THE AFFECT HEURISTIC IN CONSUMER EVALUATIONS

by

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This dissertation examines the role of affect in consumer judgments in two essays. The first essay explores the use of affect as a heuristic basis for judgments of the risks and benefits associated with new products. Current perspectives regarding the processes by which consumers make decisions about the adoption of innovations maintain that it is largely a cognitive process. However, the four studies that make up the first essay suggest that consumer assessments of the risks and benefits associated with product innovations are often inversely related and affectively congruent with evaluations of those innovations. The results support and extend previous research that has investigated the affect heuristic in the context of social hazards. The findings further indicate that more affectively extreme evaluations are associated with increasingly disparate assessments of risk and benefit. The results indicate that this relationship is consistent across a variety of products and product categories. Together, these findings challenge traditional conceptualizations of innovation adoption decision making and suggest that cognitive models alone are insufficient to explain innovation adoption decisions.

The second essay investigates if processing fluency – the difficulty associated with processing information – may serve as an input to the affect heuristic and

subsequent judgments of risk and benefit. Recently, Song and Schwarz investigated the relationship between differences in fluency and perceptions of risk. Their results suggested that fluency experiences influence risk perception through differences in familiarity and not as the result of fluency-elicited affect. The three studies included in the second essay re-examine those results in an effort to clarify the role of affect as a basis for perceptions of risk. The findings document a previously unreported reversal in preference for less fluent stimuli and suggest that fluency-elicited affect can explain the relationship between processing experiences and perceptions of risk. The results have important theoretical implications for our understanding of how people derive meaning from fluency experiences and for the role of fluency-elicited affect as a basis for judgments of risk and benefit.

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CHAPTER I

INTRODUCTION

Last year Apple began selling its newest product, the iPad. On the day of its release, thousands of consumers camped out in front of Apple stores while thousands more anxiously awaited shipments from pre-orders placed months earlier. Apple sent bloggers, reporters and other influential members of the media devices in advance of the launch so that their reviews would be ready to fuel the already prodigious hype surrounding the new product. As the reviews came out, they were decidedly mixed. Interestingly, the reviews - rather than balancing the pros and cons and offering an indefinite opinion - were split. Some commentators lauded the device and predicted that it signaled the dawning of a new age of computing. Others chastised it for lacking features and dumbing down the user interface. In opening his review for the New York Times, David Pogue (2010) wrote: "In 10 years of reviewing products for the New York Times, I've never seen a product as polarizing as Apple's iPad…". Rather than try to find a middle ground between the two extremes, Pogue went on to write his review from two perspectives. One, targeted at "regular people" was favorable, while the other intended for "techies" was negative.

Previous innovation adoption research would explain the polarized evaluations of the iPad as being the result of one of several bottom-up, analytical processes. In general, more analytical explanations would argue that reviewers first acquired knowledge about the features, risks and benefits of the iPad then integrated that information to form a

judgment. For example, they might assign weights based on importance, then using these weighted attributes, sum the advantages and disadvantages offered by the product to form an opinion. However, recent work in other domains suggests that like many other judgments, evaluations of innovations could also occur through a top-down, affective process. This perspective suggests that the reviewers of the iPad may have first formed a feeling toward the product and then assessed the benefits and risks associated with the device to be congruent with their underlying affective evaluation (i.e. I like/dislike it). In this dissertation, a series of studies are proposed to explore the role of affect in consumer judgments of products. Each of these studies is expected to provide evidence that affect often underlies consumer evaluations. More specifically, it is proposed that consumers apply an affect heuristic when making judgments about a newly encountered product and its attributes. This research further investigates how consumers select among naïve theories to interpret their experiences processing information and how these inferences may serve as one potential input to the affect heuristic. The findings of this dissertation make a substantive contribution by demonstrating that analytical factors alone are not sufficient to explain the process by which consumers form evaluations of new products. A more comprehensive understanding of this process can be gained by also considering the role of affective decision making processes.

This dissertation is divided into two essays, each composed of several studies. The first essay addresses the question of how affect influences consumer judgments of the risks and benefits associated with innovations. Previous research from other domains (e.g. Alhakami and Slovic 1994; Finucane et al. 2000) suggests that like other uncertain judgments, consumers will perceive these attributes to be inversely related. This inverse

relationship is thought to occur because people apply an affect heuristic (Finucane et al. 2000) when forming their judgments. The affect heuristic is based on the idea that when making a judgment, it is more efficient for people to rely upon their overall affective impression of an object than it is for them to account for all available information. Empirical work surrounding the affect heuristic has largely been limited to evaluations of objects about which study participants had some knowledge or prior attitudes. For example, the work of Finucane et al. (2000) focused on the risks and benefits of social hazards, such as nuclear power, pesticides and food preservatives. To date, few studies have explored affect as a basis of risk and benefit evaluations using unfamiliar stimuli. Those that have, were limited to evaluations of financial products (e.g. Ganzach 2000; MacGregor et al. 2000). The research detailed in this dissertation provides evidence that consumers also turn to their feelings and rely upon the affect heuristic to form affectively congruent evaluations of new products, about which they have no prior attitude or knowledge. The results indicate that new products that are liked tend to be evaluated as being beneficial with few risks. Whereas, innovations that are disliked elicit the opposite pattern – consumers tend to see them as risky and offering few benefits.

These findings make three important contributions to the consumer decision making literature. First, they demonstrate that consumers rely upon their feelings when other information is not available, lending further support to the idea that the affect heuristic does not depend on the retrieval of previously formed cognitive evaluations. Second, evidence of these relationships in a consumer context is important because previous empirical work on the affect heuristic has been published almost exclusively in psychology journals. This work has yet to make inroads to the consumer behavior

literature. Both of the essays in this dissertation proposal represent an initial attempt to integrate the methodology and theoretical insight developed in other literatures with current consumer behavior research and highlight the role of the affect heuristic in consumer decision making. A final contribution of the first essay is evidence supporting the use of affect in judgments of new products. These findings address a critical gap in the innovation adoption literature. Previous research on innovation adoption decisions has been heavily focused on analytical factors (Wood and Moreau 2006). For example, researchers have identified product attributes such as complexity, relative advantage, compatibility etc. that influence the diffusion of innovations through a marketplace. At an individual level, new product adoption decisions have been characterized as an uncertainty reduction process that takes place over time (Rogers 2003). While consumer attitudes developed during this process are recognized as being affective (e.g. favorable/unfavorable), their formation is conceptualized as a bottom up, analytical process in which consumers become "psychologically involved with the innovation" actively seeking out and integrating information to form an attitude (Rogers 2003, pg. 175). The studies from both essays of this dissertation forward an alternative perspective that considers the role of intuitive, affective decision making in consumer decisions under conditions of uncertainty. In the first essay, it is acknowledged that while analytical factors can influence judgments, consumer evaluations of innovations can also occur through an affect driven, top down process. The findings of the first essay provide evidence that consumers use the affect heuristic when evaluating new products and identifies contexts that moderate reliance on the affect heuristic.

If consumers rely on affect when forming judgments of new products, the logical next question to ask is where might this affect originate? Associative memory models would suggest that one source of affect may be the result of the retrieval of affect laced conceptual information learned from past encounters with similar products. However, this conceptual information is likely to be idosyncratic, variable across both individuals and products. A second potential source of affect is the ease or difficulty associated with processing information.

The second essay further addresses the role of affect in consumer decision making by exploring the question of how the experience of processing information might contribute to the affect that consumers use to make evaluations of novel stimuli. Research has shown that metacognitions (thoughts about thinking) regarding the relative ease or difficulty experienced as consumers process information (fluency) can influence judgment beyond the content of the information that is processed (Schwarz et al. 1991). Fluency research has consistently shown that fluent processing experiences lead to favorable evaluations (e.g. Schwarz 2004). However, a number of researchers have suggested that the actual meaning of a processing experience may be open to interpretation based on the naïve theories that consumers apply (Alter and Oppenheimer 2009). Recently, researchers have begun to report reversals in the interpretation of fluency experiences and demonstrate conditions under which difficult to process (disfluent) stimuli are preferred over easily processed (fluent) stimuli. These reversals have been achieved by instructing participants to apply specific naïve theories (Briñol, Petty, and Tormala 2006), by priming different goals (Labroo and Kim 2009) by manipulating the way by which information is processed (Nielsen and Escalas 2010), by

manipulating construal level (Tsai and McGill 2011), and by varying the consumption domain (Pocheptsova, Labroo, and Dhar 2010). However, this research has yet to investigate how reversals in preference due to the application of different naïve theories might influence perceptions of risk and benefit. In this dissertation, three studies demonstrate that goals held by consumers can influence the naïve theories consumers select to apply to the interpretation of a processing experience. When consumer goals suggest that difficulty experienced while processing information leads towards goal advancement, disfluent stimuli are preferred over fluent stimuli. However, if consumer goals suggest the opposite, fluent stimuli are preferred over disfluent stimuli. Importantly, findings from the second essay suggest that favorable affect resulting from fluency experiences can serve as an important source of information for judgments of risk and benefit. The exact nature of the relationship between favorable affective evaluations and perceptions of risk, however, appears to depend on the goals held by consumers.

IMPLICATIONS FOR PRACTITIONERS

As a whole, this research has important implications for practitioners developing and releasing innovations into the marketplace and for understanding how consumers form evaluations of risk. A major purpose of this research is to highlight the importance of affective, decision making styles in consumer evaluations of new products. For marketers, such findings help to provide an answer to several important questions. First, the affect heuristic helps to answer the question of why first impressions matter. A failure to create a favorable initial impression during the launch of a new product or

brand will likely negatively bias subsequent evaluations of the object's attributes. Similarly, for market researchers testing product concepts, these findings provide an explanation for why consumers often find it difficult to objectively evaluate really new products (Hoeffler 2003). Rather than forming their attitudes by first understanding the attributes of the product, consumers may look to their initial affective evaluation, then pattern their responses in an affectively congruent fashion. This implies that marketers testing new product concepts should be aware that a concerted effort may be required in order to get research participants to analytically evaluate a new product. Further, the way in which new product concepts are presented to consumers may affect their subsequent evaluations. Concepts that are easy to understand may trigger different evaluations than concepts that are more difficult to understand. The influence of these processing experiences may also be moderated by individual differences or by instructing participants to visualize different goals or usage situations. Complex or difficult to understand products can be evaluated more favorably by consumers who hold goals that promote a favorable interpretation of disfluent processing, whereas the reverse is true for those who hold goals that trigger a negative interpretation of disfluent processing. With these findings, marketers could tailor persuasive messages to specific products and usage situations.

This dissertation also addresses the question of why some attributes of a product are capable of compensating for others. The affect heuristic centers on the idea that decision makers turn to affect, employing a top down strategy to form affectively congruent evaluations. If this type of strategy is used, specific risks (or benefits) of a product may be overlooked if the product's overall evaluation is favorable (unfavorable). For

marketers, this distinction may hold real implications. If consumer evaluations of a product's attributes are biased by their holistic evaluation of the product, then communications emphasizing attributes that increase overall favorability of a product (e.g. increase benefits) would be expected to produce affectively congruent changes in evaluations of attributes which may be completely unrelated (e.g. decrease risks). In developing communications, marketers may be able to rely on consumers to form affectively congruent inferences about the risks and benefits associated with a product without addressing them directly. Further, marketing communications that appropriately match ease of processing with goals held by consumers may be capable of increasing preference for products that are perceived as risky choices.

Finally, this research offers practitioners an explanation for why consumers often reach different conclusions from similar experiences. In the second essay, consumers with different goals are shown to apply different naïve theories to interpret their processing experiences. Applied to the example of the iPad introduced earlier, such a finding suggests that "techies" might have interpreted their fluent experiences with the iPad's new user interface negatively because simplified software prevents them from reaching customized solutions to complex tasks. However "regular people" are likely to have different goals and may have selected a different naïve theory which led them to interpret greater ease of use as advancement towards a goal.

SUMMARY OF RESEARCH

A total of seven studies are reported in the two essays that follow. In the first essay, I describe four studies that explore the use of the affect heuristic in consumer evaluations of product innovations. The results of study 1 demonstrate an inverse relationship between perceptions of risk and benefit surrounding innovations. The affect heuristic is conceptualized as a more efficient decision making style and as such is expected to be favored over more analytical styles when mental resources are constrained or when motivation is low. To explore this idea, participants in the first study were assigned to a control condition, an analytical evaluation condition, or a working memory load condition. In the analytical condition, participants were asked to identify and rank the risks and benefits associated with each product before forming their evaluations. It was hypothesized that the relationship between risk and benefit would be weaker in the analytical evaluation compared to the control condition. In contrast, it was expected that the inverse relationship between risks and benefits would be strengthened when the cognitive resources available to participants are constrained by a working memory load. The results of the first study generally support these hypotheses. Perceptions of risk and benefit were found to be significantly less related among participants assigned to the analytical evaluation condition as compared to the other two conditions.

The second study examined the affect heuristic from a different perspective. In this study, participants were first asked to evaluate a product. Then after completing a separate experiment they were presented with information about only the risks or benefits of the product and changes in the non-manipulated attribute were measured. The findings

indicated that participants changed their evaluations of the non-manipulated attribute in an affectively congruent manner, despite the absence of a logical relationship. For example, a participant who was given information intended to increase the favorability of a new product (e.g. information that increased benefit perception or decreased risk perception) usually inferred an affectively congruent change in the non-manipulated attribute (e.g. decreased risk perception /increased benefit perception). The same, affectively congruent pattern was found for information intended to decrease favorability of the product (e.g. information that increased risk perception or decreased benefit perception). This change in the non-manipulated attribute demonstrates that participants rely upon a common affective evaluation rather than a purely analytical assessment of information.

The third study of essay 1 manipulated affective evaluations more directly and measured differences in risk and benefit evaluations. In this study, participants were given information intended to increase or decrease their affective evaluation of an innovation relative to a control group. The results demonstrated that increases in the extremity of participant's affective response corresponded with greater differences in judgments of risk and benefit. Neutral evaluations (e.g. neither like nor dislike) were found to correspond with smaller risk benefit differences than more strongly valenced responses (e.g. strongly like or strongly dislike).

