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To Think or Not to Think?: A New Perspective on Optimal Consumer Decision Making

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TO THINK OR NOT TO THINK?:
A NEW PERSPECTIVE ON
OPTIMAL CONSUMER DECISION MAKING

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Business and Economics
at the University of Kentucky

By
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Lexington, Kentucky

2013

ABSTRACT OF DISSERTATION

TO THINK OR NOT TO THINK?:
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This research introduces a new theoretical perspective (termed the Adaptive Processing Perspective) that reexamines how consumers *should* think before making decisions and the optimal outcomes that result. New insights into conscious ("careful deliberation"), unconscious ("sleeping on it"), and intuitive ("going with your gut") thought processes are provided. Across four studies, empirical evidence demonstrates that consumers can make significantly better decisions by thinking more about routine choices, using their intuition for occasional purchase decisions, and distracting themselves before making major purchase decisions. Specifically, in study 1, increased conscious thought optimized routine decision making due to increases in openness to information. In study 2, consumers using intuition optimized an occasional purchase decision by focusing attention on relevant information. Study 3 demonstrated unconscious thought to be optimal for consumers when making a major purchase decision via their engagement in associative processing. Lastly, study 4 provided further support for the Adaptive Processing Perspective by manipulating the decision setting (i.e., routine, limited, extensive) across a common product and replicating the earlier study results. Several theoretical and practical advances to the domains of information processing and consumer decision making are offered and discussed.

KEYWORDS: Information Processing, Conscious Thought, Unconscious Thought, Intuition, Decision Making

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Dedicated to my friends and family.

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Finally, I would like to thank those who participated as subjects in my research. While most students who participate in REP wish they didn't have to do so, their participation provides the college with an important resource. Those students who participated in my studies are greatly appreciated.

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CHAPTER ONE
INTRODUCTION

It is widely recognized that consumers process information in either a fast, automatic manner, or a slow, more deliberative manner (Evans 2008; Gigerenzer and Gaissmeier 2011). Numerous articles and popular press books have attempted to describe and understand these fundamental approaches to thinking (e.g. Ambady 2010; Bettman, Luce, and Payne 2008; Dijksterhuis 2004; Gladwell 2005; Kahneman 2011). Yet, surprisingly little research has examined when and why these modes of thinking can improve consumer decision making. Understanding when and why consumer decisions can be improved has considerable implications for consumer welfare and marketing practitioners interested in transforming consumer behavior.

In this research, conventional wisdom in the decision making literature is challenged. For decades, both research and practice have suggested that consumers should think carefully before making important decisions and think very little when making routine choices (e.g. Bettman, Luce, and Payne 2008; Gigerenzer and Goldstein 1996; Simon 1955, 1982). However, recent research has questioned this conventional approach. For example, research has suggested that thinking slow through unconscious thought (i.e. sleeping on it) may improve the quality of complex purchase decisions (e.g. Dijksterhuis 2004; Dijksterhuis et al. 2006; Lerouge 2009). Other research has suggested that thinking fast by using one's intuition (i.e. going with your gut) can improve one's ability to evaluate salespeople and make important interpersonal judgments (e.g. Ambady, Krabbenhoft, and Hogan 2006; Kardes 2006; Kenny et al. 1994). These important studies demonstrate that research is still unclear regarding how consumers

should think to optimize decision making for specific decision settings. Thus, the current research provides a new perspective of how consumers should think before making a choice to optimize their decision making. It is suggested here that consumers should think more carefully about routine choices, use intuition for occasional purchases, and rely on unconscious thought for major purchase decisions.

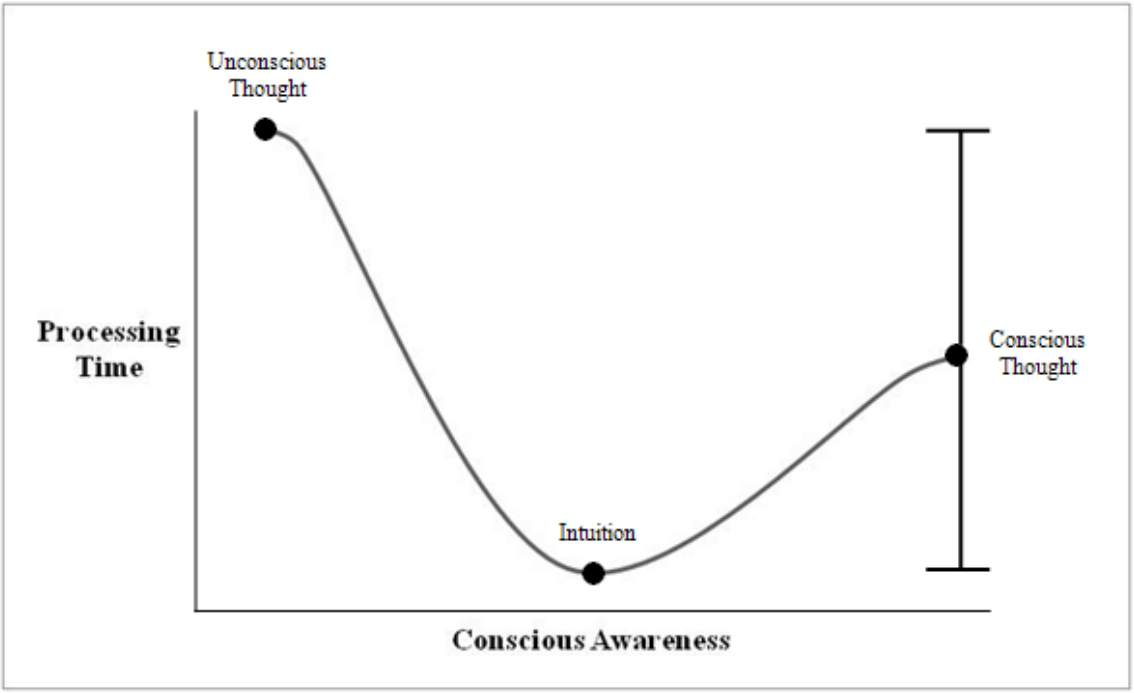
The current research offers four main contributions. First, a comprehensive view of consumer decision making is taken in this research to identify when various modes of thought (conscious, unconscious, and intuition) are optimal across multiple decision settings (routine, occasional, and major purchases). Second, the results of four studies provide the foundation for a new theoretical perspective of decision making, termed the Adaptive Processing Perspective. This perspective is counter to conventional wisdom (i.e. think more as the decision is perceived to be more important) in the decision making literature. Third, process mechanisms are identified and empirically supported to explain why each mode of thought is optimal for a given decision setting. New theoretical links are established between the effectiveness of conscious thought and openness to information, intuition and focused attention, and unconscious thought and associative processing. Finally, implications and recommendations for marketers and policy makers who are interested in transforming consumer behavior are offered.

Next, the three modes of thought are described, followed by a discussion of the characteristics of each that provide unique advantages for optimal consumer choice. Hypotheses are then formulated within an encompassing taxonomy of consumer decisions to describe how and why a particular mode of thought should be utilized to improve decision making.

CHAPTER TWO
CONCEPTUAL BACKGROUND

Once the information search stage of consumer decision making has concluded, there are three fundamental ways consumers can think about what they learned before making a decision. Individuals can utilize conscious, unconscious, or intuitive thought to process information. Two key factors differentiate each mode of thought; the *time* to process decision information and the *degree of consciousness* during deliberation. Each mode of thought is described next and is summarized in figure 2.1.

Figure 2.1
MODES OF THOUGHT



Conscious Thought

Conscious thought refers to the explicit, deliberate consideration of information during decision making. Individuals select either a compensatory (e.g. Weighted Additive, described below) or noncompensatory (e.g. Lexicographic) evaluation model and analyze information according to the specifications of the chosen model (Bettman, Luce, and Payne 2008). Consider the process of buying a new computer. When consciously thinking, individuals will explicitly determine the relative importance of product attributes (e.g. screen size, processing speed, etc.), formulate a "total score" for each brand, and decide based on the weighted attribute score. This rule-based process is representative of how individuals explicitly deliberate among alternatives (e.g. Bettman 1979; Gigerenzer and Gaissmaier 2011; Nordgren and Dijksterhuis 2009). During this process, consciousness allows consumers to be more open to considering new information and information that would typically be ignored (Levav and Zhu 2009) relative to other modes of thought. This openness to information can be beneficial in decisions where choice is often based on limited information.

During conscious thought, individuals consciously consider the information previously learned during information search. As a result, explicit awareness is highest during this mode of thought. Furthermore, individuals who consciously think can choose how long they deliberate on available information. The duration of deliberation is often a function of the decision maker's goals (Bettman, Luce, and Payne 2008) such as minimizing effort and avoiding difficult trade-offs. This variation in processing time is represented by the variance bar in figure 1.

Unconscious Thought

Unconscious thought is characterized as deliberation outside of conscious attention, deliberation under distraction, or colloquially as “sleeping on it”. Unconscious thought occurs outside of conscious awareness over an extended period of time, and focuses on cognitive information (e.g. product attributes) present in the decision (Dijksterhuis 2004). Recall the prior computer example. After information search has concluded, conscious thought is occupied with other tasks to allow the unconscious to process information. Then, after a period of time, the decision maker revisits the problem to make a choice (with little to no additional conscious thought). Research has suggested that consumers who use unconscious thought are better at discriminating among alternatives (Dijksterhuis 2004), weighing attribute information (Bos, Dijksterhuis, and van Baaren 2011), and selecting more satisfying choices (Dijksterhuis and van Olden 2006; Messner and Wänke 2011) relative to consumers who use conscious thought. These findings are captured by the Powerful Unconscious view (Dijksterhuis and Nordgren 2006), which suggests that unconscious thought is better suited for processing large amounts of information and making important choices.

Unconscious thought has the lowest explicit awareness of any mode of thought (see figure 1). For unconscious thought to occur, individuals must occupy or distract their consciousness (Dijksterhuis 2004). Furthermore, unconscious thought requires an extended amount of time to process information. Unconscious thought engages one’s associative processing to recognize patterns and links among a set of information (Claxton 1997; Lewicki, Hill, and Czyzewska 1992), which can provide a unique perspective when individuals lack experience in a domain. However, engaging in

associative processing is typically longer in duration relative to the rule-based approaches of conscious and intuitive thought (Gigerenzer and Gaissmeier 2011).

Intuitive Thought

A third mode of thought has gained attention via the popular press (e.g. Gladwell 2005). Intuition, also referred to as intuitive thought or "gut feelings", occurs when individuals immediately recognize the salient aspects of information and utilize that information to formulate quick decisions (Ambady 2010; Epstein 2010). Intuition is distinct from unconscious thought, as intuition is a rapid (if not immediate) process that focuses on the salient aspects and emotions in a decision. Recall the computer example. Consumers using intuitive thought are drawn to salient information (e.g. brand name, screen size) and quickly apply a decision rule to make a choice. Consumers may be unable to provide a cognitive explanation for the basis of their choice, instead making a decision based on a "gut feeling". Emotions commonly drive intuitive thought (Epstein 2010) and individuals often describe intuitive decisions as a result of a spontaneous feeling or emotional state (Ambady 2010; Plessner, Betsch, and Betsch 2007).

Intuition is unique in both its processing time and degree of explicit awareness (see figure 1). The rapid nature of intuitive thought minimizes processing time through the use of thin slicing (Ambady 2010). Thin slicing focuses one's attention on limited pieces of salient information that are diagnostic to the decision, which can be beneficial when individuals have some prior experience in a domain. This focused attention is necessary for rapid, automatic processing to occur (Epstein 2010). Furthermore, consumers who use intuition exhibit a moderate degree of explicit awareness given the

nature by which intuitions are developed. Intuitive thought develops through conscious experiences that are subsequently committed to unconscious memory (Epstein 2007). Once intuitive decision making rules have been developed, consumers using intuition can evaluate information rapidly with minimal conscious awareness.

Next, hypotheses are developed based on the unique characteristics of each mode of thought relative to particular decision settings. These predictions form the Adaptive Processing Perspective, which suggests consumers should think more carefully about routine decisions, use intuition for occasional decisions, and rely on unconscious thought for major purchase decisions in order to optimize choice.

