite different from faces of judgment aimed at the receiver to convey the sender's contempt or surprise.

As for Bargh's (2006) battle cry to take the field of marketing using nonconscious processing, perhaps we need some better intelligence first. Before committing to the concrete practicality required to sell products and services, we should fully understand this accidental finding—what is the relationship between nonconscious processing and emotion?

BIBLIOGRAPHY

Aarts, Henk (2007), "Health And Goal-Directed Behavior: The Nonconscious Regulation and Motivation of Goals and Their Pursuit," *Health Psychology Review*, 1 (1), 53-82.

Aarts, Henk, Ruud Custers, and Rob W. Holland (2007), "The Nonconscious Cessation Of Goal Pursuit: When Goals and Negative Affect Are Coactivated," *Journal of Personality and Social Psychology*, 92 (2), 165-78.

Aarts, Henk, Ruud Custers, and Hans Marien (2009), "Priming and Authorship Ascription: When Nonconscious Goals Turn into Conscious Experiences of Self-Agency," *Journal of Personality and Social Psychology*, 96 (5), 967-79.

Aarts, Henk, Ruud Custers, and Martijn Veltkamp (2008), "Goal Priming and the Affective-Motivational Route to Nonconsious Goal Pursuit," *Social Cognition*, 26 (5), 555-77.

Aarts, Henk and Ap Dijksterhuis (2000), "Habits as Knowledge Structures: Automaticity in Goal-Directed Behavior," *Journal of Personality and Social Psychology*, 78 (1), 53-63.

---- (2003), "The Silence of the Library: Environment, Situational Norm, and Social Behavior," *Journal of Personality and Social Psychology*, 84 (1), 1-28.

Ajzen, Icek and Martin Fishbein (1980), *Understanding attitudes and predicting social behavior* Englewood Cliffs, NJ: Prentice-Hall.

American Psychological Association (2009), *Publication Manual of the American Psychological Association* (6th ed.). Washington, DC: APA.

Aristotle (1958), "Nichomachean Ethics," in *Pocket Aristotle*, Justin D. Kaplan, ed. New York: Pocket Books.

Bagozzi, Richard P. (1975), "Marketing as Exchange," *Journal of Marketing*, 39 (4), 32-39.

Baker, Michael J. and Gilbert A. Churchill Jr (1977), "The Impact of Physically Attractive Models on Advertising Evaluations," *Journal of Marketing Research*, 14 (4), 538-55.

Bargh, John A. (1990), "Auto-Motives: Preconscious Determinants of Social Interaction," in *Handbook of Motivation and Cognition*, Richard M. Sorrentino and E. Tory Higgins, eds. Vol. 2. New York: Guilford Press.

---- (2002), "Losing Consciousness: Automatic Influences on Consumer Judgment, Behavior, and Motivation," *Journal of Consumer Research*, 29 (2), 280-85.

---- (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), 147-68.

Bargh, John A., Mark Chen, and Lara Burrows (1996), "Automaticity of Social Behavior: Direct Effects of Trait Construct and Stereotype Activation on Action," *Journal of Personality and Social Psychology*, 71 (2), 230-44.

Bargh, John A., Peter M. Gollwitzer, Annette Lee-Chai, Kimberly Barndollar, and Roman Troetschel (2001), "The Automated Will: Nonconscious Activation and Pursuit of Behavioral Goals," *Journal of Personality and Social Psychology*, 81 (6), 1014-27.

Bargh, John A., Michelle Green, and Gráinne Fitzsimons (2008), "The Selfish Goal: Unintended Consequences of Intended Goal Pursuits," *Social Cognition*, 26 (5), 534-54.

Berger, Jonah and Gráinne 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.

Bloch, Peter H., Nancy M. Ridgway, and Scott A. Dawson (1994), "The Shopping Mall as Consumer Habitat," *Journal of Retailing*, 70 (1), 23-42.

Bos, Maarten W., Ap Dijksterhuis, and Rick B. van Baaren (2011), "The Benefits of "Sleeping on Things": Unconscious Thought Leads to Automatic Weighting," *Journal of Consumer Psychology*, 21 (1), 4-8.

Brasel, S. Adam and James Gips (2011), "Red Bull "Gives You Wings" for Better or Worse: A Double-Edged Impact of Brand Exposure on Consumer Performance," *Journal of Consumer Psychology*, 21 (1), 57-64.