The fourth study explored contexts that had the potential to moderate the use of the affect heuristic. Previous research suggests that products that are more utilitarian may be evaluated using more analytical processes than products that are more hedonic in nature (Yeung and Wyer Jr 2004). Participants in the fourth study were asked to evaluate

a series of innovations on a number of attributes to see which, if any, might moderate the relationship between affective evaluations and differences between perceived risk and benefit. None of the product level attributes considered in this study were found to moderate the use of the affect heuristic. One possible interpretation of these findings is that product level attributes may not influence the extent to which consumers rely upon affect when forming judgments of risk and benefit. Rather, consumers may turn to affect as a default when making judgments of products about which they have little information.

The second essay is comprised of three additional studies. These studies test the hypotheses (1) that processing experiences (fluency) can be used as an input to affective evaluations as well as judgments of risk and benefit; and, (2) that processing experiences have different meaning depending on the goals held by consumers. The first hypothesis relates directly to the studies proposed in the first essay. If affect plays an important role in the formation of evaluations of new products then it is important to understand the processes that contribute to these feelings. The second hypothesis addresses this issue, suggesting that the goals held by consumers may influence the way in which consumers interpret the experience of processing information, potentially reversing preferences.

In the first two studies of the second essay, participants were asked to imagine that they were visiting an amusement park and were handed a brochure with the names of the rides offered. Those assigned to a risk-seeking goal condition were further instructed to imagine that they wanted to identify those rides that would be the most exciting and adventurous on the basis of a brochure so that they would not waste time on the dull ones. Those assigned to the risk-avoidance condition were instructed to imagine that they were visiting the amusement park on a day when they were not feeling well and that they

wanted to avoid rides that are too risky and adventurous and hence the most likely to make them sick. Participants then encountered a list with ride names that differed in how easy or difficult they were to pronounce. In the first study, this fluency manipulation was conducted between subjects and in the second study participants were presented with both fluent and disfluent ride names.

The results suggest that judgments based upon fluency are often comparative rather than absolute in nature. Between subjects manipulations of fluency and goals (study 1) resulted in no significant differences in favorable affect, risk or benefit among the ride names. However, when fluency was manipulated within subjects (participants saw both easy and difficult to pronounce names; studies 2 and 3), a significant interaction was found between goals and fluency in favorability evaluations of the rides and in perceptions of benefits. As predicted, easily pronounced ride names were more favorably evaluated relative to more difficult to pronounce ride names among risk avoiders. However among risk seekers, favorable affective evaluations reversed and difficult to pronounce ride names were evaluated more favorably than easily pronounced ride names.

Benefit perceptions closely followed favorable affect and a goals x fluency interaction was observed for perceptions of benefit. Importantly, as predicted by the affect heuristic, favorable affect was found to be predictor of both risk and benefit. The regression results indicated that more favorable affective evaluations corresponded with increased benefit and decreased of risk. However, the strength of the relationships was found to vary based upon differences in goals and processing difficulty. The relationship between favorable affect and risk was found to differ depending on whether participants held risk-avoidance or risk-seeking goals. Among risk avoiders, favorable affect and risk

were negatively related (e.g. more favorable names were perceived as being less risky). However, this relationship was attenuated among risk seekers. This pattern of results matches what would be expected by the affect heuristic if risks were viewed as more desirable among risk seekers relative to risk avoiders.

The third study of the second essay confirmed these findings in a different context. Rather than amusement park rides, participants in the third study were asked to imagine that someone they knew had been diagnosed with a serious medical condition and that the physician had suggested medications that could be taken to treat the illness. In the risk-seeking goal condition, participants were instructed to imagine that the person who was sick wanted to get well as soon as possible and that they should try to identify the strongest medications to help treat the illness. Conversely, participants in the risk-avoidance goal condition were instructed that they should imagine that the person who was sick often has had complications when taking medications and that they should try to identify the safest medications to treat their condition. Participants then evaluated a list of three easy to pronounce medications (brand name) and three difficult to pronounce medications (generic).

The results of the third study closely aligned with those from study two. A goals x fluency interaction was found on favorable affective evaluations of the medication names. Difficult to pronounce drug names were evaluated more favorably by risk seekers than among risk avoiders. A similar interaction was found among benefit perceptions. Difficult to pronounce medications were found to have more benefits among risk seekers than among risk avoiders. As predicted by the affect heuristic, favorable affective evaluations were found to be negatively related to risk and positively related to benefit.

Again however, the relationship between favorable affective evaluations and risk was found to be attenuated among risk seekers relative to risk avoiders.

Overall, the results of the studies that make up the second essay demonstrate that the meaning derived from the ease or difficulty of processing information depends on the naïve theories that are applied to interpret the experience. Difficulty associated with processing information was shown to trigger different affective evaluations depending on which goals were salient. Evidence from these studies indicated that fluency-elicited affect is related to risk and benefit in a pattern that is consistent with what would be expected if participants relied upon affect as a heuristic.

CHAPTER II

ESSAY 1: THE AFFECT HEURISTIC IN CONSUMER EVALUATIONS OF PRODUCT INNOVATIONS

INTRODUCTION

Established conceptualizations maintain that analytical cognitive processes dominate innovation adoption decisions. This emphasis likely stems from the field's economic origins and the early interest in modeling and forecasting innovation diffusion rates at the market level. Whereas these analytical theories have long served as the primary explanation for individual level innovation adoption decisions (Rogers 1995, 2003), alternative models of decision making have received broad support in both the psychology and consumer behavior literatures. These models maintain that while individuals are capable of making analytical decisions, affect and emotion often play an important role in judgment and decision making (Kardes, Posavac, and Cronley 2004; Lowenstein et al. 2001). The research below, explores the influence of affect in consumer evaluations of innovations, specifically proposing that consumers rely upon affect as a heuristic when assessing the risks and benefits associated with an innovation.

Innovation Adoption Decisions

Theories governing decisions about the adoption of innovations suggest that it is fundamentally an uncertainty reduction process (Mahajan, Muller, and Bass 1990; Rogers 1995). As customers gain an increased understanding of an innovation, they are better able to assess its benefits. In this view, an adoption decision occurs after a potential customer gathers enough information to be able to assess the relative advantage of an innovation against existing alternatives, taking into account any remaining uncertainty. Previous research has shown that product and social attributes moderate the speed with which an innovation diffuses through a marketplace (Rogers 2003).

Rogers (2003) describes the process surrounding the decision to adopt an innovation as evolving over time:

> "Diffusion scholars have long recognized that an individual's decision about an innovation is not an instantaneous act. Rather it is a *process* that occurs over time and consists of a series of different actions." (169, emphasis in original)

Briefly, the model describing this process consists of a series of five decision-making steps. A potential consumer first gains *knowledge* about the existence of an innovation and how it functions, then is *persuaded* by the attributes of the innovation that lead to an analytical formation of a positive or negative attitude toward the product. The customer then proceeds to make a *decision*, *implement* their decision, and ultimately re-evaluate and *confirm* their decision.

Following this description, a customer's evaluation of an innovation would appear to follow a very rational hierarchy of effects (Palda 1966). Consumers who become

"psychologically involved with the innovation" (Rogers 2003, 175) actively seek out additional information and compare what they have learned about the innovation to existing market offerings. When consumers acquire new information, they integrate it with existing knowledge to refine their attitudes. As information accumulates, the consumer becomes increasingly confident about the benefits expected from the innovation. In this model, the consumer carefully gathers and considers information then forms a well-reasoned, analytical evaluation of the innovation. A key element in this line of thought is that consumers form attitudes through the reduction of uncertainty. While these attitudes are conceptualized as affective in nature, their formation occurs through a bottom-up analytical process in which consumers carefully consider all available information. This perspective shares a number of similarities to Fishbein's expectancy-value model (Ajzen and Fishbein 1980) in which attitudes are realized as the consequence of cognitively assessing an individual's beliefs about some object.

Innovation research has also evaluated adoption decisions from an information processing perspective, primarily focusing on uncovering individual differences that might explain the reasons that certain groups of consumers choose to adopt innovations (Gatignon and Robertson 1991; Manning, Bearden, and Madden 1995; Wood and Swait 2002). For example, a sizeable quantity of research has focused on defining and measuring the concept of consumer innovativeness—a consumer's propensity to adopt new products (Hauser, Tellis, and Griffin 2006; Hirschman 1980). As another example, Moreau, Lehmann and Markman (2001) used individual differences to investigate how prior knowledge about related products influences the way information about new products is processed.

Other work, developed outside the innovation adoption literature, offers an alternative perspective to how individuals make decisions under conditions of uncertainty. This research credits individuals as being capable of making analytical decisions, but suggests that they are often biased and rely on heuristics (Tversky and Kahneman 1974).

A small but growing area of innovation adoption research has begun to consider the implications of heuristics and biases research. For example, research has demonstrated that the accessibility of mental simulations can bias evaluations of new products. Mental simulations are thought to aid consumers in assessing benefits and costs of new products. These judgments are then used to form an evaluation of the product as a whole. Specifically, the effect of mental simulations on evaluations of new products has been shown to be influenced by the novelty of the product, variations in how research participants are instructed to visualize using a new product (Dahl and Hoeffler 2004; Zhao, Hoeffler, and Dahl 2009) and the provision of information about the product (Ziamou and Ratneshwar 2002). Mental simulation research has not investigated affect as an antecedent to assessments of risks and benefits.

However, related theory based on clinical results (Damasio 2000) suggests that, in part, people make decisions by relying on emotions created from the recall of emotionally marked images. The positive and negative markers associated with these images affect decision making by influencing whether people like one option over another. The influence of these emotions is largely unconscious, and occurs automatically as individuals anticipate the consequence of a decision.

Forwarding this idea, Swartz and Clore (1996) have proposed that people use feelings as inputs for decisions because they often contain useful information. Pham et al. (2001) applied this affect as information framework to demonstrate differences in reason-based versus affect-based judgments toward advertising. Their findings indicated that affective judgments are often faster, more consistent across individuals, and more predictive of thoughts toward a target than reason-based judgments. These results are particularly relevant to the present research because they suggest that affect can precede cognition and act to valence subsequent thoughts regarding a target. The authors' state:

> "Feelings are often instantiated upon exposure to a target. Once instantiated, these feelings then frame subsequent thought generation through the spontaneous priming of feeling-consistent cognitions and the controlled retrieval of knowledge that helps explain the initial feeling response." (Pham et al. 2001, 185)

Judgment and decision making research has increasingly recognized the important role of affect. Some researchers have gone so far as to propose that all cognitive appraisals are laced with emotion, but that the converse is not true, experienced emotions do not necessarily elicit cognitive processing (Zajonc 1980). However, the influence of affect and emotion in the innovation adoption process has been largely overlooked. One exception is Wood and Moreau (2006) who demonstrated that negative and positive emotions can arise as consumers first learn to use an innovation. In two studies, they found that novices, but not experienced consumers, improve the accuracy of their predictions about how difficult it will be to learn to use a new product when provided a demonstration of the product. It was shown that the disconfirmation of complexity expectations as consumers first use innovations can trigger emotions that subsequently

influence post trial product evaluations. The present research differs from that of Wood and Moreau (2006) by considering the importance of affect much earlier in the adoption process, elicited in response to the initial presentation of an innovation.

Slovic et al. (2007) provide a guide in this respect, by suggesting that individuals use an affect heuristic when making judgments. The affect heuristic is based on the idea that when making a judgment, it is more efficient for people to rely upon their overall affective impression of an object than it is for them to analytically weigh all available information. Evidence for the affect heuristic has been provided by studies demonstrating that both benefit and risk perceptions toward some target can be explained, in particular contexts, by a subject's more general affect toward the target. That is, affect is experienced prior to judgments of risk and benefit and has a direct influence on subsequent cognitive appraisals (Slovic et al. 2007; Zajonc 1980).

Considering an affect heuristic as an antecedent to risk assessment is directly applicable to innovation research because risk is among the most salient factors thought to influence innovation adoption decisions. Innovations are labeled as such because they contain an idea which is judged as new from the perspective of the potential adoptee (Rogers 1995). The received view holds that exposure to novelty results in uncertainty regarding the benefits offered by a product; costs associated with this uncertainty represent the risk inherent in its adoption. Adoption risk may emanate from a myriad of sources including switching costs, social and personal disappointment, hidden ownership costs, unknown quality attributes, the potential for physical harm, and uncertainty in service delivery (Ram and Sheth 1989). The unknown potential for these and other costs

can be thought to increase the subjective assessment of risk inherent in the adoption of an innovation.

However, the work of Alhakami and Slovic (1994) as well as Finucane et al. (2000) suggests that in many situations people perceive risks and benefits to be inversely related. A plausible explanation of this inverse relationship is that the assessment of both risk and benefit may be derived from an underlying affective evaluation (like/dislike). Consumers draw upon this affect and use it to form congruent inferences about other attributes. Liking an object, therefore, promotes a favorable assessment of benefits, and a deflated assessment of risks. Disliking produces the opposite pattern. Finucane et al. (2000) demonstrated that by placing participants under time pressure, reliance on affective evaluations could be increased, producing a stronger inverse relationship between judgments of risk and benefit. Additionally, they demonstrated that manipulations that either increase or decrease perceptions of risk or benefit generally produce an inverse, affectively congruent change in the non-manipulated attribute. This pattern of results has been demonstrated under circumstances in which information about risks (benefits) is logically devoid of benefit (risk) information. A change in a participant's affective evaluation (increased/decreased favorability) was implicated for this finding.

Past research on the affect heuristic has primarily focused on evaluations of the risks and benefits associated with broadly defined hazardous technologies (e.g., food preservatives, nuclear power and pesticides) and activities (e.g., fire fighting, air travel and surgery) in reference to how they would impact society as a whole (Alhakami and Slovic 1994). Little research to date has been directed towards investigating the role of

affect in evaluations of novel stimuli. Previous studies which have used novel stimuli focused on financial decisions (Ganzach 2000; MacGregor et al. 2000) and found evidence that affect may play an important role. For example, Ganzach (2000) conducted four studies and demonstrated that, even among people who are well trained at analyzing stock markets, estimates of the risks and returns associated with unfamiliar stock indexes tend to be negatively related and congruent with their global preferences for the assets. Similarly, Macgregor et al. (2000) investigated the role of imagery and affect in decisions about initial public offerings (IPOs). Their results indicated that affective evaluations of various industries were positively related to expected future returns, as well as participants' estimates of how likely they would be to invest in those industries. The authors concluded that while an investor's affective evaluation may not be an accurate basis for prospective judgments it is nonetheless influential in decisions related to unfamiliar financial assets.