CHAPTER THREE
HYPOTHESIS DEVELOPMENT

To examine when each mode of thought can have the greatest benefit on consumer decision making, Howards (1977) encompassing taxonomy of consumer decisions which includes Routine Response Behavior, Limited Problem Solving, and Extensive Problem Solving is used. Routine Response Behavior (RRB) involves the most basic, habitual consumer decisions such as food choice. Extensive Problem Solving (EPS) is virtually the opposite of routine behavior, as individuals often spend a great deal of time before making these major purchase decisions (e.g. buying new technology). A third form of consumer decision making is Limited Problem Solving (LPS). Positioned between RRB and EPS, LPS settings are occasional purchases which involve the integration of information from past experience with new information in the current setting (e.g. buying new clothes). Descriptions and predictions for each setting are provided next.

Routine Response Behavior

RRBs are the most basic type of consumer decisions (Howard 1977; Swaminathan, Zinkhan, and Reddy 1996) and are typically low involvement, repeat purchases. Despite the limited attention these decisions usually receive, routine decisions such as food choice have a profound impact on the long-term health and well-being of consumers (Chandon and Wansink 2007; Seiders and Petty 2004). As a result, the cumulative effects of these everyday choices can be substantial over one's lifetime. Conventional wisdom along with past research (e.g. Bettman, Luce, and Payne 2008;

Gigerenzer and Goldstein 1996; Simon 1982) suggests that routine choices are less important to consumers and conscious thought should be preserved for more important decisions. Conventional wisdom thus suggests that routine decisions can be effectively made with minimal conscious thought by applying a basic decision strategy or rule of thumb. Since individuals have a great deal of prior experience in these domains, it is suggested that applying a simple heuristic or selecting the same brand from the most recent purchase can be optimal (Gigerenzer and Goldstein 1996). However, considerable research has shown that heuristics are often deceptive and lead to poor decision making (e.g. Betsch et al. 2001; Gigerenzer and Gaissmaier 2011; Hutchinson, Alba, and Eisenstein 2010). For example, as consumers gain experience in a domain, they often ignore new information and choose to rely on their past experience (Wood and Lynch 2002). When consumers rely on their past experience, they develop simple decision making rules such as a brand name or previous purchase heuristic that can be used to make future choices. These simple decision rules will be adhered to in future choices, even in the presence of information that would improve decision making (Betsch et al. 2001). Key attributes or important pieces of information will be overlooked in an effort to minimize and preserve conscious thought. This preservation of conscious thought and reliance on heuristics leads to a reduction in subsequent decision quality.

The Powerful Unconscious view offers an alternative approach to how consumers should think before making routine decisions. In order for consumers to counteract their reliance on minimal information that characterizes routine choices, the Powerful Unconscious view suggests that unconscious thought can be used to weigh information more effectively instead of focusing on salient attributes (Dijksterhuis et al. 2006;

Ulkumen, Chakravarti, and Morwitz 2010). In these decisions, using unconscious thought is argued to result in greater consideration of all available attributes instead of relying on a simple heuristic developed from past experience. This more optimal weighting of attribute information is argued to subsequently optimize choice. However, recent research has not supported these arguments which underlie the Powerful Unconscious view. Research has shown that consumers using conscious thought can effectively weigh attribute information (Newell et al. 2009), and consumers only wrongly weigh product attributes when forced to think much longer than they prefer (Payne et al. 2008). Together, these studies suggest that conscious thought is only problematic when individuals spend far too much time thinking about routine decisions. If consumers extensively think about routine choices, they become mired in trivial information (Sela and Berger 2012), subsequently attempting to consider all available attributes which negatively impacts decision quality. However, if consumers only spend some additional time carefully thinking before making these choices, they should consider some key additional information and avoid the tendency to "overthink".

Thus, it is suggested here that additional conscious thought will optimize routine decision making because individuals will be more open to information. Research has consistently shown that the more an individual consciously thinks about a decision, the more likely they are to consider new information (e.g. Levav and Zhu 2009; Ratner and Kahn 2002; Wood and Lynch 2002). This is extremely beneficial in routine decision making where choice is typically based on simple heuristics and past experience. Instead of using a simplifying heuristic and/or becoming complacent from past experience, consumers will consider more attributes that are important to the decision when giving

some additional conscious thought to their choice. Choice will be based on more attributes than just brand name or most recent purchase. Instead, considering more information in routine choice will increase the decision maker's knowledge of various alternatives and should lead to improved choice. Whereas unconscious and intuitive thinking are driven by simplifying heuristics based on prior choice behavior (e.g. tasty = unhealthy heuristic, Raghunathan, Naylor, and Hoyer 2006), some additional conscious thought increases one's openness to consider new information, subsequently leading to a greater consideration of various alternatives and ultimately optimizing choice. Thus, I expect that:

H1a: For routine response behaviors, consumers utilizing conscious thought are significantly more likely to identify an optimal choice compared to consumers using intuition or unconscious thought.

H1b: For routine response behaviors, the relationship between conscious thought and optimal choice is mediated by increased openness to information.

Limited Problem Solving

LPS settings include occasional purchases for consumers (Howard 1977; Swaminathan, Zinkhan, and Reddy 1996) such as clothes or shoes. Here, consumers integrate their past experience with new decision information that may have emerged since the last purchase occasion (Howard 1983). Conventional wisdom suggests that consumers should consciously think before making these occasional purchases (Howard 1983; Johnson and Auh 1998; Lehmann, Moore, and Elrod 1982; Mihart 2012). Because these decisions are somewhat infrequent, consumers cannot rely solely on past experience to make a decision (Howard 1983). New brands or changes in product attributes may have emerged since the last purchase decision. Therefore, consumers should spend time

thinking about their past experiences and compare that knowledge with any new brands or recent changes in the purchase setting (Johnson and Auh 1998; Mihart 2012). If consumers consciously think and integrate prior knowledge with new information, conventional wisdom suggests that consumers will identify optimal choices.

Alternatively, the Powerful Unconscious view also tries to explain how consumers should approach occasional purchases by suggesting that unconscious thought should improve choice. In these settings, the unconscious is suggested to be better able to effectively categorize new information as favorable or unfavorable and integrate that information in memory with past experience to make a choice (Dijksterhuis 2004; Dijksterhuis and Nordgren 2006; Nordgren and Dijksterhuis 2009). As the unconscious compares new information with prior experiences stored in memory, it determines what information is important and uses that information to make a decision. Because the capacity of the unconscious is greater than conscious thought (Dijksterhuis and Nordgren 2006), the unconscious is suggested to have the processing resources to allow consumers to effectively think about new information, determine how that information relates to past experiences, and decide what information is important to consider in the current decision to optimize choice.

Counter to existing perspectives, a novel prediction is made here regarding the use of intuition. It is hypothesized that consumers using intuition will make better occasional purchase decisions when using intuitive thought because it does not rely on memory to evaluate product attributes. When conscious and unconscious mechanisms are utilized in occasional purchase decisions, the characteristics of prior purchase experiences are recalled in memory and used as an input to the current decision.

However, memory and retrieval processes are often imperfect (e.g. Kardes, Posavac, and Cronley 2004; Lynch and Srull 1982; Schlosser 2006). When consumers attempt to recall past experiences from memory, they often alter prior knowledge, incorrectly recall past preferences, and remember information that makes prior decisions appear more favorable. Using this distorted knowledge as a point of comparison in decision making is problematic. Furthermore, retroactive interference, which is the reduced knowledge of prior experiences as a result of learning new information, may happen when consumers learn about any changes that have occurred since their last purchase experience (Lynch and Srull 1982; Tulving and Psotka 1971). Since consumers learn about new changes in the marketplace during occasional decision making (Howard 1977), any prior knowledge of the market may not be accurately recalled, if it is even remembered at all. Subsequent decisions that are based on distorted information or that involve memory failures are likely to be suboptimal.

However, consumers who use intuition are not subject to the distortions of memory that are prevalent among conscious and unconscious thought. Instead, using intuition focuses one's attention on the limited, relevant details of the decision to optimize choice. As one gains experience in a domain, using intuition allows them to prioritize and attend to important, diagnostic information that directly relates to optimal outcomes (Ambady 2010; Bargh and Morsella 2008; Bechara et al. 1997). This "thin slice" of diagnostic information (Ambady 2010; Kardes 2006) focuses attention on the specific attributes that are needed to make an evaluation. Decision rules are thus developed from experience that lead to focused attention on the key attributes of an optimal choice. Because individuals who use intuition for occasional purchase decisions

focus their attention on the relevant details, they will not be susceptible to influence from memory distortions and will instead make better choices by directing their attention to the important information that is available. Thus, I predict that:

H2a: For limited problem solving, consumers utilizing intuition are significantly more likely to make an optimal choice compared to consumers using conscious or unconscious thought.

H2b: For limited problem solving settings, the relationship between intuition and optimal choice is mediated by increased focused attention.

Extensive Problem Solving

EPS settings are perceived as the most important decisions consumers make. These decisions include buying a car, house, or new technology (Howard 1977; Swaminathan, Zinkhan, and Reddy 1996). For decades, conventional wisdom has suggested that major purchase decisions merit extensive conscious thought (Bettman, Luce, and Payne 2008; Johnson and Meyer 1984; Kahneman 2011; Simon 1955, 1982). Because consumers often have limited experience in these domains and spend the most money in these settings, consumers give the greatest conscious consideration to these decisions. Extensive conscious thought is likely to lead individuals to perceive a large number of attributes to be important. Subsequent decisions will be based on a majority of the information one has previously learned. However, research has suggested that conscious thought may be problematic at making optimal choices when a large number of attributes are perceived to be important (e.g. Messner and Wänke 2011; Wilson et al. 1993). When consumers consciously think before major decisions, they overweigh the importance of secondary features and lose focus on the key attributes. This comes from a desire to extensively consider all aspects of the decision before making a choice. As a

result, too much importance is placed on less important factors and decision quality decreases.

The Powerful Unconscious view offers an alternative approach to how consumers should think before making these major decisions. Unconscious thought is suggested to have greater information processing capacity and consumers are suggested to be more objective during information processing in these settings (Dijksterhuis 2004; Dijksterhuis and Nordgren 2006; Wilson 2002). This increased capacity allows individuals to more extensively consider a set of information. Furthermore, the unconscious is suggested to more objectively weigh product attributes and avoid influence from secondary factors that are not necessarily representative of the best choice. As a result, choice should be based primarily on a comprehensive consideration of the most important attributes to the decision. However, empirical findings have failed to support these explanations of why unconscious thought might be optimal. Unconscious thought does not appear to increase attribute knowledge (thus ruling out capacity explanations) or improve the decision maker's ability to weigh which information is important (e.g. Gonzalez-Vallejo et al. 2008; Newell et al. 2009). Together, these recent findings suggest that if unconscious thought does indeed optimize choice quality when making major purchase decisions, a new theoretical explanation is needed to explain this effect.

A new account of why unconscious thought optimizes choice is offered here. It is suggested that unconscious thought optimizes decision making for major purchases given one's ability to engage in associative processing. Associative processing has been linked to unconscious thought in prior research (e.g. Claxton 1997; Lewicki, Hill, and Czyzewska 1992) and is a form of information processing where individuals attempt to

find patterns and consistencies in a set of information instead of applying a decision rule or use a previously established tactic. For example, associative processing automatically groups related sets of information together and allows consumers to make judgments based on consistencies in that information. If one is attempting to decide between, for instance, tablet computer brands, associative processing would group related sets of attributes together automatically (e.g. screen size, resolution, and battery life as potential entertainment experience) and make judgments based on those patterns without needing extensive knowledge of those attributes. Associative processing has been recognized as beneficial in domains where individuals lack experience and face difficulty in formulating a solution (e.g. Beeman and Bowden 2000; Yang et al. 2012). Similar benefits are expected here, where product experience is limited and optimal solutions may be difficult to recognize. The other forms of thought, however, are problematic. Consumers using conscious and intuitive thought will face difficulty in determining which attributes are truly important due to a lack of experience in these settings. These individuals will face problems in identifying decision rules to process what they have learned, which is necessary for conscious and intuitive thinkers to be effective (Gigerenzer and Gaissmaier 2011). As a result, conscious thinkers will place too much importance on secondary attributes that are not as important to the decision, while intuitive thinkers will overweigh salient information in an effort to make a quick decision. Alternatively, individuals utilizing unconscious thought will engage in associative processing which will subsequently optimize decision making.

H3a: For extensive problem solving, consumers using unconscious thought are significantly more likely to make an optimal choice compared to consumers using conscious thought or intuition.

H3b: For extensive problem solving, the relationship between unconscious thought and optimal choice is mediated by increased associative processing.