Brown, Mark R. and Roop K. Bhadury (2006), "Analogical Thinking, Near Priming, And Advertising Creativity," *American Academy of Advertising Conference Proceedings*. Lubbock, TX : American Academy of Advertising.

Campbell, Donald T. and Julian C. Stanley (1963), *Experimental and quasi-experimental designs for research*. Boston, MA: Houghton Mifflin Company.

Carlson, Kurt A. and Samuel D. Bond (2006), “Improving Preference Assessment: Limiting the Effect of Context Through Pre-Exposure to Attribute Levels," *Management Science*, 52 (3), 410-21.

Chaiken, Shelly (1980), "Heuristic Versus Systematic Information Processing and the Use of Source Versus Message Cues in Persuasion," *Journal of Personality and Social Psychology*, 39 (5), 752-66.

Chan, Elaine and Jaideep Sengupta (2010), "Insincere Flattery Actually Works: A Dual Attitudes Perspective," *Journal of Marketing Research*, 47 (1), 122-33.

Chartrand, Tanya L. (2005), "The Role of Conscious Awareness in Consumer Behavior," *Journal of Consumer Psychology*, 15 (3), 203-10.

Chartrand, Tanya L. and John A. Bargh (1996), "Automatic Activation of Impression Formation and Memorization Goals: Nonconscious Goal Priming Reproduces Effects of Explicit Task Instructions," *Journal of Personality and Social Psychology*, 71 (3), 464-78.

Chartrand, Tanya L., Joel Huber, Baba Shiv, and Robin J. Tanner (2008), "Nonconscious Goals and Consumer Choice," *Journal of Consumer Research*, 35 (2), 189-201.

Cheng, Clara Michelle and Tanya L. Chartrand (2003), "Self-Monitoring Without Awareness: Using Mimicry as a Nonconscious Affiliation Strategy," *Journal of Personality and Social Psychology*, 85 (6), 1170-79.

Cohen, Arthur R., Ezra Stotland, and Donald M. Wolfe (1955), "An Experimental Investigation of Need for Cognition," *Journal of Abnormal and Social Psychology*, 51 (2), 291-94.

Cohen, Jacob (1988), *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum and Associates.

Cortina, Mauricio and Giovanni Liotti (2007), "New Approaches to Understanding Unconscious Processes: Implicit and Explicit Memory Systems," *International Forum of Psychoanalysis*, 16 (4), 204-12.

Custers, Ruud and Henk Aarts (2005), "Positive Affect as Implicit Motivator: On the Nonconscious Operation of Behavioral Goals," *Journal of Personality and Social Psychology*, 89 (2), 129-42.

Custers, Ruud, Marjolein Maas, Miranda Wildenbeest, and Henk Aarts (2008), "Nonconscious Goal Pursuit and the Surmounting of Physical and Social Obstacles," *European Journal of Social Psychology*, 38 (6), 1013-22.

Damasio, Antonio R. (1994), *Descartes' Error: Emotion, Reason, and the Human Brain*. New York, NY: Penguin.

---- (1999), *The Feeling of What Happens: Body and Emotion in the Making*. New York, NY: Harcourt Brace & Company.

Damasio, Antonio R., B. J. Everitt, and D. Bishop (1996), "The Somatic Marker Hypothesis and the Possible Functions of the Prefrontal Cortex [and Discussion]," *Philosophical Transactions: Biological Sciences*, 351 (1346), 1413-20.

Dean, Dwane Hal and Abhijit Biswas (2001), "Third-Party Organization Endorsement of Products: An Advertising Cue Affecting Consumer Prepurchase Evaluation of Goods and Services," *Journal of Advertising*, 30 (4), 41-57.

Descartes, Rene (1673/2006), *Discourse on Method*. New York, NY: Oxford University Press.

Digman, J. M. (1990), "Personality Structure: Emergence of the Five-Factor Model," *Annual Review of Psychology*, 41 (1), 417.

Dijksterhuis, A. and H. Aarts (2003), "On Wildebeests and Humans: The Preferential Detection of Negative Stimuli," *Psychological Science*, 14 (1), 14.

Dijksterhuis, Ap, Pamela K. Smith, Rick B. Van Baaren, and Daniël H. J. Wigboldus (2005), "The Unconscious Consumer: Effects of Environment on Consumer Behavior," *Journal of Consumer Psychology*, 15 (3), 193-202.