The research reported here is the first to propose that consumers also turn to their feelings to form affectively congruent judgments of product innovations. The results of the studies below expand the range of application of the affect heuristic and advance understanding about the process by which consumers make decisions about innovations. Consistent with use of the affect heuristic, innovations that are liked will be evaluated as being beneficial with few risks. Whereas, innovations that are disliked will elicit the opposite pattern—consumers will see them as risky and offering few benefits. Evidence of such a pattern of evaluations is important for two reasons. First, demonstrating an inverse relationship among judgments of risk and benefit of novel stimuli (innovations) would provide evidence that consumers turn to their feelings when other information is

not available. Such a finding would further support the idea that the affect heuristic does not depend on the retrieval of previously formed analytical evaluations as the stimuli employed in the studies presented below consist of products and concepts that participants have not previously seen. Thus, a demonstration of an inverse risk/benefit relationship among these products could not be attributable to participants retrieving evaluations formed at an earlier time. This inverse relationship also has specific marketing implications.

Second, this research attempts to provide an important demonstration of the affect heuristic in a consumer context. As detailed above, past research has largely conceptualized decision making about innovations as an analytical process resulting from the consideration of attributes (benefits and risks) associated with an innovation. In contrast, the affect heuristic suggests a top down process in which consumers rely upon affect as a source of information when forming judgments about an innovation's attributes. The use of a consumer context is also important because judgments are directed towards specific objects rather than broad social hazards (e.g., food preservatives in general) that have been used in previous research (Alhakami and Slovic 1994; Finucane et al. 2000). Innovation adoption decisions are typically in regard to a specific product and are made under inherently uncertain conditions. Finally, as recommended by previous research (Alhakami and Slovic 1994) participants in the studies presented below are asked to make evaluations from an individual perspective (e.g., give your opinion) rather than for society as a whole (e.g., for United States or Australian society). Such a perspective mirrors typical consumer evaluations and may be easier than forming judgments about the effect of an activity or technology on society as a whole.

Hypotheses

Based on the discussion above, affect surrounding the evaluation of an innovation is expected to influence an individual's judgments of the risks and benefits of an innovation. These assessments would be expected to subsequently affect customers' attitudes and cognitive appraisals of the innovation. This line of reasoning leads to the first hypothesis.

H1: Participants will judge the risks and benefits of an innovation to be inversely related.

Evidence of a negatively correlated risk/benefit relationship would suggest that innovations, like hazards, are not appraised in a purely analytical manner. Rather, the appraisals of these innovations may be driven by general affect towards the product as suggested by the affect heuristic. The use of this heuristic is conceived as irrational, as presented by Finnucane et al. (2000), because the benefits gained from adopting an innovation are received independent from the risks of using an innovation. For example, the expected benefits from adopting an iPod (e.g., the ability to listen to music on the go) are distinct from the associated risks (e.g., the possibility the device may be difficult to operate). In most instances, the benefits associated with adopting an innovation (the services delivered) are likely to be related positively, though distinct from, the risks (the cost of the services) of the product. As Finucane et al. (2000, 3) suggests:

> "Whereas activities that bring great benefits may be high or low in risk, activities that are low in benefit are unlikely to be high in risk (if they were, they would be proscribed), suggesting the positive correlation..."

Evidence of a negative correlation between assessments of risk and benefit among product innovations would support the idea that affect may be driving both assessments because this relationship is likely to be positive (or non-existent) if assessed objectively. However, additional evidence for the use of affect in the appraisals of innovations would be suggested if a negative relationship between judgments of risk and benefit was found to strengthen in the presence of an affectively extreme evaluation. Finucane et al. (2000) left untested the idea that, at an individual level, positive feelings toward a hazard will correspond with higher ratings of benefit and lower ratings of risk compared to more neutral feelings. Assuming this relationship extends to appraisals of innovations, it would follow that an increasingly intense affective response toward an innovation (good/bad) would produce greater negative correlations between risk and benefit assessments. Accordingly, this relationship would be attenuated in the presence of neutral affective responses. In other words, increasingly strong appraisals (e.g., I love it!) should correspond with more polarized assessments of risk and benefit (e.g., benefit is very high, risk is very low). The related hypothesis is:

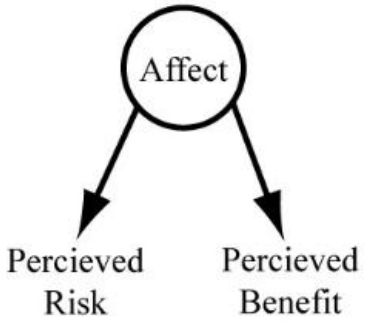
H2: Judgments of risk and benefit will be influenced by the extremity of affective response, such that differences between perceived risks and benefits will be greater with increases in the absolute magnitude (both positive and negative) of the affective response.

Combined, these hypotheses suggest a model under which judgments of risk and benefit are influenced by an affective response to the innovation. The subsequent model presented below (see figure 1) suggests that affective evaluations serve as an antecedent to judgments of risk and benefit associated with an innovation. This biasing effect on judgment occurs when a target elicits an affective response of sufficient magnitude. However, a consumer's affective response may not always exert a dominant influence on judgment. For some decisions, affect toward the target may be neutral, whereas in others (discussed below) it may simply be ignored.

FIGURE 1

THE AFFECT HEURISTIC IS USED AS A BASIS OF RISK/BENEFIT JUDGMENTS

FROM FINUCANE ET AL. (2000)



Situational Influences. A partial explanation of the circumstances favoring affective evaluations has already been outlined. The second hypothesis proposes that stronger initial affective responses increase the strength of the negative relationship between risk and benefit. A situational variable that has the potential to attenuate the influence of affect in judgments is the hedonic versus utilitarian nature of the innovation.

There is some evidence that affective reactions to a product's attributes are more likely to influence judgments if the product is perceived as highly hedonic (Yeung and Wyer Jr 2004). Products that are more hedonic are characterized as being more pleasing and more experiential whereas, more utilitarian products are characterized by greater instrumental value (Batra and Ahtola 1991; Hirschman and Holbrook 1982; Voss, Spangenberg, and Grohmann 2003). Affective criteria are thought to be more appropriate and instrumental for judgments of hedonic products, whereas reason based assessments are more consistent with utilitarian product judgments. This contention was supported by a series of studies which indicated that subjects using hedonic evaluative criteria were more likely to rely on affective evaluations than subjects evaluating products using utilitarian criteria (Yeung and Wyer Jr 2004). Other research supports this general notion. For example, there is evidence that consumers' reliance on feelings can be moderated by the motives that drive their decision (Pham 1998). Overall, consumers appear capable of switching between feeling or analytical based judgment processes depending upon the type of judgment required. The two related hypotheses are shown below. They are presented separately because hedonic and utilitarian aspects of products are best measured independently rather than by using bi-polar scales (Voss et al. 2003):

H3a: Evaluations of highly hedonic product innovations versus less hedonic product innovations will be more influenced by affective responses

H3b: Evaluations of highly utilitarian product innovations versus less utilitarian product innovations will be less influenced by affective responses

The role of affect in consumer evaluations of new products is investigated in the four studies described below. Each of these studies examines the relationship between affective evaluations of product innovations and consumer judgments of risk and benefit. Studies 1 and 2 test the first hypothesis using different approaches. The first study looks for evidence of an inverse relationship between assessments of risk and benefit, while the second manipulates information about either the risks or benefits associated with an innovation, then tests for changes in perceptions of the non-manipulated attribute. Study 3 is designed to test the second hypothesis and manipulates the favorability of different innovations, then tests for greater differences in perceptions of risk and benefit. Finally, study 4 addresses the third hypotheses and tests if the hedonic versus utilitarian nature of products leads consumers to vary how heavily they rely upon affective decision making processes.

STUDY 1: COGNITIVE LOAD MODERATES THE USE OF THE AFFECT HEURISTIC

Study 1 extends a paradigm put forth in Finucane et al. (2000) study 1. In that study, participants were assigned to either a time pressure or a control condition and asked to evaluate a variety of social hazards. As expected, participants in the time pressure condition perceived a greater negative correlation between risks and benefits of various social hazards than participants in a control condition. This increasingly strong inverse relationship provided evidence that the negative relationship between risk and benefit is driven by an affect-based heuristic rather than purely analytical processes. The

current study seeks to extend these findings by employing different manipulations and changing the context from social hazards to novel product innovations.

The first study includes three decision conditions intended to either (1) favor heuristic decision making styles, (2) allow participants the freedom to select how to form evaluations (control) or (3) encourage participants to form analytical evaluations. Previous research has suggested that when individuals are forced to make decisions with fewer cognitive resources available, they tend to favor heuristic decision making strategies (Payne, Bettman, and Johnson 1988) because they are more efficient. Therefore, this study includes a working memory load condition that is intended to constrain cognitive resources and bias participants towards relying on affect as a heuristic when forming their evaluations. A second condition serves as a control and participants are not given any instructions and allowed the opportunity to choose how they form their evaluations. Finally, in a third condition, participants are instructed to evaluate each innovation by listing and assigning weights to the risks and benefits associated with each product before judging the product's favorability in an effort to encourage analytical evaluations. Risk and benefit judgments among those participants assigned to a working memory load condition are expected to have a stronger inverse relationship than those of participants in the control condition. Such a finding would suggest an increased reliance on affect when judging the product attributes. Conversely, judgments of risk and benefit are expected to be weakly related (if at all) among participants in the analytical decision making condition as compared to the control condition or the working memory condition.

Method

One-hundred-and-fifty participants were recruited from a large northwestern university. The study was a 3 (decision condition: WM load, control, analytical) x 16 (innovation type: innovation 1-16) design with the first factor between-subjects and the second partially within-subjects. Participants were assigned to one of the three decision conditions and each participant evaluated a random selection of six (out of 16 possible) products.

Stimuli. Sixteen product innovations were selected for this study according to several criteria. First, innovations were identified that represent functionally original ideas rather than aesthetic variations of existing products. Secondly, because target innovations were presented on a computer screen, only those that were relatively easy to understand were selected. Finally, concepts were selected that would (1) elicit a range of affective responses and (2) be relevant to the sample of college age students. A list of the 16 product innovations that was included in this research is shown in appendix A.

Procedure. Participants were assigned to one of three conditions. In the working memory condition, participants were placed under a working memory load immediately before evaluating each product innovation. This was accomplished by asking participants to remember a nine-digit number (e.g., "Please remember the following number. Do not write anything down, try to remember the number in your head: 762714112") while they evaluated each product (for an example see: Shiv and Huber 2000). Participants in the

control condition were not asked to remember a number and were simply asked to evaluate each product. Finally, participants in the analytical condition were asked to produce a list of the risks and benefits associated with each innovation and then rank each before making summary judgments of the product's risks and benefits (order counterbalanced).

After being presented with a picture and description of each product, participants (depending on their condition) were asked to "choose a point on the scale that best matches your opinion of the innovation you just saw." Risk evaluations for each product were collected on an 11-point scale anchored by "Very Risky" and "Not at All Risky". Evaluations of benefits were also measured on an 11-point scale anchored by "Very Beneficial" and "Not at All Beneficial." In addition, participant's affective evaluation of the product was measured with three items (I like it/I dislike it, Good/Bad, Favorable/Unfavorable), again on an 11-point scale. The scale items were presented in a random order to avoid any ordering effects. Participants in the working memory load condition were asked to recall the nine-digit number after evaluating each product.

After evaluating all six innovations, participants in the working memory load condition were asked to estimate how accurate they were in remembering the numbers, how hard they tried to remember the numbers and if they used any tools to help them remember the numbers. Similarly, participants in the analytical condition were asked how closely they followed the procedure. Participants assigned to the control condition did not receive any further instructions.

Results

Correlations between risk and benefit by innovation for each condition are shown in table 1. In the analytical condition, the correlation between risk and benefit rating across innovations was -.22. A negative relationship was found between risk and benefit in 11 of the 16 innovations. Of these, only three were significant ($\alpha < .05$). Differences between risk/benefit correlations between conditions were calculated using a Fisher r to z transformation. In the control condition, the correlation between risk and benefit across innovations was significantly more negative than in the analytical condition ($r_{control} = -.42$, $z = -3.24$, $p < .01$). At a product level, negative relationships between judgments of risk and benefit were observed for all of the 16 innovations, 10 of which reached the conventional level of significance. The negative correlation between risk and benefit was found to be significantly less (more negative) for four products in the control group compared to the correlation between risk and benefit in the analytical condition. In the working memory load condition, the correlation between risk and benefit rating across innovations was -.43, which was not significantly different than the measured risk/benefit correlation in the control condition ($z = -.29$, n.s.). Within the working memory load condition, a negative relationship between judgments of risk and benefit was again observed among all 16 products. Of these, the risk/benefit correlations of nine products reached a level of significance. Significant differences among the risk/benefit correlations between the control condition and the working memory condition were found for five of the 16 innovations. Of these, four were in the direction expected (WM load < control condition) and one was opposite what was hypothesized (WM load > control condition).

Discussion

Hypothesis 1 predicted that consumers would judge the risks and benefits of an innovation to be negatively related. The results of study 1 provided evidence to support this hypothesis. Study participants reported an inverse relationship between their perceptions of the risks and benefits associated with a variety of product innovations. Surprisingly, the working memory load condition did not consistently strengthen the negative relationship between judgments of risk and benefit beyond that of the control condition. However, participants in the analytical condition did indicate a marked decrease in their perceptions of the relationship between these two attributes as compared to participants in the control condition and the working memory load condition.