Together, hypotheses 1-3 form the Adaptive Processing Perspective, which is tested across four studies. Studies 1-3 isolate each decision setting to investigate these hypotheses. Furthermore, underlying theoretical mechanisms related to each form of thought are identified and competing explanations are ruled out. In study 4, the decision setting is manipulated across a common product. Further support for the main predictions is provided while ruling out additional alternative explanations. The studies are described next.

CHAPTER FOUR
METHODOLOGY

PILOT STUDY

To test the optimality of each mode of thought across various decision settings, it is first necessary to determine specific purchases that characterize each setting. To identify products in each setting, a pilot study was conducted. Thirty undergraduate students completed a survey for course credit. Participants answered three open-ended questions related to routine (What are some products that you purchase routinely?), occasional (What are some products that you occasionally purchase?), and major (What are some products that are major purchases which you rarely make?) purchase decisions.

Participants were asked to list several categories of products for each type of decision. For routine purchases, groceries (87%) were the most commonly listed product category. For occasional purchases, shoes (67%) were the most commonly listed category. For rarely made major purchases, computers (47%) were the most commonly listed category. Furthermore, to identify a product that can be manipulated in study 4 as routine, occasional, or major, responses were analyzed to identify if any product was listed in all three categories. Clothes were the only product listed in every category and was used to comprehensively test the Adaptive Processing Perspective in study 4.

STUDY 1: ROUTINE RESPONSE BEHAVIOR

Conventional wisdom and past research (e.g. Gigerenzer and Goldstein 1996; Simon 1982) suggests that routine decisions can be optimized with minimal conscious thought. Because individuals have a great deal of prior experience in these domains, it has been suggested that a quick decision based on a simplifying heuristic is all that is needed to make an effective choice (Gigerenzer and Goldstein 1996). However, following the Adaptive Processing Perspective developed here, it is suggested that consumers should think more about these decisions. Thinking more carefully about routine choices will reduce one's reliance on heuristics. As a result, individuals who consciously think more about these choices will be more open to consider additional information which subsequently allows them to make superior decisions. This improved decision making in routine choice is valuable to consumers, as the cumulative effect of these decisions is substantial over one's lifetime (e.g., food choices).

Stimuli Development

Ninety-seven undergraduates completed this study for course credit. Participants initially completed an online survey to develop stimuli for the main study. To determine commonly purchased grocery items, participants were asked how frequently they purchased various foods at the grocery store on a scale from 1-*Never Purchase* to 7-*Always Purchase*. The most commonly purchased category was frozen pizza. Furthermore, participants were asked to list the brand of frozen pizza they most frequently purchased. The three most commonly purchased brands were included in the

main study to represent routine choices. A fourth fictitious brand was included to test whether participants could overcome their heuristic associations (which are prevalent in routine decision making) and identify a choice manipulated to be superior. Importantly, the fictitious brand name was pretested and consumers had significantly lower attitudes relative to the other brands. These attitude scores are in bold at the top of figure 4.1. Stimuli from study 1 are displayed in the Appendix.

To manipulate the highest quality choice in each category, participants also rated frozen pizza attributes in terms of importance on a 20-point scale (*very important /very unimportant*, following Rey, Goldstein, and Perruchet 2009). Four fictitious products were created with each of the brand names and 12 attributes developed based on participant ratings. Weights were applied to each attribute (as favorable or unfavorable) and summed to form an overall attractiveness score for each of the four frozen pizza options (see figure 4.1). For example, a known brand received a plus 11, lower calories (500) received a plus 10.7, a high fat content (34 g) received a minus 10.2, and so on. These scores were then summed to compute an overall expected utility for each option. The fictitious brand was manipulated to have the highest expected utility score relative to the other brands and was thus representative of the best choice. Best choice was also analyzed at the subject level based on individual attribute importance from pretesting. No meaningful differences emerged across the aggregate and subject level analyses. For simplicity, results are reported at the aggregate level.

Figure 4.1
STUDY 1 STIMULI

	Digiorno (5.04)[a]	Red Baron (4.25)	Tombstone (4.32)	DeAngelo's (3.50)	Importance Weight[b]
Brand Name	Known (+)	Known (+)	Known (+)	Unknown (-)	11.0
Calories	700 (-)	500 (+)	700 (-)	500 (+)	10.7
Fat Grams	35 (-)	35 (-)	35 (-)	17 (+)	10.2
Carbohydrate Grams	56 (+)	56 (+)	92 (-)	92 (-)	8.6
Protein Grams	17 (-)	34 (+)	17 (-)	34 (+)	8.8
Cholesterol	25 (+)	75 (-)	25 (+)	25 (+)	8.3
Sodium	1400 (-)	1400 (-)	1400 (-)	650 (+)	8.3
Fiber	6 (+)	2 (-)	2 (-)	6 (+)	7.8
Sugars	14 (-)	7 (+)	7 (+)	14 (-)	7.6
Vitamin A	4 (-)	18 (+)	4 (-)	18 (+)	7.0
Vitamin C	2 (-)	11 (+)	11 (+)	2 (-)	7.1
Taste Rating	4.5 (+)	3.5 (-)	3.5 (-)	4.5 (+)	17.0
Total Score	-7.0	9.2	-44.4	**43.8**	

[a] Pretest attitude ratings are in parentheses.
[b] Each attribute was evaluated on a 20 point scale of importance. Total importance across all attributes could range from 12 to 240.

Lastly, to ensure that buying pizza was viewed as routine, participants answered three items related to buying frozen pizza. The items included “buying frozen pizza is a routine purchase for me” (strongly agree/disagree; reverse coded), “buying frozen pizza requires a great deal of thought” (strongly agree/disagree), and “when choosing among frozen pizzas, how many choices do you consider?” (1 – one, 4 – a few, 7 - many). The average across the items ($M = 3.50$, $\alpha = .70$) was compared to the midpoint (4) of the scale. Buying frozen pizza was viewed as a routine behavior, as the average was significantly lower than the scale midpoint ($t = -4.39$, $df = 96$, $p < .01$).

Main Study

Approximately three weeks after completing part 1, participants completed the main study. This was done to ensure that preferences from the stimuli development stage were consistent with preferences in the focal study. Participants were randomly assigned to one of four between-subjects conditions (conscious thought, unconscious thought, intuition, or control).

At the beginning of the survey, participants were told that they would view four frozen pizza brands and choose the best brand. Participants initially completed four involvement items (“Please answer the following regarding your feelings toward buying frozen pizza at the grocery store”, *unimportant/important*, *uninteresting/interesting*, *insignificant/significant*, and *unexciting/exciting*) from Zaichowsky (1985). These items ($\alpha = .85$) formed an initial measure of involvement toward the routine behavior of buying frozen pizza. Involvement was included to rule out the alternative explanation that changes in involvement explain why conscious thought improves routine decision

making. Participants were then informed they would complete the pizza selection task. All participants were told to learn as much as possible about each product while product information was displayed. These instructions were designed to avoid problems with impression formation issues in testing unconscious thought effects (Lassiter et al. 2009). The frozen pizza brands were then displayed randomly to participants. Each brand was displayed across all 12 attributes for 15 seconds each. Each product consisted of 12 attributes to hold decision complexity constant across products (Dijksterhuis et al. 2006). All attributes were simultaneously displayed for each product, and the attributes were presented as a fictitious nutrition label with a customer rating.

After exposure to each product, the mode of thought was manipulated. Participants in the conscious thought condition were given up to 1 minute to carefully think about the information they just viewed and could advance forward at any time. This self-pacing of conscious thought was done to avoid problems with forcing participants to think longer than they prefer (Payne et al. 2008). Conscious thinkers did not have access to attribute information during deliberation as prior research has shown no differences between conscious thought with attribute information and conscious thought without attribute information during choice deliberation (Rey, Goldstein, and Perruchet 2009). Participants in the unconscious thought condition solved anagrams for 1 minute. The anagram task occupies conscious thought and allows unconscious thought to process information (Dijksterhuis 2004; Lerouge 2009). Participants in the intuition condition were instructed to make quick evaluations and choices based on their gut feelings. Lastly, participants in the control condition were simply told to answer questions about the brands they just viewed.

After the experimental manipulation, all participants answered a series of attitude and choice questions. Participants were first asked to select the best brand of frozen pizza. Then, to assess attitudes, participants rated how attractive/unattractive each brand was on a 50-point slider scale (-25 to +25; Nordgren and Dijksterhuis 2009). No values were made visible on the scale.

After the choice and attitude items, participants completed follow-up questions regarding their decision process. First, participants completed a five-item scale ($\alpha = .95$) of openness to information (Leavitt and Walton 1988, Putrevu and Ratchford 1997) adapted to information search for grocery choices (see Appendix). Participants then answered whether their choice was based on one attribute, a few attributes, most of the attributes, or all of the attributes (Dijksterhuis 2004; Waroquier et al. 2009). These items were included to rule out the explanation that a simple noncompensatory strategy (based on a limited number of attributes) can optimize a routine decision. Lastly, participants completed the same measures of involvement ($\alpha = .92$) adapted to the selection task they just completed. Involvement was measured again to examine whether changes in involvement were related to conscious thought or making an optimal choice.

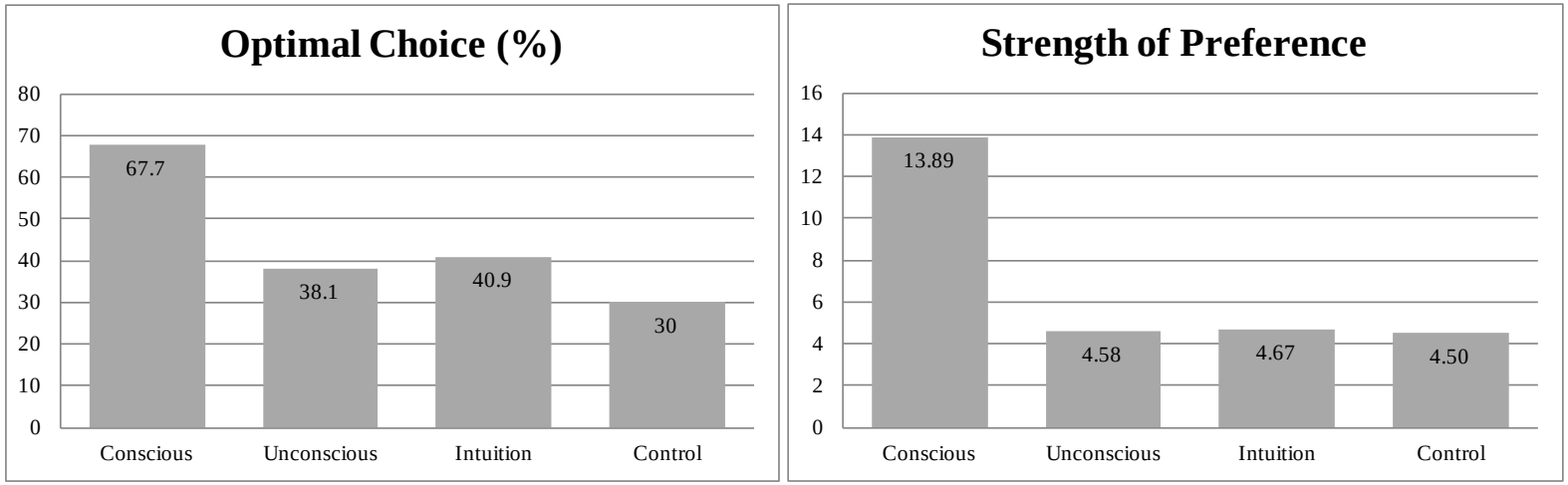
Results

To ensure conscious deliberation occurred, the duration of self-paced conscious thought was compared to the control condition across the deliberation period and answering of choice questions. Conscious thinkers ($M = 43.7$ sec) spent significantly greater time elaborating and answering choice/attitude questions relative to control

participants (M = 19.8 sec, $p < .001$), suggesting that explicit thought did indeed occur in the conscious thought condition.