Dimofte, Claudiu V. and Richard F. Yalch (2011), "The Mere Association Effect and Brand Evaluations," *Journal of Consumer Psychology*, 21 (1), 24-37.

Dupoux, Emmanuel, Sid Kouider, and Jacques Mehler (2003), "Lexical Access Without Attention? Explorations Using Dichotic Priming," *Journal of Experimental Psychology: Human Perception and Performance*, 29 (1), 172-84.

Eitam, Baruch, Ran R. Hassin, and Yaacov Schul (2008), "Nonconscious Goal Pursuit in Novel Environments: The Case of Implicit Learning," *Psychological Science*, 19 (3), 261-67.

Ekman, Paul (1992), "Facial Expressions Of Emotion: New Findings, New Questions," *Psychological Science*, 3 (1), 34-38.

Fazio, Russell H., David M. Sanbonmatsu, Martha C. Powell, and Frank R. Kardes (1986), "On the Automatic Activation of Attitudes," *Journal of Personality and Social Psychology*, 50 (2), 229-38.

Ferguson, Melissa J. (2008), "On Becoming Ready to Pursue a Goal You Don't Know You Have: Effects of Nonconscious Goals on Evaluative Readiness," *Journal of Personality and Social Psychology*, 95 (6), 1268-94.

Ferraro, Rosellina, James R. Bettman, and Tanya L. Chartrand (2009), "The Power of Strangers: The Effect of Incidental Consumer Brand Encounters on Brand Choice," *Journal of Consumer Research*, 35 (5), 729-41.

Fishbach, Ayelet, Rebecca K. Ratner, and Ying Zhang (2011), "Inherently Loyal or Easily Bored?: Nonconscious Activation of Consistency Versus Variety-Seeking Behavior," *Journal of Consumer Psychology*, 21 (1), 38-48.

Fishbein, Martin and Icek Ajzen (1975), *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.

Fitzsimons, Gavan J., J. Wesley Hutchinson, Patti Williams, Joseph W. Alba, Tanya L. Chartrand, Joel Huber, Frank R. Kardes, Geeta Menon, Priya Raghubir, J. Edward Russo, Baba Shiv, and Nader T. Tavassoli (2002), "Non-Conscious Influences on Consumer Choice," *Marketing Letters*, 13 (3), 269-79.

Fitzsimons, Gavan J. and Baba Shiv (2001), "Nonconscious and Contaminative Effects of Hypothetical Questions on Subsequent Decision Making," *Journal of Consumer Research*, 28 (2), 224-38.

Fitzsimons, Gráinne M. and John A. Bargh (2003), "Thinking of You: Nonconscious Pursuit of Interpersonal Goals Associated with Relationship Partners," *Journal of Personality and Social Psychology*, 84 (1), 148-64.

Fosshage, James L. (2005), "The Explicit and Implicit Domains in Psychoanalytic Change," *Psychoanalytic Inquiry*, 25 (4), 516-39.

Freud, Sigmund (1923/1989), *The Ego and the Id*. New York, NY: Norton.

Gabrielsen, Gorm, Tore Kristensen, and Judith Lynne Zaichkowsky (2010), "Whose Design Is it Anyway?," *International Journal of Market Research*, 52 (1), 89-110.

Geers, Andrew L., Paul E. Weiland, Kristin Kosbab, Sarah J. Landry, and Suzanne G. Helfer (2005), "Goal Activation, Expectations, and the Placebo Effect," *Journal of Personality and Social Psychology*, 89 (2), 143-59.

Geyskens, Kelly, Mario Pandelaere, Siegfried Dewitte, and Luk Warlop (2007), "The Backdoor to Overconsumption: The Effect of Associating "Low-Fat" Food with Health References," *Journal of Public Policy & Marketing*, 26 (1), 118-25.

Gigerenzer, Gerd (2007), *Gut feelings: The Intelligence of the Unconscious*. New York, NY: Viking/Penguin.

Gladwell, Malcolm (2005), *Blink: The Power of Thinking Without Thinking* (1 ed.). New York, NY: Little Brown and Company.