Participants in the analytical condition were asked to form their evaluations of risk and benefit using a analytical process in which they first considered the risks and benefits associated with an innovation before they formed an overall evaluation. This manipulation significantly attenuated the relationship between perceptions of risk and benefit. However, when consumers were allowed to freely form these evaluations (control condition), the relationship between risk and benefit was shown to be stronger, producing a similar pattern of judgments to those who were placed under a cognitive load. Previous research has used time pressure to increase a participant's reliance on heuristic decision making styles. It is possible that time pressure manipulations may be stronger than the working memory load manipulation used in study 1. Alternatively, it is

TABLE 1

Correlations Between Risk and Benefit by Innovation and Condition: Study 1

	Working Memory Load					Control Condition					Analytical Condition				
Innovation	*r*		sig	*n*	*z*		*r*		sig	*n*	*z*		*r*		sig	*n*
Vaccine Strips	-0.20		0.21	42	0.92		-0.39		0.02	38	0.86		-0.57	<	0.01	25
Uno Bike	-0.52	<	0.01	37	-1.52	*	-0.21		0.19	40	0.92		-0.45		0.04	21
Solar Phone	-0.34		0.04	37	0.38		-0.42		0.02	29	-0.06		-0.40		0.10	18
Tricycle	-0.41		0.01	36	0.28		-0.47		0.01	34	-1.89	**	0.07		0.76	19
Power Mat	-0.23		0.13	44	-0.55		-0.10		0.58	32	-0.45		0.03		0.90	24
Fruit Bowl	-0.59	<	0.01	42	-1.64	**	-0.27		0.13	34	-0.98		0.10		0.77	12
Refrigerator	-0.47		0.01	33	0.46		-0.56	<	0.01	34	-2.74	**	0.21		0.39	19
Dog Bowl	-0.20		0.25	34	0.09		-0.22		0.17	40	-0.00		-0.22		0.35	20
Cord Lock Light	-0.64	<	0.01	28	-2.52	**	-0.09		0.60	38	0.43		-0.21		0.34	23
Bottle Cooler	-0.49	<	0.01	39	-0.44		-0.40		0.02	35	-0.58		-0.25		0.28	21
Composting Disposal	-0.53	<	0.01	33	0.15		-0.56	<	0.01	30	-0.79		-0.38		0.08	23
Water Meter	-0.25		0.14	35	-0.01		-0.25		0.14	37	0.13		-0.28		0.17	25
Solar Blinds	-0.31		0.07	37	0.68		-0.45		0.01	31	-2.69	**	0.28		0.19	24
Bike Light	-0.70	<	0.01	45	-2.09	**	-0.37		0.03	35	0.39		-0.45		0.02	26
GPS	-0.32		0.25	36	2.17	**	-0.71	<	0.01	30	-3.01	**	-0.03		0.89	25
Light Converter	-0.20		0.25	34	1.21		-0.46	<	0.01	40	-0.30		-0.39		0.13	17
Overall	-0.43	<	0.01	592	-0.29		-0.42	<	0.01	557	-3.24	**	-0.22	<	0.01	342

*one tailed $p < 0.10$

**one tailed $p < 0.05$

possible that the lack of difference between the control and cognitive load conditions could be due to a ceiling effect.

However, this pattern of results instead may suggest that the default process used by consumers to form evaluations of product attributes is more similar to that used when cognitive resources are constrained (WM load condition) than to a more analytical process of forming evaluations. These results fit well with an affective decision making explanation over that of a purely analytical process.

Study 2 further examines the relationship between judgments of risk and benefit and provides a second test of hypothesis 1. In the first study, processing style was manipulated and risk and benefit perceptions were measured. The second study manipulates these two attributes to see if changes to one influence judgments of the other. Specifically, in the second study participants are asked to evaluate a series of innovations twice. After the first evaluation, participants are given information about either the risks or benefits associated with each innovation. Changes in their evaluation are recorded between the two measurement occasions. The study is designed to test if the provision of information alters consumer judgments of the non-manipulated attribute in an affectively congruent manner. Such changes indicate that judgments of risk or benefit are not considered independently, but rather based on overall affective evaluations of the innovation.

STUDY 2: MANIPULATIONS OF PRODUCT ATTRIBUTES PRODUCE AFFECTIVELY CONGRUENT CHANGES IN THE NON-MANIPULATED ATTRIBUTE

An analytical model of innovation adoption decisions would predict that information about the risks associated with innovations is assessed independently from information about the product benefits. For example, an analytical model would predict that providing information that minimized the perceived benefits of an innovation should not necessarily confer any relevant information about the product's risks. Because no new information is provided about the risks of the product, risk evaluations would be expected to remain unchanged. However, the affect heuristic would predict just the opposite. Information downplaying the benefits of a product would reduce the favorability of that product and could be expected to increase perceptions of risk, even without directly providing any risk information. The affect heuristic is based on the idea that people consult their affective evaluation of a stimulus when making specific judgments about the attributes of an object. If this is the case, then manipulations that increase the favorability of an innovation, such as information that serves to increase the perceived benefits or reduce the perceived risks of an innovation, should produce an affectively congruent shift in the non-manipulated attribute. For example, according to the affect heuristic, providing information that reduces the risk of adopting an innovation should increase the favorability of that innovation. This more favorable evaluation should subsequently increase judgments of the innovation's benefits. Alternatively, if the information provided serves to increase the perceived riskiness of adopting an innovation,

a consumer's affective evaluation of the product is expected to become less favorable. When consulted, this less favorable evaluation of the innovation would be expected to lead to a diminished evaluation of the product's benefits.

The same pattern could be expected if the consumer was provided information about the *benefits* of a product. Increasing the perceived benefits of a product should increase the favorability of the innovation, and subsequently, should decrease the perceived risks of that innovation. Whereas, information that reduces the perceived benefits of an innovation should decrease the favorability of an innovation and lead to increased risk evaluations.

The results of the first study demonstrate that participants both in the control condition and those who had limited cognitive resources (the WM load condition) evaluated the risks and benefits associated with innovations as having a stronger inverse relationship than those who were asked to make more analytical decisions. The second study is intended to strengthen these findings by experimentally manipulating information about the risks and benefits associated with an innovation then recording changes in the non-manipulated attribute. If manipulations to one attribute produce inverse changes to another, unrelated attribute, then a case can be made for a common affective evaluation connecting the two evaluations.

The second study follows a paradigm outlined by Finucane et al. (2000). Risk information is presented separately from information about an innovation's benefits. Information about either are expected to produce changes to judgments of the other due to their relationship with the more general affective evaluation that is consulted as participants construct their judgments.

Method

One-hundred-and-fifty students from a large public northwestern university were recruited to participate in this study. The structure of the experiment followed that of the second study conducted by Finucane et al. (2000). Specifically, the study used a 4 (information: high-risk, low-risk, high-benefit, low-benefit) by 3 (innovation: Power Mat, Vaccine Strips, Simple GPS) pretest-posttest design with the first factor between subjects and the second factor within subjects. Several unrelated studies served as filler tasks separating the pre- and post-test measures.

Procedure. During the initial presentation, each participant was presented with a picture and a brief description of each innovation (see descriptions from appendix A) in a randomized order. After viewing each innovation, participants completed the set of measures that were used in study 1. Participants then completed approximately 30 minutes of filler tasks. After completing the filler tasks, participants received the following instructions: "The subsequent page contains some general information about the risks (benefits) associated with each of several innovations. Even though it is recognized that there are also some benefits (risks) associated with these products, these will not be dealt with at this time." Following the instructions, subjects were presented with a picture and description of each innovation for a second time (in a randomized order) along with additional information intended to influence their evaluations of either risks or benefits, depending upon the condition to which they were assigned (see

appendix B for each condition). After being presented with information about the risks or benefits of each innovation, participants evaluated each a second time using the same measures.

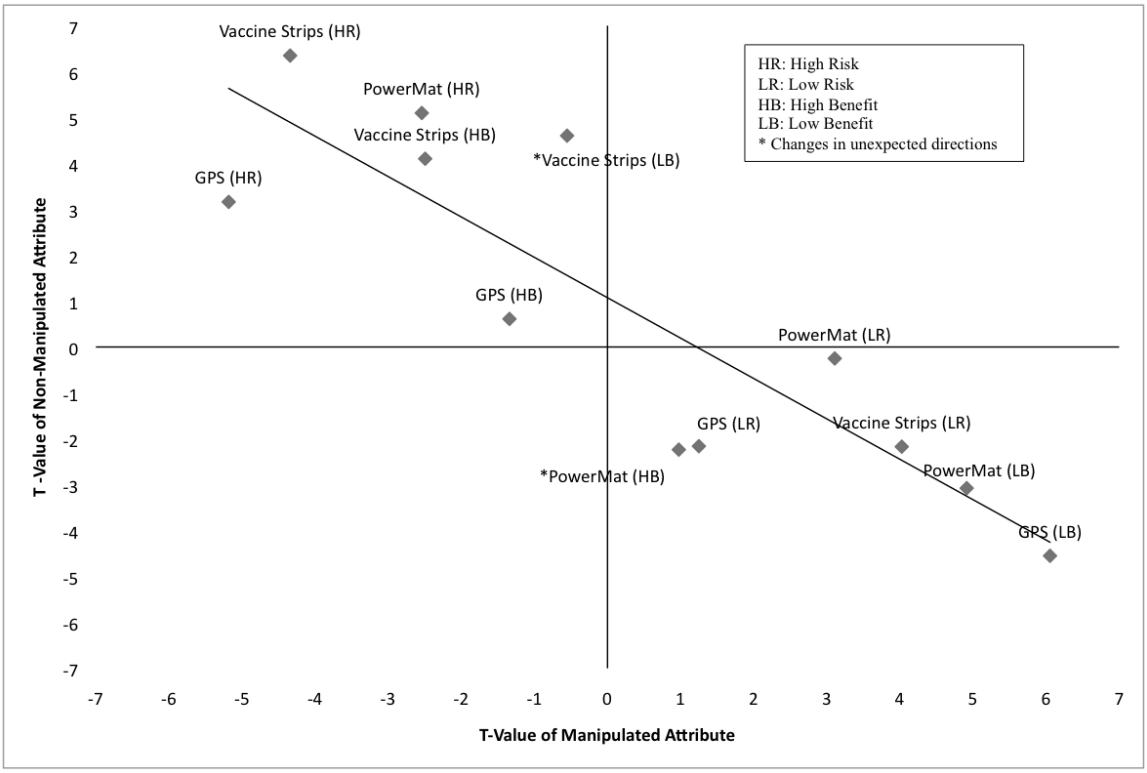
Results

Following Finucane et al. (2000), separate mean values were calculated for risk and benefit ratings across participants for each innovation. From these values, a mean difference measure was calculated which was then divided by the standard error of the mean difference measure to produce a *t*-value for both the manipulated and non-manipulated attributes. Figure 2 provides a plot of these values.

The plotted *t*-values (see figure 2) demonstrate a clear negative relationship between changes in the manipulated and non-manipulated attributes. The overall correlation of the 12 points plotted in figure 2 was -.87. Overall, the results were as expected; demonstrating that perceptions of risk and benefit are not judged independently. Of the 12 sets (three innovations x four conditions) of *t*-values, 10 evidenced changes in both the manipulated and non-manipulated variables in the directions expected. That is, manipulations to either risk or benefit produced affectively congruent changes to the non-manipulated attribute. Within the two sets of *t*-values that did not change in the direction expected (Power Matt/high-benefit and Vaccine Strips/low-benefit), the manipulated attribute (benefit for both) was not found to have changed significantly ($t(36) = .98$, n.s. and $t(39) = -.55$, n.s. respectively) between the two measurement occasions. That is, manipulations intended to alter perceptions of benefits

FIGURE 2

T-VALUES FOR MANIPULATED VS. NON-MANIPULATED ATTRIBUTES: STUDY 2



did not produce changes as expected. However, the non-manipulated attribute (risk) in both of these conditions did change significantly ($t(36) = 2.24$, $p = .03$ and $t(39) = 4.60$, $p < .01$ respectively), in a direction that was opposite that which was anticipated, but which was affectively congruent with the directional changes observed in the manipulated attribute. This again is evidence that participants consulted their affective evaluation of the innovations when determining their judgments of the risks and benefits associated with them rather than forming judgments of risk and benefit independently. Overall, the *t*-values for the manipulated and non-manipulated attributes provided support for the

affect heuristic. Changes in the non-manipulated attribute were all in an affectively congruent direction.

A second method of analyzing the data from study 2 is to examine individual participant reactions to the manipulations. Tables 2 and 3 summarize these reactions. The bottom row of table 2 shows that the manipulation worked in 59.1% of trials (e.g., a participant who received information intended to increase perceptions of risk indicated higher perceived risk at time 2 than at time 1), produced no change in 14.2% of the trials and changed opposite what was expected in 26.7% of trials. The high-risk manipulations were among the most successful with the manipulation acting to increase risk in 75.2% of trials. In contrast, the high-benefit conditions were the least successful, producing a decrease in benefit judgments in 42.7% of trials. The success rates of the manipulations were similar across each of the three innovations.

TABLE 2

Effect of Information on Manipulated Attribute: Study 2

Condition	Percent of trials that manipulation worked	Percent of trials that the effect was opposite manipulation	Percent of trails with no change
High Risk	75.24	17.14	7.62
Low Risk	56.57	21.21	22.22
High Benefit	42.74	37.61	19.66
Low Benefit	62.79	28.68	8.53
Power Mat	62.00	26.67	11.33
Vaccine Strips	54.67	29.33	16.00
GPS	60.67	15.33	24.00
Overall (n = 450)	59.11	14.22	26.67

TABLE 3

Effect of Information on Non-Manipulated Attributes: Study 2

	Effect on the non-manipulated attribute		
Effect on the manipulated attribute	Percent of trials prediction confirmed	Percent of trials change was opposite of prediction	Percent of trials no change
Manipulation Worked (*n* = 266; 59.1%)	62.41	16.92	20.68
No Change (*n* = 64, 14.2%)	39.06	29.69	31.25
Change was contrary to manipulation (*n* = 120; 26.7%)	30.83	51.67	17.50
Total (*n* = 450)	50.67	28.00	21.33

The effects of risk and benefit information on the non-manipulated attributes are shown in table 3. In the 59.1% of instances in which the manipulation worked as expected (from table 2), the non-manipulated attribute changed in an affectively congruent direction 62.4% of the time. Thus, in the majority of cases in which the manipulation worked as intended (e.g., information intended to increase perceptions of risk actually led to increases in risk perceptions) the non-manipulated attribute (e.g., benefit) changed in a direction opposite that of the manipulated attribute (e.g., perceptions of benefits decreased). An additional 20.7% of these cases produced no change in the non-manipulated attribute, and in 16.9% of cases, participants indicated that the non-manipulated attribute changed in the same direction as the manipulated attribute (opposite of what was predicted). This finding confirms those of Finucane et al. (2000), demonstrating that when the manipulation worked as expected (e.g., high-risk information increases perceived risks), the non-manipulated attribute generally moved in

the opposite direction (e.g., high-risk information decreases perceived benefit), as predicted by the affect heuristic. These findings support the idea that consumers do not fully partition information about one attribute (e.g., risks) when making judgments about another (e.g., benefits), even when no logical basis exists for making inferences about one from the other.