To compare the modes of thought in the pizza selection task, both the selection of the highest quality choice and attitude measures were considered. To test whether individuals identified the best brand, responses were dummy coded to reflect a "1" for selection of the best brand (the fictitious DeAngelo's) and "0" for the other three brands. For attitudes, the average attitude toward the three inferior brands was subtracted from the attitude toward the fictitious brand to form a strength of preference measure (Dijksterhuis 2004; Lerouge 2009). Results are summarized in figure 4.2. For both measures, consumers utilizing conscious thought were more likely to identify optimal choices. First, a logistic regression was conducted to examine the impact of mode of thought condition on choice. The mode of thought condition variable was a significant predictor of selection of the highest quality choice (Nagelkerke $R^2 = .122$, $p < .05$). Results revealed that consumers using conscious thought (M = 67.7%) selected the highest quality choice more frequently relative to consumers in the control condition (M = 30%, $\beta_{exp} = 4.88$, $p < .01$). Consumers using either unconscious (M = 38.1%, $\beta_{exp} = 1.44$, $p > .05$) or intuitive (M = 40.9%, $\beta_{exp} = 1.62$, $p > .05$) thought were not significantly more likely to select the highest quality choice relative to the control group. Consumers using conscious thought also selected the highest quality choice more frequently than consumers using unconscious ($\beta_{exp} = 3.34$, $p < .05$) and intuitive ($\beta_{exp} = 3.02$, $p = .05$) thought. These results support H_{1a}.

Figure 4.2
STUDY 1 RESULTS



A one-way ANOVA was conducted to examine the effect of mode of thought condition on strength of preference. The condition variable significantly predicted strength of preference ($F(3,93) = 4.68$, $p < .01$) and results revealed that consumers using conscious thought had a greater strength of preference (M = 13.89) toward the highest quality choice relative to consumers using unconscious thought (M = 4.58), consumers using intuition (M = 4.67), and consumers in the control condition (M = 4.50, all *p*s < .05). These results further support H_{1a}.

To test the underlying mechanism of openness to information, mediation analyses were conducted following Zhao, Lynch, and Chen (2010). The strength of preference measure was used as the measure of decision quality (results were similar for the choice measure and thus were not included). A bootstrap analysis (all coefficients are unstandardized) revealed a positive, significant indirect effect of conscious thought on decision quality (a x $b = 2.23$). The 95% confidence interval excluded zero (.50 to 5.47). Conscious thought was significantly positively related to openness to information ($a = .69$), and openness to information was significantly positively related to greater strength of preference ($b = 3.23$) in routine settings. The direct effect of conscious thought to greater strength of preference was nonsignificant ($c = 4.22$, $p > .05$). These findings suggest the mediator of openness to information is consistent with the hypothesized model of conscious thought (i.e. indirect-only mediation; Zhao, Lynch, and Chen 2010) and thus supports H_{1b}.

Furthermore, additional analyses were conducted to rule out explanations provided by the conventional wisdom of conscious thought in routine decision making. First, conscious thought time was positively correlated with selecting the

best brand (r = .31, $p < .05$). Furthermore, comparisons were performed across the number of attributes considered when making a decision. Conscious thinkers reported using *more* attributes (45% reported using most or all attributes) when asked whether the decision was based on one, a few, most, or all attributes ($\chi^2 = 14.03$, $p = .12$) relative to unconscious thinkers (30%), intuitive thinkers (17%), and consumers in the control condition (21%). Lastly, the change in involvement with the grocery selection task relative to one's routine purchases was analyzed. During the pizza selection task, conscious thinkers did not demonstrate a significant change in involvement (M = .37) relative to the unconscious thought (M = .07), intuition (M = .12), or the control conditions (M = -.13, all *p*s > .05). Thus, any changes in involvement during the pizza selection did not relate to selecting the optimal choice. These findings challenge the traditional perspective which suggests minimal thought and the use of heuristics is optimal in routine decision making. Here, consumers who used conscious thought made superior routine decisions by considering *more* information in these settings relative to other modes of thought.

Study 1 Implications

Conventional wisdom in decision making suggests that minimal conscious thought is all that is required to make optimal routine decisions (Gigerenzer and Goldstein 1996). Contrary to this perspective, study 1 demonstrates that consumers who consciously think more before making their choices made higher quality choices. This result was due to increases in openness to information. Additionally, alternative explanations related to minimal processing and the use of heuristics provided by the

conventional wisdom of conscious thought were empirically ruled out. As a result, these findings provide novel insights into the importance of thinking carefully in routine decision making. Given the cumulative effects of routine choices over time on one's health and well-being, it is suggested here that consumers should consciously think more about these decisions. Next, occasional purchase decisions are investigated.

STUDY 2: LIMITED PROBLEM SOLVING

LPS settings are characterized as occasional purchases of moderate importance, where individuals will often attempt to integrate new information with past experience to make a decision (Howard 1977). Both conventional wisdom (suggesting conscious thought) and the Powerful Unconscious view (suggesting unconscious thought) suggest a different mode of thought as being effective at recalling information and using it to aid decision making. However, using memory as a decision input is likely ineffective given the prevalence of distortions of memory (e.g. Kardes, Posavac, and Cronley 2004; Schlosser 2006). Instead, intuition is argued to be optimal here given its ability to focus attention on the limited, relevant details of the decision. This focused attention is not dependent on memory and develops from one's prior experiences. Subsequent decision making will be optimized from focusing attention on the important information that is available.

Stimuli Development

One-hundred twelve undergraduates completed this study for course credit. Participants began the stimuli development phase by rating the importance of 12 athletic shoe attributes similar to study 1. Participants also answered familiarity and attitude questions for a number of different athletic shoe brands. Consumers are moderately familiar with brands in occasional purchase decisions (Howard 1977), so brands were selected that were moderately familiar to participants (between 3.5 and 4.5 on the 7-point scale) which had no differences in attitudes as displayed in bold at the top of figure 4.3. Attitudes toward each brand were held equal to rule out the explanation that prior preferences influenced choice. Four fictitious products were created which are available in figure 4.3. Stimuli from study 2 are displayed in the Appendix.

Figure 4.3
STUDY 2 STIMULI

	Brooks (3.66)[a]	Mizuno (3.68)	Saucony (3.71)	Avia (3.59)	Importance Weight[b]
Heel Stability	Low (-)	High (+)	High (+)	Low (-)	15.5
Toe Stability	Low (-)	High (+)	Low (-)	High (+)	14.8
Insert Padding	1/16“ (-)	1/16“ (-)	1/4“ (+)	1/4“ (+)	15.6
Breathability	High (+)	Low (-)	High (+)	Low (-)	15.0
Lace Colors	Variety (+)	Variety (+)	Variety (+)	White Only (-)	6.9
Distance Rating	400 miles (+)	400 miles (+)	400 miles (+)	200 miles (-)	14.7
Weight	18 oz (-)	18 oz (-)	18 oz (-)	10 oz (+)	15.5
Outsole	Carbon Rubber (-)	Blown Rubber (+)	Blown Rubber (+)	Blown Rubber (+)	14.7
Sole Type	Raised (-)	Raised (-)	Flat (+)	Raised (-)	15.0
Traction	High (+)	Low (-)	Low (-)	High (+)	15.1
Colors	Variety(+)	Limited(-)	Limited(-)	Variety(+)	11.3
Fashion Rating	4.4 (+)	4.4 (+)	3.2 (-)	3.2 (-)	12.8
Total Score	-15.3	-8.1	**27.9**	7.1	

[a] Pretest attitude ratings are in parentheses.
[b] Each attribute was evaluated on a 20 point scale of importance. Total importance across all attributes could range from 12 to 240.

Similar items from study 1 were used to verify that purchasing shoes is an occasional purchase decision. The average of the three items ($M = 4.21$, $\alpha = .85$) was compared to the midpoint of the scale. Buying athletic shoes was perceived as an occasional decision, as ratings toward buying athletic shoes did not significantly differ from the midpoint of the scale ($t = 1.83$, $df = 111$, $p > .05$).

Main Study

Approximately three weeks after part 1, participants completed the main study. Participants were randomly assigned to one of four between-subjects conditions (conscious thought, unconscious thought, intuition, control).

Study 2 was similar in design to study 1. Participants were told they would evaluate a set of athletic shoes and choose the best brand. Before they viewed each of the brands, however, participants were given background information on some of the shoe attributes. In occasional decision making, consumers typically learn about attributes they lack knowledge of before making a choice (Howard 1977). However, consumers do not typically need to learn background information on all available attributes. Therefore, to increase the validity of the study, a pretest was conducted and participants were asked to report their knowledge of the various athletic shoe attributes in figure 4.3. The six attributes with the lowest knowledge scores were identified from the pretest and participants in the main study read a description of those six attributes (see Appendix) before viewing the products. After reviewing the information on the attributes, the selection task took place.

Participants were given instructions similar to study 1 before starting the selection task. The brands of athletic shoes were then randomly displayed to participants. Each product was displayed across all 12 attributes simultaneously for 30 seconds each. The attributes were presented in the format of a website listing with a customer rating. After seeing each product, the mode of thought was manipulated similar to study 1. However, conscious and unconscious thinkers had (up to) 2 minutes of processing time. The time to process information was increased as occasional purchase decisions are perceived to be more important decisions than routine choices (Howard 1977).

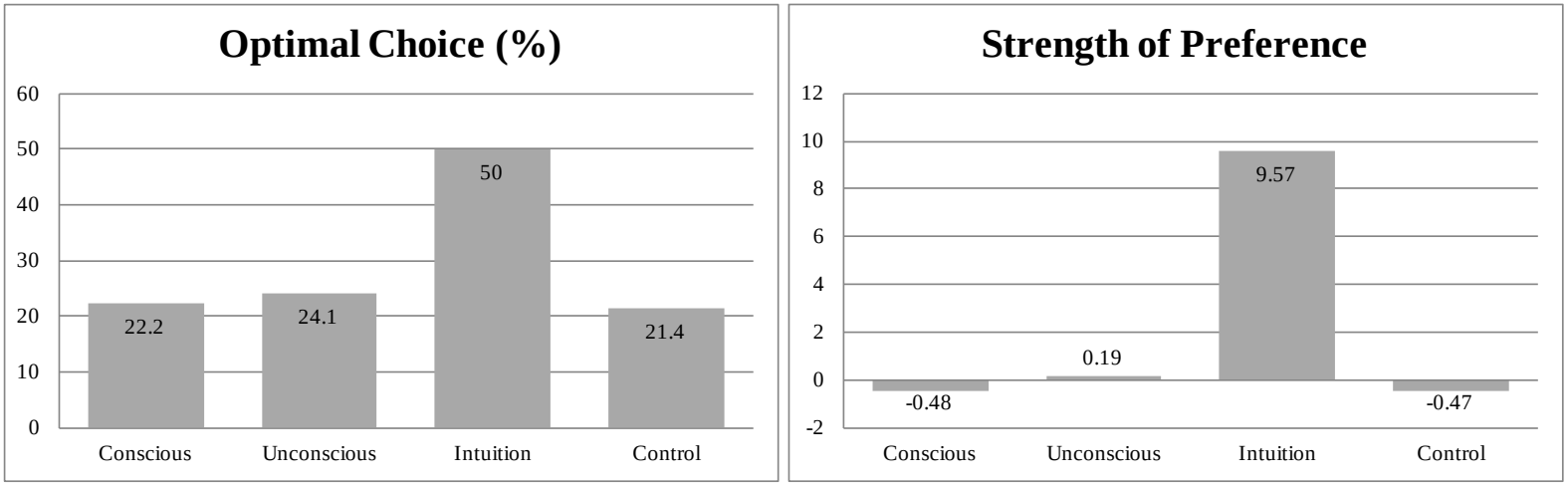
Participants then completed the same attitude and choice questions from study 1 for shoes. After the evaluation measures, participants also completed a three-item scale designed to capture the underlying process of focused attention when using intuitive thought ($\alpha = .75$; see Appendix). The items were developed from prior theorizing in intuition (e.g. Ambady 2010; Bechara et al. 1997; Epstein 2010).

Results

To ensure conscious deliberation occurred, the duration of self-paced conscious thought was compared to the control condition across the deliberation period and answering of choice questions. Conscious thinkers (M = 47.0 sec) spent significantly greater time elaborating and answering choice/attitude questions relative to control participants (M = 31.8 sec, $p < .001$), suggesting that explicit thought did occur in the conscious thought condition.