Greenwald, Anthony G., Debbie E. McGhee, and Jordan L. K. Schwartz (1998), "Measuring Individual Differences in Implicit Cognition: The Implicit Association Test," *Journal of Personality and Social Psychology*, 74 (6), 1464-80.

Guise, Kevin, Karen Kelly, Jennifer Romanowski, Kai Vogeley, Steven Platek, Elizabeth Murray, and Julian Keenan (2007), "The Anatomical and Evolutionary Relationship Between Self-Awareness and Theory of Mind," *Human Nature*, 18 (2), 132-42.

Hair, Joseph F., Jr., William C. Black, Barry J. Babin, Rolph E. Anderson, and Ronald L. Tatham (2006), *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Hassin, Ran R. (2008), "Being Open Minded Without Knowing Why: Evidence From Nonconsious Goal Pursuit," *Social Cognition*, 26 (5), 578-92.

Hassin, Ran R., John A. Bargh, and Shira Zimerman (2009), "Automatic and Flexible: The Case of Nonconsious Goal Pursuit," *Social Cognition*, 27 (1), 20-36.

Heinzel, Alexander and Georg Northoff (2009), "Emotional Feeling and the Orbitomedial Prefrontal Cortex: Theoretical and Empirical Considerations," *Philosophical Psychology*, 22 (4), 443-64.

Hermans, Hubert J., Harry J. Kempen, and Rens J. Van Loon (1992), "The Dialogical Self: Beyond Individualism and Rationalism," *American Psychologist*, 47 (1), 23-33.

Holden, Constance (1979), "Paul MacLean and the Triune Brain," *Science*, 204 (4397), 1066-68.

Holden, Stephen and Marc Vanhuele (1999), "Know the Name, Forget the Exposure: Brand Familiarity Versus Memory of Exposure Context," *Psychology & Marketing*, 16 (6), 479-96.

Holland, Rob W., Annemarie M. Wennekers, Gijsbert Bijlstra, Maaike M. Jongenelen, and Ad van Knippenberg (2009), "Self-Symbols as Implicit Motivators," *Social Cognition*, 27 (4), 579-600.

James, William (1890/1950), *The Principles of Psychology*. New York: Dover Publications.

Janiszewski, Chris (1988), "Preconscious Processing Effects: The Independence of Attitude Formation and Conscious Thought," *Journal of Consumer Research*, 15 (2), 199-209.

Kawada, Christie L. K., Gabriele Oettingen, Peter M. Gollwitzer, and John A. Bargh (2004), "The Projection of Implicit and Explicit Goals," *Journal of Personality and Social Psychology*, 86 (4), 545-59.

Kellaris, James J., Robert F. Dahlstrom, and Brett A. Boyle (1996), "Contextual Bias in Ethical Judgment of Marketing Practices," *Psychology & Marketing*, 13 (7), 677-94.

Kramer, Thomas and Lauren Block (2008), "Conscious and Nonconscious Components of Superstitious Beliefs in Judgment and Decision Making," *Journal of Consumer Research*, 34 (6), 783-93.

---- (2011), "Nonconscious Effects of Peculiar Beliefs on Consumer Psychology and Choice," *Journal of Consumer Psychology*, 21 (1), 101-11.

Labroo, Aparna A., 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), 819-31.

Lau-Gesk, Loraine and Joan Meyers-Levy (2009), "Emotional Persuasion: When the Valence Versus the Resource Demands of Emotions Influence Consumers' Attitudes," *Journal of Consumer Research*, 36 (4), 585-99.

LeDoux, Joseph E. (2000), "Emotion Circuits in the Brain," *Annual Review of Neuroscience*, 23 (1), 155-84.

Lee, Angela Y. (2002), "Effects of Implicit Memory on Memory-Based Versus Stimulus-Based Brand Choice," *Journal of Marketing Research*, 39 (4), 440-54.

Libet, Benjamin (1999), "How Does Conscious Experience Arise? The Neural Time Factor," *Brain Research Bulletin*, 50 (5-6), 339-40.

---- (2002), "The Timing of Mental Events: Libet's Experimental Findings and Their Implications," *Consciousness and Cognition*, 11 (2), 291-99.

---- (1985), "Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action," *Behavioral and Brain Sciences*, 8 (4), 529-39.

Liu, Jia and Dirk Smeesters (2010), "Have You Seen the News Today? The Effect of Death-Related Media Contexts on Brand Preferences," *Journal of Marketing Research*, 47 (2), 251-62.