When the presentation of information failed to produce an effect on the manipulated attribute (no change, row 2 of table 3), the non-manipulated attribute changed as expected in 39.1% of trials and in a direction opposite to what was expected in 29.7% of trials. Another 31.3% of trials produced no change in the non-manipulated attribute. Such a pattern is not surprising, because the absence of a perceived change in the manipulated attribute would not be expected to change a participant's affective evaluation of the innovation. Subsequently, the non-manipulated attribute was not expected to change more frequently in one direction than another.

Finally, in those instances in which the manipulated attribute changed in a direction that was contrary to the manipulation (e.g., judgments of risk decreased in response to information intended to increase perceptions of risk), the non-manipulated attribute was found to have changed in the predicted direction only 30.8% of the time (judgments of benefits decreased in the example above). Comparing this value to that of the cell in the first column and first row of table 3 (62.4%), it is apparent that the values are starkly different. Overall, the non-manipulated attribute was more likely to move in a manner inverse to changes in the manipulated attribute even in those instances in which the manipulation did not function as expected. In 51.7% of trials when the manipulation

produced contrary results, the non-manipulated attribute moved inversely (but affectively congruently) to the manipulated attribute (see row 3, column 2 in table 3).

Discussion

Overall, the results of study 2 provided additional support for the first hypothesis and further demonstrated the use of affect in consumer evaluations of innovations. Participants perceived changes in the non-manipulated attribute, despite not receiving any information about that attribute. Most changes in the non-manipulated attribute were found to occur in a direction affectively congruent with changes in the manipulated attribute. This pattern was found even among instances in which the manipulation did not work as expected. The results were different from what would have been expected if consumer judgments were derived only from analytical reasoning.

The *t*-values plotted in figure 2 demonstrated the strong inverse relationship between risk and benefit across conditions and innovations. At the individual level, the inverse risk/benefit relationship was more apparent. Successful manipulations of either risks or benefits produced inverse changes in the non-manipulated attribute. When manipulations produced changes that were opposite of what was intended, this inverse relationship still held. The values reported in table 3 align closely, and are often more convincing, than those reported by Finucane et al. (2000) in their study of hazards. For example, in the present study the manipulations worked in a greater number of instances (59% versus 50%). Further, the non-manipulated attribute changed in an affectively congruent direction in a greater number of instances in the current study (62% versus

45% among instances in which the manipulation worked as expected and 52% versus 33% among those instances in which the manipulation produced an opposite change than expected).

The findings from study 2 are important because they demonstrated a causal, inverse relationship between judgments of an innovation's risks and benefits that was congruent with an affective decision process. When making evaluations about the non-manipulated attribute, participants appear to have turned to a common affective evaluation rather than analytically assessing information at hand. Study 3 seeks to further demonstrate this relationship by manipulating favorability rather than risk or benefit.

STUDY 3: AFFECTIVELY EXTREME EVALUATIONS INCREASE PERCEIVED DIFFERENCES BETWEEN JUDGMENTS OF RISK AND BENEFIT

The results of study 2 demonstrated that when provided with risk or benefit information, consumers form affectively congruent inferences about other attributes which are not logically connected with the information received. This finding is inconsistent with what would be expected if consumers developed their judgments of these innovations using analytical processes alone because information about one attribute (e.g., benefit) should be logically uninformative when making judgments of other attributes (e.g., risks). The second study however, manipulated favorability indirectly (through either risk or benefit information). The third study uses another manipulation intended to increase or decrease the affective evaluations of a product compared to a control group. Before participants began the third study, they were

instructed that the majority of students from another data collection liked (disliked) each of the innovations they were about to see. Past research has shown that consumer preferences can be influenced by providing information about how others evaluate a target (Burnkrant and Cousineau 1975; Morwitz and Pluzinski 1996). Thus, participants who were instructed that previous participants liked the innovations were expected to increase their overall evaluations of each of the innovations in the study relative to a control group who did not receive any information. Whereas, those participants who received information indicating that other study participants disliked the innovations were expected to report less favorable evaluations of the innovations relative to the control group. This manipulation was designed in such a way that participants were not provided with any information about the risks and benefits associated with the products. Participants were only told that earlier (equally naïve) participants from another study either liked or disliked the products they were shown. This information is expected to influence study participant's affective evaluations of the products and correspondingly produce affectively congruent changes in judgments of both risk and benefit. By manipulating affective evaluations, this study is designed to test hypothesis 2, which predicts that the extremity of a participant's affective evaluation will be positively related to differences between judgments of risk and benefit. It is hypothesized that more affectively extreme reactions (e.g., I like it/I dislike it) will correspond to greater differences between risk and benefit compared to affectively neutral responses (e.g., neither like nor dislike).

Method

Forty-two students from a large, public northwestern university were recruited to participate in this study. The study was a 3 (instructions: favorable, control, unfavorable) by 3 (innovation: Tricycle, Dog Bowl and Fruit Bowl) design with the first factor between subjects and the second factor within subjects. Participants were assigned one of the three instruction conditions and each participant evaluated the same three innovations presented in random order.

Procedure. Participants were assigned to one of three instruction conditions. In the favorable instructions condition, participants were told: "In this study we are interested in your opinions of new products and concepts. On the following screens you will be presented with 3 different new products that were favorably evaluated in a previous study similar to this one. In that study, the majority of participants indicated that they liked each of these products. Please answer the questions to the best of your ability." Those participants assigned to the unfavorable instruction condition received the same instructions, but the wording was changed to indicate that students from a previous study disliked each of the products. Participants in the control condition were not given any information about other participants who may have evaluated the products and were simply told that they would be presented with three products and asked to give their opinion of each.

After reading the instructions, participants were randomly presented with three products selected from the first study (Tricycle, Dog Bowl and Fruit Bowl) and asked to

complete the same measures used in study 1 for each. Scale items measuring affective evaluations of the innovations were combined to form a single variable for each product ($\alpha_{\text{Tricycle}} = .94$, $\alpha_{\text{Dog Bowl}} = .95$, $\alpha_{\text{Fruit Bowl}} = .92$).

Results

The different instruction conditions were expected to produce differences in affective evaluations of the innovations. To test this manipulation, the within subjects evaluations of each innovation were combined to form a single affective score for each instructional condition. An analysis of variance (ANOVA) was conducted with the averaged evaluation as a dependent variable, and the instructional conditions as the independent variable. A significant main effect of instruction conditions on affective evaluation was found ($F(2,39) = 4.31$, $p = .02$). Planned contrasts revealed that the affective evaluations of participants assigned to the control group ($M_{\text{control}} = 8.06$) and those assigned to the favorable instruction group ($M_{\text{favorable}} = 8.30$) differed from those assigned to the unfavorable instruction group ($M_{\text{unfavorable}} = 6.74$; $t(39) = 2.90$, $p = .01$). No statistical difference in affective evaluations was observed between those assigned to the favorable condition and those in the control condition ($t(39) = .46$, n.s.). Interestingly, the mean evaluation for participants who were told that previous study participants disliked the innovations, was near the midpoint of the scale (six on an 11-point scale). Thus, the average affective evaluation of those who were provided negative information is best characterized as neutral rather than negative, whereas those in the other two conditions held favorable evaluations. This analysis was also conducted using a repeated

measures ANOVA. The results of that analysis indicated within subjects differences in affective evaluations of the innovations (the Tricycle was preferred over the other two innovations), but no interaction between the different innovations and instructional conditions.

Hypothesis 2 states that more extreme affective responses are expected to correspond to a stronger negative relationship between risks and benefits. To test this hypothesis a measure of the difference between risk and benefit for each innovation was calculated then averaged across products. Greater differences between risk and benefit are expected to correspond with more affectively extreme evaluations. An ANOVA was conducted with the difference measure as the dependent variable and the instruction conditions as the independent measure. This analysis revealed a significant main effect of instructions on the dependent variable ($F(2,39) = 12.95$, $p < .01$). Planned contrasts revealed that the risk/benefit difference scores for those participants who were told that previous study participants liked the innovations ($M_{favorable} = -4.38$) and those assigned to the control condition ($M_{control} = -4.04$) were significantly different from participants who were instructed that previous study participants did not like the innovations ($M_{unfavorable} = .67$, $t(39) = 5.08$, $p < .01$). However, difference scores of the group of participants who were told that previous study participants liked the innovations was not found to differ from those assigned to the control group ($t(39) = .33$, n.s.). These results reflect the observed differences in participant's affective evaluation of these innovations, and support hypothesis 2. Those conditions that produced stronger affective responses (favorable information and control conditions) also produced greater differences in judgments of risk and benefit. Conversely, when participants were provided with

unfavorable information, their affective evaluation of the innovations was neutral and the perceived difference between risk and benefit was attenuated.

Discussion

Study 3 provided support for hypothesis 2. More affectively extreme evaluations were shown to correspond with greater differences in risk and benefit judgments, suggesting that participants were basing these judgments on their underlying affective evaluations of the products. The instructions provided to participants acted to increase or decrease favorability judgments, but were devoid of information that could logically inform judgments of the risks and benefits associated with the product. While the manipulations were effective, it was surprising that participants who were provided with negative information indicated only neutral, rather than negative, evaluations of the innovations. As expected from such an affectively weak evaluation, these same participants perceived nearly equivalent amounts of risk and benefit associated with the products, evidenced by a low mean difference score. In contrast, those participants assigned to the control condition and those who were provided with positive information gave similarly favorable evaluations to the innovations they evaluated. As predicted by hypothesis 2, greater differences in judgments of risk and benefit were found among participants in these groups as compared to the group that was provided negative information.

The relationship between affective extremity and the difference between judgments of risk and benefit is explored further in the final study. The purpose of study

4 is to test for product level attributes that may moderate consumers' use of the affect heuristic when making judgments.

STUDY 4: PRODUCT LEVEL MODERATORS OF THE AFFECT HEURISTIC

The results of the first two studies supported the first hypothesis by demonstrating that the inverse relationship between risk and benefit found among judgments of social hazards and financial products also applies to consumer judgments of novel product innovations. The third study demonstrated support for the second hypothesis, establishing the relationship between more affectively extreme evaluations and greater perceived differences in risk and benefit. Combined, these first three studies provide empirical support for the use of the affect heuristic in consumer evaluations of innovations. The fourth study is expected to support these findings and provide a test of hypothesis 3. In this study, participants are asked to evaluate the 16 product innovations from the first study, across a number of dimensions. The goal of this study is to test if product level attributes might moderate the affect heuristic as measured by the relationship between affective extremity and the difference between judgments of risk and benefit. Specifically, it is expected that consumers may rely more heavily upon the affect heuristic when evaluating more hedonic products than when evaluating more utilitarian products (hypothesis 3a and 3b).

Method

One-hundred-twenty-four students were recruited from a large northwestern university. Participants evaluated six products presented in a random order, which were randomly selected from a pool of 16 innovations used in study 1 (see appendix A).

Procedure. Initial instructions informed participants that they would be asked to provide their opinions of several products and concepts. Upon reading the instructions participants were presented with each product individually, followed by a set of measures described below.

Measures. After viewing the description of each product, subjects were presented with the first block of questions used in the other three experiments. Next, participants completed multi-item scales to measure four different product concepts: (1) product radicalness, (2) hedonic dimensions, (3) utilitarian dimensions and (4) aesthetic appeal. In total, this question block contained 20 items which were randomized for each of the six products that were presented to each participant. The radicalness scale ($\alpha_{radicalness}$ = .88) consisted of seven, nine-point bi-polar items and was adapted from radicalness scales developed by Gatignon et al. (2002) and Oliver et al. (1993). The measure of hedonic and utilitarian product dimensions ($\alpha_{hedonic}$ = .93, $\alpha_{utilitarian}$ = .92) was composed of ten (five hedonic, five utilitarian), nine-point bipolar items developed by Voss et al. (2003). Finally three, nine-point bipolar items were used to measure the aesthetic appeal ($\alpha_{aesthetic}$

$_{appeal}$ = .89) of each innovation. These items are adapted from Hirschman's (1986) product aesthetics scale.

The final block of questions consisted of two items. On a nine-point bipolar scale, participants were asked to rate how knowledgeable they were about the type of product they were shown (category knowledge) as well as how well they understood the product concept.

Results

Hypothesis 3a suggested that evaluations of highly hedonic, relative to less hedonic, product innovations would be influenced more by affective responses than less hedonic innovations. Similarly, hypothesis 3b proposed that evaluations of highly utilitarian product innovations would be less influenced by affective responses than would evaluations of less utilitarian product innovations. To test these hypotheses, the 16 product innovations were divided into quartiles based on their mean hedonic and utilitarian scores. Two mixed design multiple regressions, one evaluating high versus low utilitarian innovations and one evaluating high versus low hedonic innovations, were conducted using dummy codes to differentiate among the innovations that were rated in the upper and lower quartiles on the hedonic or utilitarian scale. The dependent variable in each of these regression models was the absolute difference between risk and benefit judgments for each product. This absolute difference score was regressed onto the extremity of the participant's affective evaluation of each innovation. The affective extremity variable was calculated by centering the absolute value of the affective

evaluation provided for each product. Thus, each participant's affective rating of the product (e.g., neutral to strong affect) served as the predictor for the absolute difference between judgments of risk and benefit. An interaction term was also calculated by taking the product of the dummy code and the affective extremity measure. The regression to test hypothesis 3a/b was performed in three steps with the affective rating variable entered first, followed by the dummy code, and finally, the interaction term. The regression of the absolute difference score onto the strength of the affective experience was statistically significant for both the utilitarian innovations ($F(1,375) = 94.45$, $p < .01$, $R^2 = .21$) and the hedonic innovations ($F(1,372) = 74.08$, $p < .01$, $R^2 =. 17$).