Next, the modes of thought were compared across choice and attitude measures. For both measures, consumers using intuition were more likely to identify optimal choices (see figure 4.4). First, a logistic regression was conducted to examine the impact of mode of thought condition on choice. The mode of thought condition variable was a significant predictor of selection of the highest quality choice (Nagelkerke $R^2 = .111$, $p < .05$). Results revealed that consumers using intuition (M = 50%) selected the highest quality choice more frequently than consumers in the control condition (M = 21.4%, $\beta_{exp} = 4.50$, $p < .05$). Consumers using either conscious (M = 22.2%, $\beta_{exp} = 1.04$, $p > .05$) or unconscious (M = 24.1%, $\beta_{exp} = 1.25$, $p > .05$) thought were not significantly more likely to select the highest quality choice relative to the control condition. Intuitive thinkers also selected the highest quality choice more frequently than consumers using conscious ($\beta_{exp} = 4.31$, $p < .05$) or unconscious ($\beta_{exp} = 3.60$, $p < .05$) thought. These results support H_{2a}.

Figure 4.4
STUDY 2 RESULTS



A one-way ANOVA was conducted to examine the effect of mode of thought condition on strength of preference. The mode of thought condition variable significantly predicted strength of preference ($F(3,108) = 3.76$, $p < .05$) and results revealed that consumers using intuitive thought had a greater strength of preference ($M = 9.57$) toward the highest quality choice relative to consumers using conscious thought ($M = -.48$), consumers using unconscious thought ($M = .19$), and consumers in the control condition ($M = -.47$, all ps $< .05$). These results further support H_{2a}.

To test the underlying process of focused attention, mediation analyses were again conducted following Zhao, Lynch, and Chen (2010). The strength of preference measure was used as the measure of decision quality (results were similar for the choice measure thus were not included). A bootstrap analysis (all coefficients are unstandardized) revealed a positive, significant indirect effect of intuition on decision quality (a x $b = 1.50$). The 95% confidence interval excluded zero (.02 to 4.58). Intuition was significantly positively related to focused attention ($a = .45$), and focused attention was significantly positively related to higher quality choice ($b = 3.36$) in LPS settings. The direct effect of intuition on higher quality choice was nonsignificant ($c = 5.68$, $p > .05$). These findings suggest the mediator of focused attention is consistent with the hypothesized model of intuition (i.e. indirect-only mediation; Zhao, Lynch, and Chen 2010) and thus supports H_{2b}.

Study 2 Implications

Study 2 provides further support for the Adaptive Processing Perspective. Consistent with predictions for occasional purchases, consumers who used intuition

focused their attention on relevant information to optimize decision quality. These results provide novel insights into limited problem solving as intuition systematically improved decision quality. Neither the conventional wisdom of conscious thought nor the Powerful Unconscious view identified when intuition can improve choice. Furthermore, the underlying process of focused attention was supported. Next, major purchase decisions are investigated.

STUDY 3: EXTENSIVE PROBLEM SOLVING

EPS settings are perceived as the most important decisions that consumers make. Conventional wisdom (e.g. Bettman, Luce, and Payne 2008; Simon 1982) suggests that consumers should spend a great deal of time consciously thinking before making these major decisions. Conversely, recent research has suggested that unconscious thought may be optimal in these decisions (e.g. Dijksterhuis et al. 2006; Dijksterhuis and Nordgren 2006). It is suggested here that unconscious thought optimizes these decisions, but not due to greater processing capacity or more effective attribute weighing. Rather, a new process explanation is provided which suggests that unconscious thought allows consumers to engage in associative processing. Associative processing is beneficial here as related attributes will be automatically grouped together in order to make an evaluation that does not require prior experience in the domain. Decision quality will subsequently be increased.

Stimuli Development

One-hundred eight undergraduates completed this study for course credit. Participants began the stimuli development phase by rating 12 tablet PC attributes in terms of importance similar to prior studies. Participants also answered the same brand familiarity and attitude questions as in prior studies. Consumers often have minimal familiarity with brands in major purchase decisions (Howard 1977), so brands were selected that were unfamiliar to participants (less than 2 on a 7-point scale) which had no differences in attitudes as displayed in bold at the top of figure 4.5. Attitudes toward each brand were again held consistent to rule out the influence of a particular brand on choice. Four fictitious products were created which are available in figure 4.5. Stimuli from study 3 are displayed in the Appendix.

Figure 4.5
STUDY 3 STIMULI

	Superpad (3.31)[a]	ViewSonic (3.42)	Archos (3.24)	SimpleTech (3.31)	Importance Weight[b]
Screen Size	7 inch (-)	10 inch (+)	7 inch (-)	10 inch (+)	15.2
Memory Capacity	1 GB (+)	1 GB (+)	1 GB (+)	256 MB (-)	16.4
Screen Display	1024x768(-)	1024x768(-)	1900x1280 (+)	1900x1280 (+)	16.0
Screen Type	Resistive(-)	Capacitive (+)	Capacitive (+)	Resistive(-)	14.9
Operating System	Honeycomb (+)	Gingerbread (-)	Honeycomb (+)	Gingerbread (-)	15.5
Size of App Market	150,000 (+)	25,000 (-)	25,000 (-)	25,000 (-)	13.8
Battery Life	5 hrs (-)	5 hrs (-)	12 hrs (+)	12 hrs (+)	17.8
Weight	1 lb (+)	3 lbs (-)	3 lbs (-)	1 lb (+)	12.7
Voice Recognition	No (-)	Yes (+)	No (-)	No (-)	8.6
Cameras	Single (-)	Dual (+)	Dual (+)	Dual (+)	12.9
Colors	Multiple(+)	Black Only(-)	Black Only(-)	Multiple(+)	9.3
Customer Rating	3.5 (-)	4.5 (+)	4.5 (+)	3.5 (-)	14.4
Total Score	-32.1	-2.7	**48.3**	0.3	

[a] Pretest attitude ratings are in parentheses.
[b] Each attribute was evaluated on a 20 point scale of importance. Total importance across all attributes could range from 12 to 240.

Similar items from prior studies were used to verify that buying a tablet PC is a major purchase. The average of the three items ($M = 5.16$, $\alpha = .82$) was compared to the midpoint of the scale. Buying a tablet PC was perceived as a major purchase decision, as participant ratings toward buying a tablet were significantly greater than the midpoint of the scale ($t = 10.08$, $df = 117$, $p < .001$).

Main Study

Approximately three weeks after part 1, participants completed the main study. Participants were randomly assigned to one of four between-subjects conditions (conscious thought, unconscious thought, intuition, control).

Study 3 was similar to prior studies. Participants were told they would evaluate a set of tablet PCs and choose the best brand. Participants then read a brief description regarding all 12 of the tablet computer attributes (see Appendix). After reviewing the attribute information, the selection task took place.

Participants were given instructions similar to prior studies before starting the selection task. Each brand of tablet PC was then randomly displayed to participants. Each product was displayed across all 12 attributes simultaneously for 45 seconds. The attributes were presented in the format of a product web page with customer ratings. After participants were exposed to each product, the mode of thought was manipulated similar to prior studies. However, conscious and unconscious thinkers had (up to) 3 minutes of processing time. Major purchases are the most involving decisions that consumers make, so the time to think was increased to reflect this.

Participants then completed the same attitude and choice questions for the tablet PCs. After responding to the evaluation measures, participants also completed follow-up questions regarding their decision process. First, to measure associative processing, participants completed measures of confidence in their knowledge. While prior research has linked associative processing to unconscious thought conceptually (e.g. Claxton 1997), a measure which accurately captures how attribute information is categorized in memory and how evaluations are made across those categorizations is problematic. As a result, associative processing cannot be directly measured. However, an emerging literature has linked associative processing to greater in confidence in one's knowledge (e.g. Moorman et al. 2004; Wan and Rucker 2013). Because these constructs conceptually linked, any increases in associative processing should be related to increased confidence in one's knowledge. Thus, to examine differences in associative processing, participants completed subjective knowledge items ($\alpha = .87$) from Brucks (1985) that were adapted to the tablet PC decision task (see Appendix). Next, participants were asked to report how many attributes they considered when making their choice, similar to study 1. Then, participants were given random attributes (e.g. 10 inch screen size) and asked to identify which product(s) had that attribute. These measures were designed to rule out the explanation that the unconscious has a greater capacity to think about and recall attribute information (Dijksterhuis and Nordgren 2006; Newell et al. 2009). For each individual attribute, participants also answered whether or not that attribute was important in making their decision. This was designed to rule out the explanation that

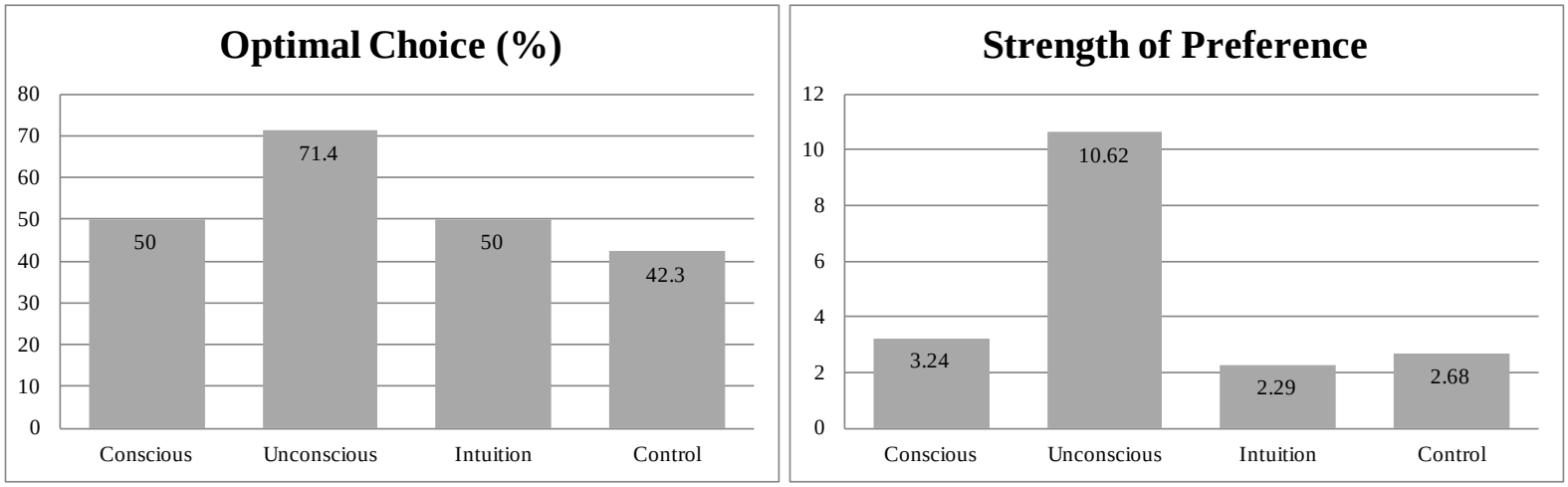
unconscious thought is better at weighing which attributes are important in a decision (Dijksterhuis and Nordgren 2006).

Results

To ensure conscious deliberation occurred, the duration of self-paced conscious thought was compared to the control condition across the deliberation period and answering of choice questions. Conscious thinkers (M = 71.8 sec) spent significantly greater time elaborating and answering choice/attitude questions relative to control participants (M = 29.7 sec, $p < .001$), suggesting that explicit thought did indeed occur in the conscious thought condition.

Next, the modes of thought were compared across choice and strength of preference. For both measures, consumers using unconscious thought were more likely to identify optimal choices (see figure 4.6). First, a logistic regression was conducted to examine the impact of mode of thought condition on choice. The mode of thought condition variable was a significant predictor of the highest quality choice (Nagelkerke $R^2 = .065$, $p < .05$ – one tailed). Results revealed that consumers using unconscious thought (M = 71.4%) selected the highest quality choice more frequently than consumers in the control condition (M = 42.3%, $\beta_{exp} = 3.41$, $p < .05$). Both consumers using conscious thought (M = 50%) and consumers using intuitive thought (M = 50%) were not significantly more likely to select the highest quality choice ($\beta_{exp} = 1.36$, $p > .05$). Consumers using unconscious thought also selected the highest quality choice more frequently than consumers using conscious thought or intuition ($\beta_{exp} = 2.50$, $p = .05$ – one tailed). These results support H_{3a}.

Figure 4.6
STUDY 3 RESULTS



A one-way ANOVA was also fit to examine the effect of mode of thought condition on strength of preference. The mode of thought condition variable significantly predicted strength of preference ($F(3,104) = 5.68$, $p < .01$) and results revealed that consumers using unconscious thought had a greater strength of preference (M = 10.62) toward the highest quality choice relative to consumers using conscious thought (M = 3.24), consumers using intuition (M = 2.29), and consumers in the control condition (M = 2.68, all *p*s < .05). These results further support H_{3a}.