Long, Gerald M. (1980), "Iconic Memory: A Review and Critique of the Study of Short-Term Visual Storage," *Psychological Bulletin*, 88 (3), 785-820.

Maimaran, Michal and S. Christian Wheeler (2008), "Circles, Squares, and Choice: The Effect of Shape Arrays on Uniqueness and Variety Seeking," *Journal of Marketing Research*, 45 (6), 731-40.

Maison, Dominika, Anthony G. Greenwald, and Ralph H. Bruin (2004), "Predictive Validity of the Implicit Association Test in Studies of Brands, Consumer Attitudes, and Behavior," *Journal of Consumer Psychology*, 14 (4), 405-15.

Mandel, Naomi (2003), "Shifting Selves and Decision Making: The Effects of Self-Construal Priming on Consumer Risk-Taking," *Journal of Consumer Research*, 30 (1), 30-40.

Mardia, K. V. (1971), "The Effect of Nonnormality on Some Multivariate Tests and Robustness to Nonnormality in the Linear Model," *Biometrika*, 58 (1), 105-21.

Matsumoto, David and Paul Ekman (1988), "*Japanese and caucasian facial expressions of emotion (JACFEE)*". San Francisco, CA: Intercultural and Emotion Research Laboratory, Department of Psychology, San Francisco State University.

Messner, Claude and Michaela Wänke (2011), "Unconscious Information Processing Reduces Information Overload and Increases Product Satisfaction," *Journal of Consumer Psychology*, 21 (1), 9-13.

Monroe, Kristen Renwick (1995), "Psychology and Rational Actor Theory," Political Psychology, 16 (1), 1-21.

Morris, J. S., A. Ohman, and R. J. Dolan (1999), "A Subcortical Pathway To The Right Amygdala Mediating "Unseen" Fear," *Proceedings Of The National Academy Of Sciences Of The United States Of America*, 96 (4), 1680-85.

Morris, J. S., A. Öhman, and R. J. Dolan (1998), "Conscious and Unconscious Emotional Learning in The Human Amygdala," *Nature*, 393 (6684), 467.

Mowen, John C. and Micheal S. Minor (2006), *Understanding Consumer Behavior* (1st ed.). Mason, OH: Thompson.

Öhman, Arne (2002), "Automaticity and The Amygdala: Nonconscious Responses to Emotional Faces," *Current Directions in Psychological Science*, 11 (2), 62.

Olson, Chester L. (1979), "Practical Considerations in Choosing a MANOVA Test Statistic: A Rejoinder to Stevens," *Psychological Bulletin*, 86 (6), 1350-52.

Papousek, Hanus and Mechthild Papousek (1992), "Beyond Emotional Bonding: The Role of Preverbal Communication in Mental Growth and Health,"*Infant Mental Health Journal*, 13 (1), 43-53.

Petty, Richard E., John T. Cacioppo, and David Schumann (1983), "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," *Journal of Consumer Research*, 10 (2), 135-46.

Piaget, Jean (1952), *The Origins of Intelligence in Children* (Margaret Cook, Trans.). New York, NY: International Universities Press.

Pierce, Charles A., Richard A. Block, and Herman Aguinis (2004), "Cautionary Note on Reporting Eta-Squared Values from Multifactor ANOVA Designs," *Educational and Psychological Measurement*, 64 (6), 916-24.

Rajagopal, Priyali and Robert E. Burnkrant (2009), "Consumer Evaluations of Hybrid Products," *Journal of Consumer Research*, 36 (2), 232-41.

Rook, Dennis W. (1984), "Ritual Behavior and Consumer Symbolism," *Advances in Consumer Research*, 11 (1), 279-84.

---- (1985), "The Ritual Dimension of Consumer Behavior," *Journal of Consumer Research*, 12 (3), 251-64.

Schooler, Lael J. and John R. Anderson (1997), "The Role of Process in the Rational Analysis of Memory," *Cognitive Psychology*, 32 (3), 219-50.

Schooler, Lael J. and Ralph Hertwig (2005), "How Forgetting Aids Heuristic Inference," *Psychological Review*, 112 (3), 610-28.

Simon, Herbert A. (1955), "A Behaviroal Model of Rational Choice," *Quarterly Journal of Economics*, 69 (1), 99-118.