The strength of the affective response toward each product was found to be a significant predictor of the absolute difference between risk and benefit for both utilitarian and hedonic innovations ($b = .88$, $SE = .09$, $p < .01$; $b = .76$, $SE = .09$, $p < .01$ respectively), providing further support for hypothesis 2. This result indicates that for every standard deviation increase in affective extremity, the absolute difference score (negative relationship between risk and benefit) increased .45 among utilitarian products, and .41 among hedonic products.

In both sets of regressions, the R^2 resulting from the addition of the dummy coded term was not significant, indicating that the relationship between absolute affective response and the absolute difference score was not statistically different between the two groups, and that both groups could be represented by a common intercept and slope. Overall, the results do not lend support to hypothesis 3, thus suggesting, that the relationship between affective extremity and absolute risk/benefit difference is not

TABLE 4

Regression Analysis: Study 4

High Versus Low Utility (R^2 = .21, F(1,375) = 94.45, p < .01)						
Variable	*b*	*SE*	*t*	B	*sr*	*p*
Intercept	.08	.14	.58			.56
ABS Affect	.88	.09	9.72	.45	.45	< .01

High Versus Low Hedonic (R^2 =.17, F(1,372) = 74.08, p < .01)						
Variable	*b*	*SE*	*t*	B	*sr*	*p*
Intercept	- .29	.14	-2.09			.04
ABS Affect	.76	.09	8.61	.41	.41	< .01

High Versus Low Radicalness *(R^2 = .25, F(2,366) = 60.39, p < .01)*						
R^2 change when adding dummies .22 to .25, +.02 F(1,366) = 11.76, p < .01						
Variable	*b*	*SE*	*t*	B	*sr*	*p*
Intercept	.32	.20	1.63			.1
ABS Affect	.98	.09	10.99	.52	.50	< .01
D1	- .96	.28	3.43	- .16	- .16	< .01

High Versus Low Category Knowledge (R^2 = .23, F(2,351) = 52.11, p < .01)						
R^2 change when adding dummies .21 to .23, +.02 F(1,351) = 7.32, p < .01						
Variable	*b*	*SE*	*t*	B	*sr*	*p*
Intercept	.71	.19	3.81			< .01
ABS Affect	.90	.09	10.04	.47	.47	< .01
D1	- .76	.28	- .27	- .13	- .13	.01

High Versus Low Product Understanding (R^2 = .189, F(2,378) = 46.59, p < .01)						
R^2 change when adding dummies .189 to .198, +.009 F(1,378) = 4.32, p = .05						
Variable	*b*	*SE*	*t*	B	*sr*	*p*
Intercept	.39	.18	2.11			.04
ABS Affect	.85	.09	9.58	.44	.44	< .01
D1	- .57	.27	- .21	- .10	- .10	.04

High Versus Low Aesthetic Appeal (R^2 = .16, F(2,362) = 35.41, p < .01)						
R^2 change when adding dummies .15 to .16, +.01 F(1,362) = 4.45, p = .04						
Variable	*b*	*SE*	*t*	B	*sr*	*p*
Intercept	- .04	.20	- .20			.84
ABS Affect	.77	.09	8.41	.42	.40	< .01
D1	- .60	.28	- 2.11	- .11	- .10	.04

moderated by the hedonic or utilitarian nature of the innovation, at least not for the innovations included in this study.

To test if other product attributes might moderate the relationship between affective extremity and absolute risk/benefit differences, the 16 innovations were again partitioned into quartiles on the basis of innovation radicalness, category knowledge, product understanding, and aesthetic appeal. The results of each of these regression analyses are presented in table 4. Innovation radicalness was found to have a main effect on the absolute difference judgments between risk and benefits. That is, the mean absolute difference scores between highly radical and less radical product innovations were found to differ along the continuum of absolute affective product ratings. For each value of the absolute affective response, the absolute difference between risk and benefit was lower for more radical innovations ($\beta = -.16$) than for less radical products, although the differences in the responses did not change across the continuum of answers (i.e., there was no interaction). A similar result was found for category knowledge, product understanding and aesthetic appeal in which innovations about which consumers had greater category knowledge, greater product understanding, or which were more aesthetically appealing corresponded to lower ($\beta = -.13, -.10, -.10$ respectively) absolute differences between risk and benefit responses.

Discussion

The results of study 4 provide further evidence that the inverse relationship found between judgments of risk and benefit among hazards (Finucane et al. 2000) can also be generalized to innovations. Further, the regression analysis demonstrated a consistent relationship between the extremity of an affective response and the difference between risk and benefit. The results indicated that increasingly extreme affective responses (i.e., strong liking/disliking versus neutral evaluation) corresponded with larger differences between risk and benefit.

The 16 innovations in this study were split into quartiles based on several product attributes. In the first two analyses, no main or interaction effects were found for either utilitarian or hedonic product ratings on the relationship between affect extremity and absolute risk/benefit difference. Thus, no support was found for hypothesis 3a or 3b. This inability to find significant results may be the result of a failure to include innovations which elicited extreme enough hedonic and utilitarian ratings. While the upper and lower hedonic quartile groups of innovations had mean hedonic evaluations that were significantly different from one another, both groups had average hedonic ratings above the midpoint (4.5 on a nine-point scale) on the hedonic rating scale. A similar problem was present for innovations split into quartiles on the basis of mean utilitarian scale ratings.

In an effort to find other innovation specific attributes that may moderate the use of the affect heuristic, quartile splits were also calculated on the basis of innovation radicalness, category knowledge, product understanding, and aesthetic appeal. For each

of these variables, only main effects were found indicating that participants relied upon the affect heuristic to an equal extent regardless of differences in product level attributes or experience with the product category. Therefore, the results of this study did not find evidence of product level moderators of the affect heuristic.

GENERAL DISCUSSION

Each of the studies presented above provide evidence that consumers rely upon affective decision making processes in forming judgments of product innovations. Judgments of risk and benefit were shown to be consistent with underlying affective evaluations and the pattern of results is consistent with the affect heuristic. The negative risk/benefit relationship discussed by Alhakami and Sovic (1994) and Finucane et al. (2000) regarding hazards was found to hold across a number of product innovations, individuals and manipulations. The results suggest that bottom-up analytical explanations of new product adoption decisions are not sufficient to explain the process and that top-down, affective processes should also be considered.

The results of the first three studies each provided support for the hypotheses they were designed to test. Specifically, studies 1 and 2 provided support for hypothesis 1 by demonstrating an inverse relationship between perceptions of risk and benefit. In study 1, participants assigned to the analytical condition were asked to create lists of risks and benefits before forming their judgments. Participants assigned to this group, indicated a weaker relationship between perceptions of risk and benefit than those who were assigned to either the cognitive load or the control condition.

Study 2 provided additional support for the first hypothesis by demonstrating that changes in one attribute (e.g., increases in risk perception) influence non-manipulated attributes (e.g., decreases in benefit) in an affectively congruent manner. The overwhelming majority (10 of 12) of risk/benefit statements provided to participants produced the anticipated changes in the attribute that they were designed to manipulate. The results of the individual level changes were equally encouraging, showing that changes in the manipulated attribute generally produced affectively congruent changes in the non-manipulated attribute.

The results of study 3 and 4 provided support for hypothesis 2 by demonstrating that increases in the affective extremity of evaluations corresponded with greater differences in perceptions of risk and benefit. In study 3, participants were provided only with the opinions (e.g., like/dislike) of other study participants who were ostensibly also naïve. Those who were told that others disliked the innovations responded with neutral evaluations of the innovations. Whereas, those who were told that others liked the innovations, or who were not given any information about the other group's preferences, evaluated the products favorably. Differences in risk and benefit closely matched changes in affect. Favorable evaluations corresponded with greater differences in risk and benefit whereas more neutral evaluations were associated with smaller differences. In this study, it was expected that negative information would decrease evaluations of the products. While participants who were provided negative information did lower their evaluations of the products, their average ratings were best characterized as neutral. This result may indicate the presence of a pro-innovation bias, whereby innovations are generally perceived as inherently favorable (Rogers 1976). Future research may explore stronger

negative manipulations in an effort to shift average evaluations below the midpoint on the scale. The affect heuristic would predict that as affective evaluations become increasingly negative, judgments of risk should become progressively larger than judgments of benefit.

Study 4 also found a positive relationship between affective extremity and perceived differences in judgments of risk and benefit, further supporting hypothesis 2. In study 4, a variety of attributes associated with the innovations were measured to determine if product attributes might moderate this relationship. The results did not lend support to hypothesis 3a or 3b. Participants did not rely on affect to a greater extent when evaluating risks and benefits of more versus less hedonic products. Likewise, the utilitarian nature of the product was not found to moderate the relationship between affect and risk/benefit judgments.

The unexpected results of the fourth study could be due to a number of possibilities. The distinction between hedonic and utilitarian products is somewhat enigmatic. Many products can be both utilitarian and hedonic, whereas others may be predominantly hedonic or utilitarian, or neither. Identifying product innovations that are uniquely hedonic or utilitarian poses a challenge. Even if such innovations can be identified, they may not reflect products which consumers are likely to encounter in the marketplace, creating concerns about external validity. An alternative approach may be to manipulate the benefits that consumers seek from using an innovation, rather than attributes of the innovation. For example, affect may be more relevant to decisions about an innovation that is expected to deliver experiential benefits (e.g., fun/enjoyment) whereas affect may be less relevant for decisions about an innovation which will have

instrumental uses (e.g., used for work; Pham 1998; Pham and Avnet 2009). However, the results of study 1 suggest that participants relied upon the affect heuristic as a default process for forming judgments across product categories. This may have also been the case in the fourth study. It is possible that product level attributes may not influence the extent to which consumers rely upon affect when forming judgments of risk and benefit. Consumers may turn to affect as a default when making judgments of products about which they have little information. However, there are likely to be situational factors that motivate deliberate analytical evaluations that may reduce the reliance on affective decision processes. A challenge for future research is to continue to identify situations that may influence the process by which judgments are formed.

One such possibility comes from recent research which suggests that regulatory focus may also moderate the use of the affect heuristic (Pham and Avnet 2009). The findings of a series of studies indicate that those who are promotion focused are more likely to rely upon affective decision processes to form evaluations. Promotion focused individuals prefer affective inputs when making decisions because they are thought to be relevant to their eagerness to form judgments. Future research may investigate the role of promotion versus prevention focus on moderating the use of affect in judgments of innovations. Existing work has already demonstrated that regulatory focus is related to the adoption of new products (Herzenstein, Posavac, and Brakus 2007), however research has not yet investigated the potential influence of affective decision making in explaining this relationship.

Together this series of studies contribute to our theoretical understanding of both the process by which consumers evaluate innovations and the affect heuristic. Despite

voluminous prior research on the topic, the potentially fundamental role of affect in new product evaluations has largely been overlooked. The findings from the four studies above make a contribution by serving as an initial demonstration of the importance of affect and the use of the affect heuristic in evaluations of innovations. This research marks a departure from the analytical cognitive processes that have been proposed to underlie the innovation adoption process. This research also makes a contribution by further incorporating heuristics and biases perspectives into research on innovation adoption. Heuristics and biases research is fundamentally an investigation of decision making under conditions of uncertainty (Tversky and Kahneman 1974); conditions that undoubtedly apply to innovation adoption decisions. Recent innovation research has begun to adopt perspectives from the heuristics and biases literature. While much remains to be done, future research should not overlook the importance of the affect heuristic. In his acceptance speech for the Nobel prize in economics, Daniel Kahneman (2003, 470) emphasized that "the idea of an affect heuristic is probably the most important development in the study of judgment heuristics in the last decades." Additional examination of the role of the affect heuristic in innovation adoption decision making as well as other consumer behavior domains seems warranted.

The use of new products as a context also contributes to a theoretical understanding of the affect heuristic. Past research has argued that the affect heuristic is not dependent upon the retrieval of cognitively formed evaluations. The results of the current studies support this assertion. The innovations used as stimuli in these studies were novel products that consumers had never encountered before and thus had no previously formed evaluations upon which to draw. Additionally, participants in each of

the studies were asked to make risk and benefit evaluations of specific products, as opposed to social hazards, from their own perspective, rather than from the prospective of society as a whole. These conditions more closely match the types of judgments people are asked to make in the marketplace and extend our understanding of the types of judgments resulting from the use of the affect heuristic.

For practitioners, the results of these studies highlight the importance of considering affective decision making styles in consumer evaluations of new products. The affect heuristic helps to address several important issues confronting marketers. First, the affect heuristic suggests an explanation for why first impressions are so important. Based on the findings above, failing to create a favorable affective evaluation during the launch of a new product will likely bias subsequent evaluations of the product's attributes such that perceptions of the benefits associated with a product will be low and perceptions of risk will be high. Similarly for market researchers testing product concepts, these findings provide an explanation for why consumers often find it difficult to objectively evaluate really new products (Hoeffler 2003). Rather than forming their evaluations by first understanding the attributes of a product, the affect heuristic suggests that consumers may look at their initial affective evaluation, and then pattern their responses in an affectively congruent fashion. If so, marketers testing new product concepts should be aware that a concerted effort may be required in order to get research participants to analytically evaluate a new product concept.

This research also addresses the question of why some attributes of a product are capable of compensating for others. The affect heuristic centers on the idea that when forming evaluations, people turn to affect, employing a top down strategy to form

affectively congruent evaluations of an object's attributes. If this strategy is used, specific risks (or benefits) of a product are likely to be overlooked if the product's overall affective evaluation is favorable (unfavorable). For marketers, this distinction carries real consequences. If consumer evaluations of an innovation's attributes are biased by their holistic evaluation of the product, then communications emphasizing attributes that serve to increase the overall favorability of a product (e.g., increase perceptions of benefits), would be expected to produce affectively congruent changes in evaluations of attributes which may be completely unrelated (e.g., decrease perceptions of risk). This relationship between information about risks and benefits was shown in the second study. In developing communications, marketers may be able to rely on consumers to form affectively congruent inferences about the risks and benefits associated with a product without addressing them directly. For example, public health campaigns tasked with increasing the perceived risk associated with cigarette smoking could choose to focus on decreasing the perceived benefits associated with smoking. As shown in study 2, this information would be expected to decrease the favorability of smoking and thus increase perceptions of risk without addressing the risks directly.