To test the underlying mechanism of associative processing, mediation analyses were again conducted following Zhao, Lynch, and Chen (2010). The strength of preference measure was used as the measure of decision quality (results were similar for the choice measure and thus were not included). A bootstrap analysis (all coefficients are unstandardized) revealed a positive, significant indirect effect of unconscious thought on decision quality (a x b = .45). The 95% confidence interval excluded zero (.02 to 1.67). Unconscious thought was significantly positively related to associative processing (a = .24), and associative processing was significantly positively related to higher quality choice (b = 1.91). The direct effect of unconscious thought on higher quality choice was nonsignificant (c = 2.57, $p > .05$). These findings suggest the mediator of associative processing is consistent with the hypothesized model of unconscious thought (i.e. indirect-only mediation; Zhao, Lynch, and Chen 2010) and thus supports H_{3b}.

Furthermore, additional analyses were conducted to rule out explanations provided by the Powerful Unconscious view in major purchase decisions. First, the number of attributes considered during decision making was compared across

conditions. No differences emerged across conditions when reporting whether one, a few, most, or all attributes were used for evaluating tablets ($\chi^2 = 12.6$, $p > .05$), and participant reporting of the exact number of attributes considered by unconscious thought (M = 4.57) did not differ from conscious thought (M = 4.26) or the control condition (M = 4.62, *p*s > .05) Unconscious thinkers did report considering more attributes relative to participants utilizing intuition (M = 3.26), although differences were not significant. Next, accuracy in the attribute recall task was compared across conditions. Unconscious thought was worse in the attribute recall task (M = 19.6%) relative to conscious thought (M = 24.1%), although differences were not significant. Accuracy in the recall task was also not significantly different for unconscious thought relative to intuition (M = 13.0%) or the control condition (M = 21.2%, *p*s > .05). Lastly, differences among which specific attributes were considered by each mode of thought were investigated. No mode of thought reported using any of the 12 attributes more frequently in their decision relative to any other mode of thought (all *p*s > .05). Together, these findings challenge the notion that unconscious thought optimizes decision making for major purchases given its capacity to process information or through its ability to effectively weigh the importance of attributes in decision making.

Study 3 Implications

Study 3 supports the predictions put forth here relative to the Powerful Unconscious view. In major purchases, consumers who utilize unconscious thought engage in associative processing which ultimately optimizes decision quality.

Furthermore, existing theoretical explanations provided by the Powerful Unconscious view were ruled out. These results provide insights into unconscious thought in major purchase decisions. To further test the predictions made here, study 4 manipulates the decision setting across a single product and compares the effectiveness of each mode of thought.

STUDY 4: MULTIPLE DECISION SETTINGS

In order to replicate the predictions of the Adaptive Processing Perspective, the product category is held constant in this study to rule out any potential confound associated with the product used for each decision setting in studies 1-3.

Pretest of Decision Frames

Twenty-five undergraduates completed a pretest in which they rated the manipulations for each decision setting. For each decision setting, participants read a description of the decision setting and answered questions about each scenario. The descriptions are in the Appendix. After reading each description, participants answered items related to how much thought (e.g. involvement, number of alternatives considered) they would give to the decision. These factors differentiate routine, occasional, and major purchases as outlined by Howard (1977). These items are listed in the Appendix. The means for each decision scenario were computed and compared via paired-samples t-tests. The routine purchase scenario was significantly lower in thought (M = 3.28) relative to the occasional purchase scenario (M = 5.22, $t(24) = -5.52$, $p < .05$), which was significantly lower in thought relative to the major

purchase scenario (M = 6.10, t(24) = -6.01, $p < .01$). The routine purchase scenario was also significantly lower in thought relative to the major purchase scenario (t(24) = -6.73, $p < .01$). These findings suggest the manipulation effectively frames the decision as either routine, occasional, or major.

Stimuli Development

Two-hundred twenty-three undergraduates completed this study for course credit. Participants began the stimuli development phase by completing measures of attribute importance, brand familiarity, and brand attitudes similar to prior studies. Four brands were chosen which had no differences in attitudes or familiarity. Attitudes toward each brand were held consistent to rule out the alternative explanation that attitudes toward brand names influenced choice. Four fictitious products were created which are available in figure 4.7. As in prior studies, attitude scores toward each brand are listed in bold at the top of figure 4.7. Stimuli from study 4 are displayed in the Appendix.

Figure 4.7
STUDY 4 STIMULI

	Marc Jacobs (4.45)[a]	Guess (4.37)	Kenneth Cole (4.43)	Steve Madden (4.48)	Importance Weight[b]
Style	Basic (-)	Trendy (+)	Basic (-)	Trendy (+)	16.0
Fabric	Cotton (+)	Wool (-)	Wool (-)	Wool (-)	15.0
Fit	Loose (-)	Loose (-)	Form Fitting (+)	Form Fitting (+)	16.4
Country of Origin	Sweden (+)	Bangladesh(-)	Bangladesh(-)	Bangladesh(-)	6.8
Tag Type	Tagless (+)	Tagless (+)	Tagless (+)	Traditional (-)	7.5
Weight	6 ounces (+)	6 ounces (+)	14 ounces (-)	6 ounces (+)	10.5
Color Choices	Variety (+)	Limited (-)	Limited (-)	Variety (+)	14.6
Size Availability	Multiple (+)	Multiple (+)	Limited (-)	Limited (-)	14.9
Wrinkle Resistance	No (-)	No (-)	Yes (+)	Yes (+)	11.7
Shirt Shape	Holds Over Time (+)	Holds Over Time (+)	Loses Over Time (-)	Loses Over Time (-)	13.9
Colors and Dyes	Fades Over Time (-)	Fades Over Time (-)	Holds Over Time (+)	Fades Over Time (-)	13.7
Customer Rating	4.5 (+)	4.5 (+)	3.5 (-)	4.5 (+)	10.9
Total Score	**36.3**	-4.5	-53.3	8.3	

[a] Pretest attitude ratings are in parentheses.
[b] Each attribute was evaluated on a 20 point scale of importance. Total importance across all attributes could range from 12 to 240.

Main Study

Approximately three weeks after part 1, participants completed the main study. Participants were randomly assigned to a 3 (mode of thought: conscious thought, unconscious thought, intuition, or control) x 3 (purchase scenario: routine, occasional, major) between-subjects design. The control condition was removed from this study as studies 1-3 demonstrated that a particular mode of thought optimizes decision making beyond the baseline control condition.

Participants began with similar instructions to prior studies, followed by the decision setting manipulation (see Appendix). Routine purchase decision participants read their scenario and then began the shirt selection task. Occasional purchase decision participants read their scenario and then viewed a description of six of the twelve shirt attributes (see Appendix), followed by the selection task. Major purchase decision participants read their scenario and then viewed a description of all twelve shirt attributes (see Appendix), followed by the selection task.

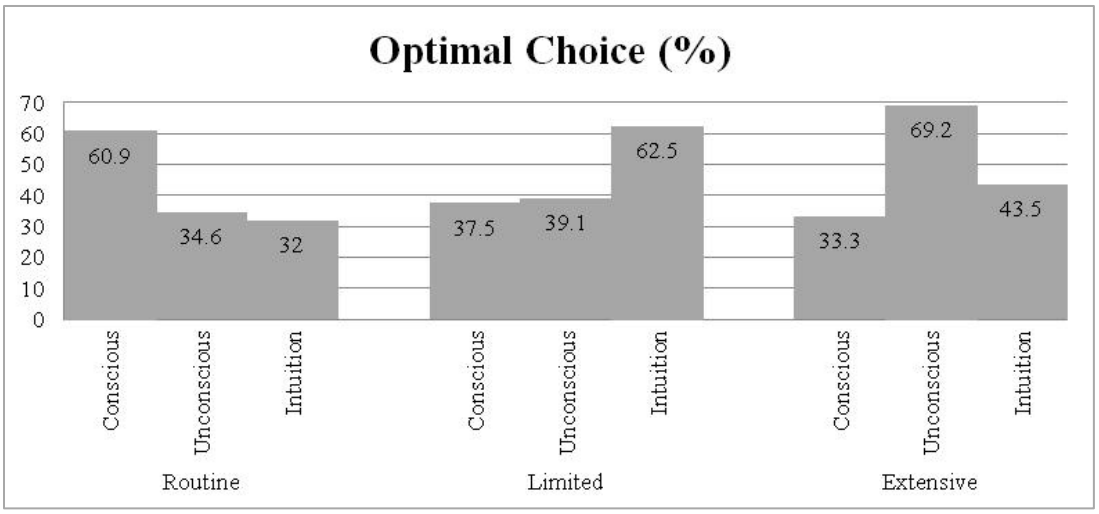
Next, participants in all scenarios began the shirt selection task. Procedures were similar to prior studies. Participants in the conscious thought condition were given up to 2 minutes to carefully think, while participants in the unconscious thought condition solved word puzzles for 2 minutes. Time to think was held constant across decision settings to rule out processing time as an alternative explanation to the results. After the experimental manipulation occurred, all participants answered attitude and choice questions about the shirt brands.

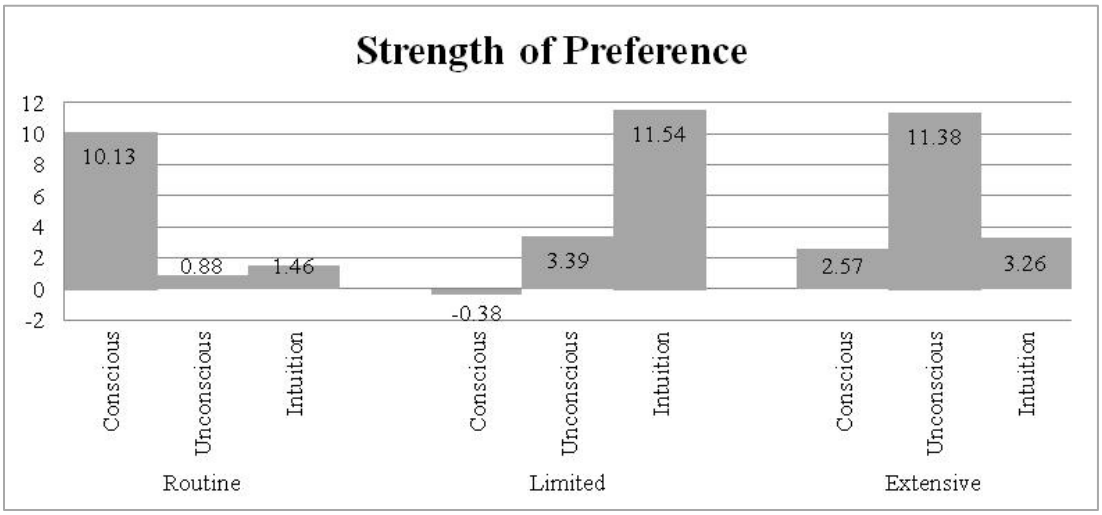
Results

To ensure conscious deliberation occurred, the duration of self-paced conscious thought was compared to the control condition across the deliberation period and answering of choice questions. Conscious thinkers (M = 50.2 sec) spent significantly greater time deliberating and answering choice/attitude questions relative to intuitive thinkers (M = 28.5 sec, $p < .001$). This finding suggests that explicit thought did indeed occur in the conscious thought condition.

To compare the modes of thought in the shirt selection task, both the selection of the highest quality choice and attitude measures were assessed. Results are summarized in figure 4.8.

Figure 4.8
STUDY 4 RESULTS





Best Choice in Routine Purchase Scenario. A logistic regression was conducted for participants in the routine scenario, where modes of thought predicted the choice of highest quality shirt. The mode of thought variable was a significant predictor of selecting the best brand (Nagelkerke $R^2 = .087$, $p < .05$ – one tailed). Results revealed that consumers using conscious thought (M = 60.9%) selected the highest quality choice more frequently than consumers using unconscious thought (M = 34.6%, $\beta_{exp} = 2.94$, $p < .05$ – one tailed) and consumers using intuition (M = 32%, $\beta_{exp} = 3.31$, $p < .05$). These results support H_{1a}.