---- (1959), "Theories of Decision-Making in Economics and Behavioral Science," *American Economic Review*, 49 (3), 253-83.

Sleeth-Keppler, David and S. Christian Wheeler (2011), "A Multidimensional Association Approach to Sequential Consumer Judgments," *Journal of Consumer Psychology*, 21 (1), 14-23.

Smeesters, Dirk, S. Christian Wheeler, and Aaron C. Kay (2009), "The Role of Interpersonal Perceptions in the Prime-to-Behavior Pathway," *Journal of Personality and Social Psychology*, 96 (2), 395-414.

Srull, Thomas K. and Robert S. Wyer (1979), "The Role of Category Accessibility in the Interpretation of Information About Persons: Some Determinants and Implications," *Journal of Personality and Social Psychology*, 37 (10), 1660-72.

Stevens, James (2002), *Applied Multivariate Statistics for the Social Sciences* (4 ed.). Mahwah NJ: Lawrence Erlbaum Associates.

Storbeck, Justin and Gerald L. Clore (2008), "The Affective Regulation of Cognitive Priming," Emotion*, 8 (2), 208-15.*

Tauber, Edward M. (1972), "Why Do People Shop?," *Journal of Marketing*, 36 (4), 46-49.

Thayer, Robert E. (1978), "Toward A Psychological Theory of Multidimensional Activation (Arousal)," *Motivation and Emotion*, 2 (1), 1-34.

Turk, Tahir, Fiona J. Newton, and Michael T. Ewing (2006), "Using Ambient Media to Promote HIV/AIDS Protective Behaviour Change," *International Journal of Advertising*, 25 (3), 333-59.

van Baaren, Rick B., Daniel A. Fockenberg, Rob W. Holland, Loes Janssen, and Ad van Knippenberg (2006), "The Moody Chameleon: The Effect of Mood on Non-Conscious Mimicry," *Social Cognition*, 24 (4), 426-37.

Veltkamp, Martijn, Ruud Custers, and Henk Aarts (2011), "Motivating Consumer Behavior by Subliminal Conditioning in the Absence of Basic Needs: Striking Even While the Iron is Cold," *Journal of Consumer Psychology*, 21 (1), 49-56.

Verplanken, Bas and Rob W. Holland (2002), "Motivated Decision Making: Effects of Activation and Self-Centrality of Values on Choices and Behavior," *Journal of Personality and Social Psychology*, 82 (3), 434-47.

Weinberger, Joel (2000), "William James and the Unconscious: Redressing a Century-Old Misunderstanding," *Psychological Science*, 11 (6), 439-45.

Wenger, Jay L. (2007), "Research: The Implicit Nature of Intrinsic Religious Pursuit," *International Journal for the Psychology of Religion*, 17 (1), 47-60.

Wiggins, Jerry S. and Aaron L. Pincus (1992), "Personality: Structure and Assessment," *Annual Review of Psychology*, 43 (1), 473.

Winkielman, Piotr, Kent Berridge, and Julia Wilbarger (2005), "Unconscious Affective Reactions to Masked Happy Versus Angry Faces Influence Consumption Behavior and Judgments Of Value," *Personality and Social Psychology Bulletin*, 31 (1), 121-35.

Yang, Moonhee and David R. Roskos-Ewoldsen (2007), "The Effectiveness of Brand Placements in the Movies: Levels of Placements, Explicit and Implicit Memory, and Brand-Choice Behavior," *Journal of Communication*, 57 (3), 469-89.

Yang, Moonhee, David R. Roskos-Ewoldsen, Lucian Dinu, and Laura M. Arpan (2006), "The Effectivenss of "In-Game"," *Journal of Advertising*, 35 (4), 143-52.

Yi, Youjae (1990), "Cognitive and Affective Priming Effects of the Context for Print Advertisements," *Journal of Advertising*, 19 (2), 40-48.

---- (1991), "The Influence of Contextual Priming on Advertising Effects," in *Advances in Consumer Research* Vol. 18: Association for Consumer Research.

Zajonc, Robert B. (1980), "Feeling and Thinking: Preferences Need No Inferences," *American Psychologist*, 35 (2), 151-75.

Zaltman, Gerald (2003), *How Customers Think: Essential Insights into the Mind of the Market*. Boston, MA: Harvard Business School Press.