Together, these studies make a unique contribution by demonstrating that consumers turn to their feelings to form affectively congruent judgments of product innovations. The findings are important because they challenge the traditional view of innovation adoption decisions—suggesting that the process is not dependent upon purely analytical factors. Instead, consumers are shown to also rely upon their feelings to form judgments. Further, these studies demonstrate the use of the affect heuristic in a consumer context. The process of forming evaluations of innovations is particularly

interesting because of the high degree of uncertainty and the lack of existing attitudes, however the phenomena observed in these studies are likely to exist in other domains as well. Future consumer behavior research may benefit from exploring other contexts that promote or obstruct the use of the affect heuristic as a decision making strategy.

NEXT ESSAY

This essay demonstrated that consumers use affect to inform judgments surrounding product innovations. The second essay asks the next logical question of where might this affect originate? That is, if consumers rely upon affect to form judgments of products that they have never seen – then what prompts their affective reaction? A number of sources likely contribute to these reactions, however many of these sources are likely to be idiosyncratic, tied to the unique experiences of the person and the product. However, the ease or difficulty consumers experience processing information about the innovation (fluency) may serve as one generalized source of affective information. The second essay explores how interpretations of processing experiences may contribute to affect that is used in making evaluations of novel stimuli.

CHAPTER III

ESSAY 2: RE-EXAMINING THE ROLE OF AFFECT IN FLUENCY BASED JUDGMENTS OF RISK

INTRODUCTION

A growing body of literature has provided evidence that experiences of fluency—the subjective ease or difficulty associated with processing information—can serve as a distinct input for a wide variety of judgments. For example, greater subjective ease of processing (fluent processing) has been found to be associated with more favorable evaluations (positive affect), feelings of greater confidence, and judgments of increased frequency and truthfulness (Alter and Oppenheimer 2009; Reber, Winkielman, and Schwarz 1998). Fluency has been suggested to operate as a heuristic source of information (Schwarz and Vaughn 2002), underlying many of the decisions and intuitive judgments people make on a daily basis. While several different types of fluency have been described within the literature, they have each been shown to provide remarkably similar influences on judgment and decision making.

The usefulness of fluency experiences as an input to decision making has been shown to vary across situations. When the source of the processing difficulty is called into question, people tend to discount the information provided by their processing experience and rely instead, upon the content retrieved (Schwarz et al. 1991). A number of different process theories have been put forth to explain these effects. Some authors have proposed that more fluent processing elicits a positive affective response (Reber,

Schwarz, and Winkielman 2004; Reber et al. 1998; Winkielman and Cacioppo 2001) that is then referenced as a basis for other judgments. Others have suggested that these judgments stem from the relationship between fluent processing and increased estimates of frequency or familiarity (Johnston, Dark, and Jacoby 1985; Schwarz et al. 2007; Song and Schwarz 2009). From this perspective, increased fluency leads to favorable judgments partly because familiarity is inferred to signal a more trustworthy source. More complicated models have also been proposed, suggesting that fluent processing experiences have both a direct relationship with positive affect as well as an indirect relationship that is dependent upon the inferences drawn from the experience (Fang, Singh, and Ahluwalia 2007).

Recently, Song and Schwarz (2009) published a series of studies investigating the relationship between fluency experiences and perceptions of risk. Their findings demonstrated that difficult to process stimuli were perceived as more risky relative to easily processed stimuli. The differences in perceived risk were considered as evidence that processing experiences influence perceptions of risk primarily as a result of differences in perceived novelty (familiarity) and not because of affect associated with the processing experience. However, methodological limitations preclude such conclusions from the reported data and leave room for alternative interpretations. The present research re-examines the studies reported by Song and Schwarz (2009) and offers evidence that fluency-elicited affect is related to risk perceptions. Interestingly, the results of the current research do not contradict those reported by Song and Schwarz (2009), but the inclusion of additional measures help to clarify the processes that underlie the relationship between fluency experiences and the perception of risk. The purpose of

this research is not to refute the role of feelings of familiarity in influencing risk perceptions, but rather to explore if favorable affective reactions to processing experiences might also be related to perceived risk.

This work offers contributions both to fluency research and to work investigating the role of favorable affect in perceptions of risk. The results of the current research demonstrate that the effects of fluency on judgments are often relative, based on comparative rather than absolute processing difficulty. Further, differences in the interpretation of fluency experiences are shown to help explain the results reported by Song and Schwarz (2009). The reported reversals in the meaning derived from processing experiences supports other recent research (Labroo and Kim 2009) which has found that individuals selectively apply different naïve theories to interpret fluency experiences depending upon salient goals. The application of different naïve theories can trigger divergent affective evaluations from similar processing experiences. Further, the results of this research demonstrate that the relationship between favorable affective evaluations and perceived risk varies as a function of both goals and processing difficulty.

The sections that follow summarize past research exploring affect as a basis for perceptions of risk, the role of naïve theories in understanding processing experiences, and the methodology used by Song and Schwarz (2009). Then, three studies are presented which explore the influence of favorable affective evaluations, goals and fluency on judgments of risk and benefit. Finally, this essay concludes by discussing the implications of the results both from theoretical and applied perspectives.

Naïve Theories and the Interpretation of Fluency Experiences

To at least some extent, the effect of processing difficulty on different types of judgments is likely to depend on the naïve theories that are applied. Naïve theories are assumptions about what a metacognitive experience means. People apply different naïve theories to a context depending on their experience with similar situations. These theories explain many of the effects associated with fluency experiences. For example, the availability heuristic has been shown to occur because people make the assumption that instances that occur with a higher frequency are more easily recalled from memory than instances that occur with a lower frequency (Schwarz 2004). In most situations, this assumption is valid; however, it can lead to incorrect judgments when people make the reverse inference that ease of processing is a signal of familiarity or frequency (Schwarz et al. 1991). Similarly, people assume that familiar stimuli will be easier to process than novel stimuli. Supporting this idea, Whittlesea et al. (1990) found that words that were presented with greater visual clarity were more likely to be incorrectly recognized as having been presented on an earlier list. Manipulations that make participants aware of the biasing influence of visual clarity eliminated the effect. Thus, naïve theories provide an interpretive lens through which people infer meaning from processing experiences.

While familiarity judgments are common, depending on the situation, fluency experiences may lead to a number of other inferences about the attributes of a particular stimulus. For instance, a common finding is that more fluent processing leads to increased favorability (Reber et al. 2004; Reber et al. 1998; Winkielman and Cacioppo 2001). Zajonc (1968) popularized the mere exposure effect, which has since spurred a

great amount of research. Research has demonstrated that mere exposure effect can be explained by differences in fluency, as people tend to prefer recurring stimuli because they are perceptually easier to recognize, creating a sense of fluency (see: Bornstein and D'Agostino 1992; Bornstein and D'Agostino 1994; Fang et al. 2007; Whittlesea 1993).

Psychophysiological studies have also provided evidence of a relationship between fluency and positive affect. Winkielman and Cacioppo (2001) used two different fluency manipulations (matched / mismatched contour primes and increased duration) to present stimuli in two experiments while participants were monitored by facial electromyography (EMG) sensors. Stimuli that were easier to process (more fluent) were found to correspond with increased activation of muscles related to smiling (zygomaticus major) as well as more positive affective evaluations in self-reports.

Most naïve theories lead decision makers to draw favorable inferences from fluent processing experiences and less favorable inferences from those that are less fluent. However, in some circumstances consumers may interpret disfluent processing experiences favorably. Alter and Oppenheimer (2009) have suggested that such a pattern might also exist:

> "Whereas one naïve theory might imply that a complex – and therefore disfluent – artwork is novel and interesting, a second naïve theory might classify complex, disfluent written prose as clumsy and awkward. Thus, naïve theories bridge the gap between the experience of fluency and its implications for a particular judgment. (pg. 220)"

Recent studies have begun to map boundary conditions regarding fluency effects and to document the contexts under which naïve theories lead to more favorable inferences from

disfluent processing experiences. In one example, Briñol et al. (2006) directly manipulated the naïve theories that participants applied to their fluency experiences. In their studies, participants were told that ease of processing was either good (e.g. because intelligent people generally have more complex thinking and more neuronal connections, so they often experience a feeling of difficulty when generating thoughts about a new issue – pg. 202), or that ease of processing was bad by reversing the instructions arguing that intelligence was linked with fluent processing. The results revealed an interaction between fluency and the type of naïve theory applied by study participants, such that greater processing ease was associated with higher evaluations in the fluency-is-good condition, but was associated with lower evaluations in the fluency-is-bad condition. These findings provide compelling evidence that while fluency experiences serve as a ubiquitous input to decision making, the actual conclusions drawn from fluent processing may be open to interpretation and depend on the naïve theory that is applied.

In everyday life however, naïve theories are not made as salient, or defined as explicitly, as they were in the Briñol et al. (2006) studies. Rather, the specific naïve theory that is applied is inductively determined based upon the context, the type of judgment and the goals of the consumer. The matching of appropriate naïve theories to specific situations is learned through a lifetime of experience. For example, people learn to apply the naïve theory underlying the availability heuristic because the ease of recalling an instance is usually informative about the frequency with which that instance occurs. However, in some instances interpreting highly accessible information as a signal of greater frequency may be inappropriate.

Nielsen and Escalas (2010), demonstrated that the effect of fluency can vary based upon the processing style used by consumers. Their results indicated that advertisements that are more fluent trigger a favorable interpretation when they are analytically processed. However, advertisements evaluated using a narrative processing style produced reversals in which difficult processing was perceived as more favorable due to the inference that processing difficulty signaled a more complex (thus better) story.

Another reversal in the interpretation of fluency was documented by Pocheptsova et al. (2010). They found that greater difficulty associated with processing products and services intended for use during special occasions increased purchase intent, willingness to pay, and evaluations. However, more fluent processing was preferred among products and services intended for every day use. This reversal was driven by naïve theories about the domain where the product was consumed. Products intended for use on a special occasion are typically valued for being uncommon and distinctive. Greater processing difficulty associated with an object that is intended for a special occasion triggers the inference that the product is unique and special leading to increased evaluations. When considering objects for everyday consumption, familiarity is desirable and ease of processing leads to improved evaluations.

Closely related to the current research, Labroo and Kim (2009) demonstrated another reversal in the interpretation of fluency by manipulating the goals held by consumers. They found that the effect of fluency on evaluations depends on whether an object is instrumental in achieving accessible goals. Objects perceived as being

instrumental towards goal advancement were evaluated more favorably when presented in a difficult to process format as opposed to an easily processed format.

For example, Labroo and Kim (2009) found that chocolates presented with greater fluency in an advertisement were preferred over those presented with less fluency if consumers held goals that could not be satisfied by consuming chocolates (e.g. goals of self control). However, chocolates presented with less fluency were preferred if consumers held goals (e.g. feeling good) that could be satisfied by consuming chocolate. Again, differences in naïve theories explain this effect. People commonly associate goal advancement with the expenditure of effort. As a result, when trying to reach a goal and to assess how useful an object will be in helping to achieve that goal, greater effort improves evaluations because the object is seen as more instrumental towards achieving the goal. Greater difficulty was favored among those with feel-good goals because it increased the perceived instrumentality of chocolates in achieving a goal of feeling good. However, among those with neutral or self-control goals, difficult processing did not increase favorability because the achievement of those goals could not be achieved by consuming chocolate.

Reversals in preference due to the application of different naïve theories are relatively new to the fluency literature. However, these studies provide strong evidence that meaning derived from a processing experience is not fixed, but rather depends on how it is interpreted. This begs the question of how these preference reversals might influence subsequent judgments.

The Affect Heuristic

Slovic et al. (2007) suggests that individuals often rely on an "affect heuristic" when making judgments. The affect heuristic is based on the idea that when making a judgment, it is more efficient for people to rely on their overall affective impression of an object than it is to account for all available information. Evidence for the affect heuristic has been provided by studies demonstrating that both the perceived benefit and risk of some target can be explained, in particular contexts, as the result of an individual's more general affect toward the target (Finucane et al. 2000). Reliance on affect causes perceived risks and benefits to have an inverse relationship. Liking an object, therefore, triggers assessments of high benefits and low risks. In contrast, disliking produces the opposite pattern. Experimental manipulations increasing or decreasing perceptions of risk or benefit have been shown to produce an inverse, affectively congruent change in the non-manipulated attribute. This pattern of results has been demonstrated under circumstances in which information about risks (benefits) is logically devoid of information about benefits (risks). A change in a participant's affective evaluation (increased/decreased favorability) was implicated for this finding. The affect heuristic appears to be relevant to fluency research because the experience of processing information may provide a source of affect that influences subsequent judgments of risk and benefit.

Song and Schwarz (2009) recognized this possibility, acknowledging that positive affect should attenuate judgments of risk and increase judgments of benefits. However, their results did not find support for the role of fluency-elicited affect in these judgments.

The experimental data presented to support their argument had limitations that leave room for the possibility that fluency-elicited affect underlies perceptions of risk and benefit. Below, this experimental evidence is explored in more detail and a plausible alternative interpretation that takes into account the affect heuristic and the role of naïve theories in determining the meaning of a fluency experience is presented.

Fluency-Elicited Affect and Risk

Song and Schwarz (2009) reported three experiments all of which manipulated fluency by altering the ease with which words could be pronounced. In the first study, participants were presented with a list of ten food additives (five easy to pronounce, five difficult to pronounce). Study participants perceived greater potential harm (risk) from food additives with difficult to pronounce names than easily pronounced names. The second study replicated this finding, but study participants also evaluated the novelty of the food additives. The results indicated that participants evaluated additives that were difficult to pronounce as being more novel than easier to pronounce substances. The results also revealed a significant interaction between question order and fluency such that fluency was found to produce a greater effect on perceived novelty when the novelty question preceded the question about risk than when the risk question preceded the novelty question. A mediational analysis indicated that novelty partially mediated the relationship between fluency and judgments of hazard. However, because the study manipulated neither novelty nor hazardousness, the causal order of the relationship is difficult to establish.