Best Choice in Occasional Purchase Scenario. A logistic regression was conducted for participants in the occasional purchase scenario, where modes of thought predicted the choice of highest quality shirt. The mode of thought variable was a significant predictor of the highest quality choice (Nagelkerke $R^2 = .069$, $p = .05$ – one tailed). Results revealed that consumers using intuition (M = 62.5%) selected the best brand more frequently than consumers using conscious thought (M = 37.5%, $\beta_{exp} = 2.78$, $p < .05$ – one tailed) and consumers using unconscious thought (M = 39.1%, $\beta_{exp} = 2.59$, $p = .05$ – one tailed). These results support H_{2a}.

Best Choice in Major Purchase Scenario. A logistic regression was conducted for participants in the major purchase scenario, where modes of thought predicted the choice of highest quality shirt. The mode of thought variable was a significant predictor of the highest quality choice (Nagelkerke $R^2 = .123$, $p < .05$). Results revealed that consumers using unconscious thought (M = 69.2%) selected the best brand more frequently than consumers using conscious thought (M = 33.3%, $\beta_{exp} = 4.50$, $p < .01$) and consumers using intuition (M = 43.5%, $\beta_{exp} = 2.93$, $p < .05$ – one tailed). These results support H_{3a}.

Strength of Preference Measure. An ANOVA was conducted comparing the modes of thought across each decision setting to predict strength of preference. The interaction of mode of thought and decision setting significantly predicted attitude differences ($F(4,215) = 9.08$, $p < .01$). Post-hoc analyses followed the expected pattern of results. In the routine scenario, consumers using conscious thought had significantly greater strength of preference ($M = 10.13$) relative to consumers using unconscious thought ($M = .88$, $p < .05$) and consumers using intuition ($M = 1.46$, $p < .05$), supporting H_{1a}. In the occasional purchase scenario, consumers using intuition had significantly greater strength of preference ($M = 11.54$) relative to consumers using conscious thought ($M = -.38$, $p < .01$) and consumers using unconscious thought ($M = 3.39$, $p < .05$), supporting H_{2a}. In the major purchase scenario, consumers using unconscious thought had significantly greater strength of preference ($M = 11.38$) relative to consumers using conscious thought ($M = 2.57$, $p < .01$) and consumers using intuition ($M = 3.26$, $p < .05$), supporting H_{3a}.

Study 4 Implications

Study 4 further supports the Adaptive Processing Perspective. When the same product is framed as either a routine, occasional, or major purchase, support for the predictions remains robust. Individuals using conscious thought made higher quality choices in routine settings, individuals using intuition made higher quality choices for occasional purchases, and individuals using unconscious thought made higher quality choices for major purchase decisions.

CHAPTER FIVE
DISCUSSION

Conventional wisdom in decision making research and practice suggests that consumers should think more carefully before making important and involving decisions, and think far less for more routine choices that are regularly made. This conventional wisdom is challenged in the current research. Here, a new perspective of information processing and decision making (termed the Adaptive Processing Perspective) is developed, suggesting greater conscious thought for routine decisions, the use of intuition for occasional decisions, and the use of unconscious thought for major purchase decisions. In advancing this perspective, the processes underlying each type of information processing are identified. Furthermore, the predictions made here are empirically supported across four studies.

In study 1, conscious thought optimized routine decision making as consumers made better grocery choices. This was a function of increases in openness to information. These findings challenge conventional wisdom in decision making which suggests minimal conscious thought and a reliance on heuristics can lead to optimal routine decision making (e.g. Gigerenzer and Goldstein 1996; Simon 1982). Instead, this study provides insights into the importance of thinking more carefully about one's routine choices. New theoretical advances were provided by identifying that conscious thinkers are more open to consider additional information which benefits their decision making ability. Furthermore, given the cumulative effects of routine choices over time, it is suggested here that consumers should consciously think more about these decisions to improve their overall health and well-being.

Study 2 found intuition to be optimal for the occasional purchase decision of athletic shoes. Focused attention mediated the relationship between intuitive thought and optimal choice. These results provide novel insights into occasional purchase decisions as intuition optimized decision quality. Prior research had not identified when consumers should use intuition to optimize their decision making. Neither the conventional wisdom of conscious thought (e.g. Bettman, Luce, and Payne 2008; Simon 1982) nor the Powerful Unconscious view (e.g. Dijksterhuis 2004; Dijksterhuis and Nordgren 2006) identified when intuition can improve choice. Here, using intuition for occasional purchases improved decision quality. Furthermore, the underlying process of focused attention was developed and empirically supported.

Study 3 demonstrated that unconscious thought optimized decision making in the major purchase decision of selecting a tablet PC. Unconscious thought was optimal here as consumers engaged in greater levels of associative processing which subsequently optimized decision making. This finding provides insight on the emerging debate between the effectiveness of conscious versus unconscious thought in major purchase decisions (e.g. Bos, Dijksterhuis, and van Baaren 2011; Dijksterhuis 2004; Payne et al. 2008; Rey, Goldstein, and Perruchet 2009). Furthermore, these findings provide new theoretical advances to the emerging literature on unconscious thought. Whereas process explanations of unconscious thought having greater capacity and more objective attribute weighing have been called into question (e.g. Newell et al. 2008; Rey, Goldstein, and Perruchet 2009) and were not empirically supported in this research, the unconscious's ability to engage in associative processing was identified and supported here.

Lastly, Study 4 provided further support for the new theoretical perspective developed here, as results were robust when the same product (a shirt) was manipulated across multiple decision settings. The alternative explanation of time to process the decision was accounted for and ruled out in this study as well. These results provide further evidence that the nature of the decision setting impacts which mode of thought is optimal.

Theoretical Implications

The current research challenges existing theorizing in the information processing literature. Our understanding of *when* consumers should think fast or slow is refined based on the current research. Using a theoretically grounded interpretation of conscious, unconscious, and intuitive thought, our understanding of when consumers should utilize each of these modes of thought is better understood. Furthermore, the underlying process mediators of openness to information, focused attention, and associative processing were examined and supported. An understanding of the underlying processes extends the rich literature on consumer information processing by increasing our knowledge of each mode of thought.

The present research also contributes to the current debate on the effects of deliberation on decision making. When faced with more complex decisions (i.e. decisions with a greater number of attributes to consider), disagreements exist between proponents of the recently developed Powerful Unconscious view (e.g. Bos, Dijksterhuis, and van Baaren 2011; Dijksterhuis 2004; Dijksterhuis and Nordgren 2006) and proponents of the conventional wisdom of conscious thought (e.g. Bettman, Luce, and Payne 2008; Newell

et al. 2009; Payne et al. 2008; Rey, Goldstein, and Perruchet 2009). The current research reconciles differences between these perspectives by considering the nature of the decision setting and identifying when each mode of thought (including intuition) is optimal.

Additionally, this research develops an understanding of the underlying processes within each mode of thought. While prior research had linked openness to information to conscious thought (e.g. Levav and Zhu 2009), focused attention to intuition (e.g. Ambady 2010), and associative processing to unconscious thought (e.g. Claxton 1997), research had not yet linked these processes to optimal decision making. In this research, theoretical advancements were provided by linking each of these processes to improved decision making in a particular decision setting. These process mechanisms were examined and empirically supported across three studies while simultaneously ruling out alternative existing theoretical explanations.

Implications for Transforming Consumer Behavior

Furthermore, the findings here have practical implications for consumer behavior. Of particular importance is the impact of information processing on improving the quality of consumer choice. A number of programs and interventions have been investigated that aim to improve consumer behavior, including healthier eating (e.g. Cheema and Soman 2008; Raju, Rajagopal, and Gilbride 2010), fiscal responsibility (e.g. Soman and Cheema 2011), and environmental conservation (e.g. Goldstein, Cialdini, and Griskevicius 2008). The current research extends these transformative topics by providing insights on how consumers can improve their decision making. By matching the mode of thought with the

demands of the decision setting, consumers can improve the quality of their choices. For example, the current research demonstrates more optimal food choices after a period of conscious thought. Rather than increasing one's knowledge of nutrition content, higher quality decisions were made simply by taking time to think about the decision. If decision settings can be developed that promote a certain form of processing to avoid one's typical and less effective response, these programs would provide an alternative approach to training and intervention programs commonly used in research and practice. As a result, the overall health and well-being of consumers may improve not because of an increase in knowledge, but rather due to more effective thought. Beyond these theoretical and practical implications, several issues warrant consideration in future research.

Moderating Factors

The current research focused on understanding why each mode of thought is optimal in a given setting. However, several potential moderating factors should be considered in future research. For example, recent research has identified that intuition improves decision making as product knowledge in a domain increases (Dane, Rockmann, and Pratt 2012). Furthermore, unconscious thought has been shown to improve decision making when individuals establish goals prior to making evaluations (Bos, Dijksterhuis, and van Baaren 2008). Additionally, prior research has identified the importance of gender across the various modes of thought, finding that conscious thought can improve complex decision making among a primarily female sample (Acker 2008). The interaction of these and other moderating factors across the decision settings investigated in this research would prove fruitful in extending the theory put forth here.

Cost/Benefit Analysis of Conscious Thought

In routine decision making, greater conscious deliberation improved decision quality. Conscious thinkers who spent between 20 and 25 additional seconds thinking (relative to intuitive/control thinkers in studies 1 and 4) improved their decision making in a routine choice. However, conscious deliberation is a limited resource (Simon 1982) and individuals must consider tradeoffs when deciding how long to explicitly deliberate (Bettman, Luce, and Payne 2008). Furthermore, too much conscious deliberation in routine decision making has been identified as problematic (Sela and Berger 2012). Therefore, future research should consider the optimal balance between the benefits and costs of explicit deliberation in routine settings. Several factors could be considered, including the desire to satisfice or optimize, the degree of satisfaction with a previous purchase, and changes in the available brands in subsequent purchase decisions (e.g. straight re-buy vs. modified re-buy; Doyle, Woodside, and Michell 1979).

Familiar Brands in Unfamiliar Settings

Participants evaluated brands that were not highly familiar in either the occasional or major purchase decisions in the current research. However, brands often leverage their equity into new products and domains. Research has shown that individuals process these persuasion attempts more associatively and automatically (e.g. Campbell and Keller 2003; Chow and Luk 2006; Kent and Allen 1994). Therefore, individuals may be influenced by unconscious associations based on prior knowledge and experience with

the brand. Future research should consider how individuals process these prior experiences and its influence when evaluating a new product in a distinct domain.

The current research was designed to introduce a new perspective on consumer information processing. Here, it is suggested that all forms of deliberation can benefit consumer decision making. By identifying *when* consumers should think fast or slow, this research provides an understanding for how and why consumers can improve the quality of choices they make. To become better decision makers, consumers should match the benefits of each mode of thought to the nature of the decision. As a result, it is suggested here that consumers should think more about their everyday decisions, use intuition for occasional choices, and “sleep on it” before making major purchase decisions.

APPENDIX

Study 1

Beginning Instructions

Thank you for participating in today's study on grocery choices. You will begin by answering questions about foods that college students typically buy from the grocery store. Please answer all of the questions to the best of your ability, even if you do not typically buy the food.

Once you answer those questions, you will begin a frozen pizza selection task. You will see product information appear on screen for a brief period for various frozen pizza brands. Then, you will answer questions about each brand you just viewed.

Conscious Thought Instructions

Please think carefully about each of the brands you just viewed. When you are ready to answer questions about each of the brands, please advance forward. The survey will automatically advance you after 1 minute.

Unconscious Thought Instructions

For each set of letters below, use all the letters and try to create a word.
For Example: oobtr = robot

Intuition Instructions

Please use your gut feelings to quickly answer the following questions about the brands you just viewed.

Control Instructions

Please answer the upcoming questions about the brands you just viewed.

Openness to Information Items (*Strongly Agree-Strongly Disagree*)

1. I considered the calories, fat, and other nutritional information when evaluating each pizza brand.
2. I considered factors other than brand name when evaluating pizza brands.
3. I compared pizza brands on factors like calories, fat, protein, carbohydrates, etc.
4. I compared the nutritional value of different pizza brands.
5. I compared factors other than taste when evaluating pizza brands.

Study 1 Stimuli

DiGiorno's

Nutrition Facts	
Serving Size	2 Slices
Servings Per Container 4	
Amount Per Serving	
Calories 700	
	Daily Value
Total Fat 35 g	54%
Cholesterol 25 mg	8%
Sodium 1400 mg	58%
Total Carbohydrates 56 g	19%
Dietary Fiber 6 g	24%
Sugars 14 g	
Protein 17 g	
Vitamin A 4% * Vitamin C 2%	
* Percent Daily Values based on 2,000 Calorie Diet	

Taste Rating – 4.5/5

Red Baron

Nutrition Facts	
Serving Size	2 Slices
Servings Per Container 4	
Amount Per Serving	
Calories 500	
	Daily Value
Total Fat 35 g	54%
Cholesterol 75 mg	25%
Sodium 1400 mg	58%
Total Carbohydrates 56 g	19%
Dietary Fiber 2 g	8%
Sugars 7 g	
Protein 34 g	
Vitamin A 18% * Vitamin C 11%	
* Percent Daily Values based on 2,000 Calorie Diet	

Taste Rating – 3.5/5

Tombstone

Nutrition Facts	
Serving Size	2 Slices
Servings Per Container 4	
Amount Per Serving	
Calories 700	
	Daily Value
Total Fat 35 g	54%
Cholesterol 25 mg	8%
Sodium 1400 mg	58%
Total Carbohydrates 92 g	31%
Dietary Fiber 2 g	8%
Sugars 7 g	
Protein 17 g	
Vitamin A 4% * Vitamin C 11%	
* Percent Daily Values based on 2,000 Calorie Diet	

Taste Rating – 3.5/5

DeAngelo's

Nutrition Facts	
Serving Size	2 Slices
Servings Per Container 4	
Amount Per Serving	
Calories 500	
	Daily Value
Total Fat 17 g	26%
Cholesterol 25 mg	8%
Sodium 650 mg	27%
Total Carbohydrates 92 g	31%
Dietary Fiber 6 g	24%
Sugars 14 g	
Protein 34 g	
Vitamin A 18% * Vitamin C 2%	
* Percent Daily Values based on 2,000 Calorie Diet	

Taste Rating – 4.5/5

Study 2

Beginning Instructions

Thank you for participating in today's study on college student purchases. You will begin by answering questions about your feelings toward purchasing various products. Please answer all of the questions to the best of your ability, even if you have never purchased any of the products.

Once you answer those questions, you will begin the product selection task. For each product, you will see four brands/service providers. Then, you will answer questions about each brand/service provider you just viewed.

Description of Athletic Shoe Attributes for Study 2

Heel Stability

Refers to how stable the heel of an athletic shoe is.

Toe Stability

Refers to how stable the toe of an athletic shoe is.

Insert Padding

Refers to thickness of the padding inside an athletic shoe.

Breathability

Refers to how much air flows through the athletic shoe when being worn.

Outsole

The outsole is the bottom of an athletic shoe. It can be made of carbon rubber or blown rubber. Carbon rubber is durable, somewhat stiff and relatively heavy material used for outsoles. Blown rubber is lighter weight, more cushioned and flexible rubber used for outsoles.

Sole Type

Refers to whether the athletic shoe has a flat or raised sole. A flat sole reduces impact from running across the bottom of the shoe, while a raised sole increases impact on the heel.

Focused Attention Items (*Strongly Agree-Strongly Disagree*)

1. I utilized a few key pieces of information to evaluate the new market entrant.
2. I focused on the limited, relevant information when evaluating each athletic shoe.
3. I only considered a subset of the information presented when making my evaluations.

Study 2 Stimuli

Brooks

Specifications	
Heel Stability	Low
Toe Stability	Low
Insert Padding	1/16"
Breathability	High
Lace Colors	Multiple Available
Distance Rating	400 Miles
Weight	18 oz. per Shoe
Outsole	Carbon Rubber
Sole Type	Raised
Traction	High
Colors	Multiple Available
Fashion Rating	4.4 out of 5 Stars

Mizuno

Specifications	
Heel Stability	High
Toe Stability	High
Insert Padding	1/16"
Breathability	Low
Lace Colors	Multiple Available
Distance Rating	400 Miles
Weight	18 oz. per Shoe
Outsole	Blown Rubber
Sole Type	Raised
Traction	Low
Colors	Limited Available
Fashion Rating	4.4 out of 5 Stars

Saucony

Specifications	
Heel Stability	High
Toe Stability	Low
Insert Padding	1/4"
Breathability	High
Lace Colors	Multiple Available
Distance Rating	400 Miles
Weight	18 oz. per Shoe
Outsole	Blown Rubber
Sole Type	Flat
Traction	Low
Colors	Limited Available
Fashion Rating	3.2 out of 5 Stars

Avia

Specifications	
Heel Stability	Low
Toe Stability	High
Insert Padding	1/4"
Breathability	Low
Lace Colors	White Only
Distance Rating	200 Miles
Weight	10 oz. per Shoe
Outsole	Blown Rubber
Sole Type	Raised
Traction	High
Colors	Multiple Available
Fashion Rating	3.2 out of 5 Stars

Study 3

Beginning Instructions

Thank you for participating in today's study on buying new technology. You will begin by answering questions about your feelings toward purchasing tablet PCs. Please answer all of the questions to the best of your ability, even if you do not own a tablet PC.

Once you answer those questions, you will begin the tablet PC selection task. For each brand, you will see product information appear on screen for a brief period. Then, you will answer questions about each you just viewed.

Description of Tablet PC Attributes for Study 3

Screen Size

Tablet PCs have a screen size between 6 and 11 inches.

Memory Capacity

Tablet PCs have an internal memory ranging from 128 MBs to 2 GBs.

Screen Display

Tablet PCs display a resolution between 800x600 and 1920x1280.

Screen Type

Tablet PCs use either a resistive or capacitive touch screen. A capacitive touch screen supports multi-touch operations and is more flexible and responsive relative to a resistive touch screen.

Operating System

Tablet PCs use either the Gingerbread or Honeycomb operating system. Honeycomb is designed specifically for large screen devices and supports multi core processing. Gingerbread is a multi-platform operating systems designed specifically for mobile phones with lesser processing requirements.

Size of App Market

The size of the app market for tablet PCs ranges between 15,000 and 200,000 apps.

Battery Life

Tablet PCs have a battery life between 4 and 14 hours.

Weight

Tablet PCs weigh between 1 and 3 pounds.

Voice Recognition

Some tablet PCs can recognize voice commands to run programs.

Cameras
All tablet PCs have a single, front-facing camera. Some tablet PCs have dual front and rear-facing cameras.

Colors
Some tablet PCs are only available in one color (black), while other tablets come in a variety of colors.

Customer Rating
Refers to a rating from customers who have purchased the tablet PC.

Subjective Knowledge Items (*Much Less than Average-Much More than Average*)
1. Rate your knowledge of tablet PCs compared to the average customer.
2. Rate your confidence in evaluating tablet PC information compared to the average customer.
3. I feel confident about my ability to comprehend tablet PC information.

Study 3 Stimuli

Superpad	
Specifications	
Screen Size	7"
Memory Capacity	1 GB
Screen Display	1024x768
Screen Type	Resistive
Operating System	Honeycomb
Size of App Market	approx. 150,000
Battery Life	5 hr. max
Weight	1 lb.
Voice Recognition	No
Cameras	Single Front-Facing
Colors	Multiple Available
Customer Ratings	3.5/5 stars

Archos	
Specifications	
Screen Size	7"
Memory Capacity	1 GB
Screen Display	1900x1280
Screen Type	Capacitive
Operating System	Honeycomb
Size of App Market	approx. 25,000
Battery Life	12 hr. max
Weight	3 lbs.
Voice Recognition	No
Cameras	Dual (Front and Rear)
Colors	Black Only
Customer Ratings	4.5/5 stars

Viewsonic	
Specifications	
Screen Size	10"
Memory Capacity	1 GB
Screen Display	1024x768
Screen Type	Capacitive
Operating System	Gingerbread
Size of App Market	approx. 25,000
Battery Life	5 hr. max
Weight	3 lbs.
Voice Recognition	Yes
Cameras	Dual (Front and Rear)
Colors	Black Only
Customer Ratings	4.5/5 stars

Simpletech	
Specifications	
Screen Size	10"
Memory Capacity	256 MB
Screen Display	1900x1280
Screen Type	Resistive
Operating System	Gingerbread
Size of App Market	approx. 25,000
Battery Life	12 hr. max
Weight	1 lb.
Voice Recognition	No
Cameras	Dual (Front and Rear)
Colors	Multiple Available
Customer Ratings	3.5/5 stars

Study 4

Beginning Instructions

Thank you for participating in today's study on college student purchases. You will begin by answering questions about your feelings toward purchasing various products. Please answer all of the questions to the best of your ability and make sure to carefully read the directions before each task.

Once you answer those questions, you will begin the product selection task. For each product, you will see four brands/service providers. Then, you will answer questions about each brand/service provider you just viewed.

Decision Setting Manipulations

Routine Decision Setting

You are about to begin the shirt selection task. For the purposes of this task, assume you purchase shirts regularly. Furthermore, assume that you routinely purchase Guess brand of shirts.

Limited Problem Solving Setting

You are about to begin the shirt selection task. For the purposes of this task, assume you purchase shirts infrequently. Please read information on the following shirt attributes as it relates to the shirt selection task.

Extensive Problem Solving Setting

You are about to begin the shirt selection task. For the purposes of this task, assume you rarely, if ever, purchase shirts. Please read information on the following shirt attributes as it relates to the shirt selection task.

Manipulation Checks (7-point scales, $\alpha = .90$)

1. Buying a shirt would require a great deal of thinking in this task.
   (*strongly disagree-strongly agree*)

2. I would consider many alternatives carefully if choosing among shirts in this task.
   (*strongly disagree-strongly agree*)

3. How involved (or engaged) would you be in deciding among shirts in this task.
   (*minimally involved-highly involved*)

4. How much time would you spend evaluating shirts in this task?
   (*very little time-a great deal of time)*

Description of Shirt Attributes for Limited and Extensive Scenarios (Limited in bold)

Style

Shirt styles are described on a range of trendy to basic.

Shirt Fabrics

Shirts can be made of a variety of fabrics. The most comfortable shirts are made of fabrics such as cotton, while the least comfortable shirts are made of fabrics such as wool.

Fit

Most consumers prefer a form-fitting shirt instead of a loose-fitting shirt.

Country of Origin

High quality clothing is often produced in Europe, while clothing of lower quality is often produced in Southern Asia.

Tag Type

Shirts may be tagless (have the details printed on the inside collar) or have a traditional tag attached with details.

Weight

Lightweight shirts can weigh as little as 6 ounces, while heavy shirts weigh over 12 ounces.

Color Choices

Some shirts are available in a variety of colors, while others are available in a limited amount of colors.

Size Availability

Some shirts are available in multiple sizes, while other shirts are only available in a limited set of sizes.

Wrinkle Resistance

Some shirts are wrinkle resistant, while others require ironing after a wash.

Shirt Shape

Some shirts maintain their shape over repeated wears, while others lose their shape over time.

Colors and Dyes

Some shirts are made with dyes that maintain their color over time, while others are made with dyes that fade over time.

Customer Rating

Refers to a rating from customers who have purchased the shirt.

Study 4 Stimuli

Marc Jacobs

Specifications	
Style	Trendy
Fabric	Cotton
Fit	Loose
Country of Origin	Sweden
Tag Type	Tagless
Weight	6 ounces
Color Choices	Variety Available
Size Availability	Limited Available
Wrinkle Resistance	No
Shirt Shape	Holds Over Time
Colors and Dyes	Fades Over Time
Customer Rating	4.6 out of 5 stars

Guess

Specifications	
Style	Trendy
Fabric	Wool
Fit	Loose
Country of Origin	Bangladesh
Tag Type	Tagless
Weight	6 ounces
Color Choices	Limited Available
Size Availability	Multiple Available
Wrinkle Resistance	No
Shirt Shape	Holds Over Time
Colors and Dyes	Fades Over Time
Customer Rating	4.6 out of 5 stars

Kenneth Cole

Specifications	
Style	Basic
Fabric	Wool
Fit	Form Fitting
Country of Origin	Bangladesh
Tag Type	Tagless
Weight	14 ounces
Color Choices	Limited Available
Size Availability	Limited Available
Wrinkle Resistance	Yes
Shirt Shape	Loses Over Time
Colors and Dyes	Holds Over Time
Customer Rating	3.5 out of 5 stars

Steve Madden

Specifications	
Style	Trendy
Fabric	Wool
Fit	Form Fitting
Country of Origin	Bangladesh
Tag Type	Traditional Tag
Weight	6 ounces
Color Choices	Variety Available
Size Availability	Limited Available
Wrinkle Resistance	Yes
Shirt Shape	Loses Over Time
Colors and Dyes	Fades Over Time
Customer Rating	4.6 out of 5 stars

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