In a third study, Song and Schwarz (2009) examined the effects of fluency on perceptions of risk and benefit in an amusement park context. The context is interesting because risk desirability is ambiguous. Amusement parks offer the benefits of adventure and excitement, but also present risks, that include the possibility of making a person sick. In their study, all participants were told to imagine that they were visiting an amusement park and were handed a brochure with the names of the rides offered. Next, study participants were assigned to one of two groups. Those assigned to the desirable-risk condition received further instructions to imagine that they wanted to identify "very exciting and adventurous rides" on the basis of the brochure so that they "would not waste time on the dull ones." In contrast, those participants assigned to the undesirable-risk condition received instructions to imagine that they were visiting the amusement park on "a day when you were not feeling very well" and that they wanted to avoid the rides that are "too risky and adventurous" and guess which "ones are the most risky and hence most likely to make you sick." In other words, participants in the undesirable-risk condition were given the goal of avoiding risk when evaluating the ride names whereas those in the desirable risk condition were given a risk-seeking goal when making their evaluations. Participants in both conditions were then presented with three easily pronounced ride names (Chunta, Ohanzee and Tihkoosue) and three difficult to pronounce ride names (Vaiveahtoishi, Tsiischili, and Heammawihio) in one of two random orders.

Surprisingly, participants in each goal condition evaluated ride names on different dependent measures. Participants in the undesirable-risk condition evaluated the ride names on a 7-point scale risk scale with endpoints of (1) very safe to (7) very risky.

Whereas participants in the desirable-risk condition evaluated the same rides names on a 7-point scale measuring how adventurous the rides were with endpoints of (1) very dull and (7) very adventurous. This adventurousness scale was then re-labeled as "desirable risk" but may be better conceptualized as a scale measuring the *benefits* expected from participants who were told to imagine that they wanted to identify "very exciting and adventurous rides" on the basis of the brochure so that they would not "waste time on the dull ones."

The researchers predicted that if fluency-elicited affect underlies perceived risk, then more fluent names should produce judgments of less risk and greater benefits (mirroring the affect heuristic). However, if familiarity drives fluency-based risk perception, then risk and benefit judgments should be the same for each fluency condition. Despite these predictions, neither favorable affective evaluations of the ride names nor evaluations of novelty were reported for each condition. However, a pre-test was conducted that indicated that easily pronounced names were perceived as more pleasant than difficult to pronounce names. The remaining results from the third study are shown below in table 1.

Song and Schwarz (2009) analyzed their data with a 2 x 2 ANOVA with risk type (desirable vs. undesirable instructions) as one independent variable and fluency as a second independent variable (easy vs. hard to pronounce). However, the results leave room for alternative interpretations because the dependent variable was different for each risk condition.

TABLE 1

Original Results from Song and Schwarz (2009), Study 3

Difficulty of name	Benefit* (Risk-Seeking: dull to adventurous)		Risk* (Risk-Avoidance: safe to risky)	
Easy to pronounce	3.06	(1.02)	3.02	(0.98)
Hard to pronounce	4.04	(1.47)	4.35	(1.46)

*These variables were originally labeled as desirable and undesirable risk.

The analysis revealed a main effect of fluency on perceptions of desirable risks (i.e. benefits) and undesirable risks (risks) such that easily pronounced names were found to be less risky (safer) and less adventurous (duller) than difficult to pronounce names. No fluency x risk type interaction was observed. However, the absence of a significant interaction may be the result of measuring different dependent variables for each risk condition.

Two conclusions may be made from the reported data, neither of which supports the primacy of familiarity or favorable affect in explaining the relationship between fluency and risk perception. First, more difficult to pronounce ride names were judged as being more adventurous than easily pronounced ride names when participants were instructed to imagine that they should identify the most exciting and adventurous rides so as to not waste their time with the dull rides (risk-seeking goal). Second, difficult to pronounce ride names were perceived as more risky than ride names that were easily pronounced when participants were instructed to imagine that they were not feeling very well and that they should try to identify which rides were too risky and adventurous so as to avoid them (risk-avoidance goal).

Despite these methodological concerns, Song and Schwarz (2009) concluded that because low processing fluency (i.e. difficult to pronounce ride names) increased both desirable (measured using very dull—very adventurous and better characterized as benefits) and undesirable (measured using very safe— very risky, and better characterized as risks) risk, the "pattern [of results] is compatible with the assumption that fluency influences risk perception through its effects on perceived novelty of the stimuli and is difficult to reconcile with the assumption that fluency-elicited affect plays a major role in the observed results" (pg. 138). Making this conclusion however, relies on the critical assumption that less fluent processing inherently produces negative affect even when participants are assigned to different goal conditions. To their credit, Song and Schwarz (2009) pretested their stimuli and found that difficult to pronounce names were less pleasant (indicating affectively negative evaluations) than were easily pronounced names. However, the results of this pre-test were not separated by risk instruction (goal) type. Therefore, it is possible that participants who were asked to identify very exciting and adventurous rides so as to not waste any time on the dull rides may have selectively applied a naïve theory which caused them to interpret difficult to pronounce ride names (less fluent) favorably compared to easily pronounced ride names (more fluent). Conversely, participants who were asked to imagine visiting an amusement park on a day when they were not feeling well, and that they should avoid the rides that are too risky and adventurous, may have selectively applied a naïve theory that led them to interpret difficult to pronounce ride names (less fluent) less favorably compared to easier to pronounce ride names (more fluent). If this were the case, then an explanation of the results based on the affect heuristic would be plausible. Song and

Schwarz's (2009) study, however, was not designed to test for a reversal in affective evaluations based on the selective application of different naïve theories. The studies presented below explore this possibility.

The affect heuristic predicts that people consult their feelings to construct judgments of risk and benefit. This consultation explains the frequent observation that risks and benefits typically are perceived as being inversely related (Alhakami and Slovic 1994; Finucane et al. 2000), despite objectively weak or even positive relationships in the real world. Because risk typically has negative connotations, decreasing favorability (negative affective evaluations) usually leads to increased perceptions of risk and decreased perceptions of benefit. However, in circumstances in which risk is a desirable attribute, the relationship between favorable affect and risk should be attenuated, while the positive relationship between favorable affective evaluations and perceived benefit should persist.

Three studies are presented below that further explore the paradigm described by Song and Schwarz (2009). Each study explores the relationship between consumer goals and interpretations of fluency experiences while addressing several of the limitations of Song and Schwarz (2009) discussed above. Chief among these, both risk *and* benefit are measured within each goal condition. In addition, affective evaluations (favorability) are collected with reference to goals rather than as a pre-test. These additional measures make it possible to determine if the differences in perceived benefit and risk recorded by Song and Schwarz (2009) correspond with differences in favorable affect triggered by the selection of different naïve theories. Studies 1 and 2 explore these relationships in the amusement park context used by Song and Schwarz (2009). Study 3 attempts to replicate

the results using generic versus brand name medications while maintaining the assignment to risk-seeking or risk-avoidance goals.

STUDY 1

Study 1 follows Song and Schwarz (2009) closely. Participants were assigned to either a risk-seeking goal or a risk-avoidance goal. However, fluency in this study was manipulated between subjects rather than within. That is, each participant was presented with either three easily pronounced ride names (more fluent) or three difficult to pronounce ride names (less fluent). The between subjects manipulation was employed to further understand the nature of fluency judgments.

Method

Eighty-seven undergraduate students from a large northwestern university were recruited in exchange for partial course credit. Participants were told that the purpose of the study was to better understand how people evaluate amusement park rides. The study design was a 2 (goal: risk-seeking, risk-avoidance) x 2 (fluency: fluent, disfluent) between subjects design. All participants were told to imagine they were visiting an amusement park and had been handed a brochure with the names of the available rides. Participants were further instructed to read and sound out each name in their head.

Independent Variables

Goal. Participants were randomly assigned to one of two goal conditions from Song and Schwarz (2009) study 3. Participants in the risk-seeking goal condition were told to imagine that they want to identify very exciting and adventurous rides on the basis of the brochure so that they would not waste time on dull rides. Participants assigned to the risk-avoidance goal condition were told to imagine that their amusement-park visit fell on a day when they were not feeling well and that they wanted to avoid rides that were too risky and adventurous on the basis of the brochure. They were further instructed that they should try to guess which rides were the most risky and hence the most likely to make them sick.

Fluency. Fluency was manipulated by varying the ease of pronunciation of the ride names participants were given. Participants were presented with a list of either easily pronounced roller-coaster ride names (Chunta, Ohanzee, and Tihkoosue) or a list of difficult to pronounce names (Vaiveahtosishi, Tsiichili, and Heammawihio) in a random order. A pre-test confirmed that the two lists of ride names differed on the basis of how easy they were to pronounce ($t(21) = 9.70$, $p < .01$).

Dependent Measures

Favorability. Favorability evaluations of the ride names were collected using three 9-point semantic differential items (favorable-unfavorable, good-bad, like-dislike). The mean response was used to form an overall measure of favorable affect (α = .90).

Risk and Benefit. Risk and benefit evaluations associated with each ride were collected using two 9-point semantic differential items (very risky-not at all risky, very beneficial–not at all beneficial).

Results

Means and standard deviations for the dependent measures are shown in table 2 and correlations between the variables are shown in table 3. A hierarchical linear regression was conducted to determine the effects of goal condition and fluency on favorability evaluations. The regression of favorable affect onto goal condition and fluency was not statistically significant ($F(2,84) = .66$, n.s., $R^2 = .01$) and the addition of the interaction term representing the interaction between goal condition and fluency on favorability evaluations did not significantly improve the model as evidenced by a non-significant increase in R^2 ($F_{change}(1,83) < .01$, *n.s.*, $R^2_{Change} < .01$).

A similar analysis was conducted to test for the effects of goal condition, fluency and favorability evaluations on benefit perceptions. A regression equation including the

TABLE 2

Mean Values on Dependent Measures by Goal Condition and Fluency – Study 1

DV	Fluency	Goal: Risk-Seeking		Goal: Risk-Avoidance	
Favorability	Easy to pronounce	5.26	(1.08)	5.11	(.70)
	Difficult to pronounce	5.18	(1.33)	4.99	(.89)
Risk	Easy to pronounce	5.24	(1.14)	**4.94**	(.96)
	Difficult to pronounce	5.31	(1.12)	**5.33**	(.83)
Benefit	Easy to pronounce	**4.68**	(1.07)	4.63	(.82)
	Difficult to pronounce	**4.64**	(1.15)	4.03	(1.77)

Note: Standard deviations are given in parentheses.

Bold indicates values for variables similar to those reported by Song and Schwarz (2009)

Increasing values indicate increasing favorability, risk or benefit respectively

main effects terms was significant ($F(3,83) = 23.67$, $p < .01$, $R^2 = .46$). Favorability evaluations were found to be the only significant predictor of benefit perception ($b = .81$, $t(86) = 8.11$, $p < .01$). Thus, increasing favorability was found to be positively associated with increased perceptions of benefits ($r_{overall} = .67$, $p < .01$). None of the interaction terms representing the interactions between goals, fluency or favorable affect on perceptions of benefit were found to be significant as evidenced by non-significant improvements in R^2 among those models that included the interaction terms.

A final regression analysis was conducted to evaluate the influence of goal condition, fluency and favorable affect on risk perceptions. The regression of risk perception onto goal condition, fluency and favorable affect was not significant ($F(3,83) = .52$, *n.s.*, $R^2 = .02$). None of the interactions between goals, fluency or favorable affect

TABLE 3

Correlations Among Measured Variables - Study 1

		Risk-Seeking	
		1	2
Fluent	1. Favorability		
	2. Risk	.55**	
	3. Benefit	.82**	.33
Disfluent	1. Favorability		
	2. Risk	-.14	
	3. Benefit	.88**	-.12
Overall	1. Favorability		
	2. Risk	.14	
	3. Benefit	.85**	.08
		Risk-Avoidance	
		1	2
Fluent	1. Favorability		
	2. Risk	-.33	
	3. Benefit	.60**	-.34
Disfluent	1. Favorability		
	2. Risk	.05	
	3. Benefit	.49*	-.03
Overall	1. Favorability		
	2. Risk	-.13	
	3. Benefit	.50**	-.16
		Overall	
		1	2
Fluent	1. Favorability		
	2. Risk	.27	
	3. Benefit	.75**	.09
Disfluent	1. Favorability		
	2. Risk	-.08	
	3. Benefit	.64**	-.07
Overall	1. Favorability		
	2. Risk	.06	
	3. Benefit	.67**	-.03

**$p \leq .01$
*$p \leq .05$

on perceptions of risk were significant as evidenced by non-significant improvements in R^2 among those models that included the interaction terms. An examination of the correlation coefficients revealed a single significant relationship between favorability and perceptions of risk among those assigned risk-seeking goals who evaluated fluent ride names ($r = .55$, $p < .01$).

Discussion

Using a between subjects manipulation of fluency, study 1 failed to replicate the findings of Song and Schwarz (2009). The only significant finding from the regression analysis was a strong positive relationship between favorability and benefit. As expected, increased favorability corresponded with increased benefit. Unexpectedly, the analysis found no significant main effect of favorable affect on perceived risk. Further, no significant relationships between risk and benefit or between risk and favorability across, or within, any of the conditions was found. The single exception was a positive relationship that was observed between favorable affect and perceptions of risk among those assigned risk-seeking goals and presented with easy to pronounce ride names. The absence of variation in favorable affective evaluations as well as benefit or risk as a function of either manipulated variable suggests that fluency effects may be comparative rather than absolute in nature. Therefore, study 2 incorporated a within subjects manipulation of fluency in which all participants were presented with both easily pronounced and difficult to pronounce ride names.

STUDY 2

Study 2 again closely followed the design of Song and Schwarz (2009) study 3. However, as in study 1, favorable affect as well as perceptions of risk and benefit for each ride name were collected. In this study, participants were assigned to either a risk-seeking or a risk-avoidance goal, then were presented with both easy and difficult to pronounce ride names.

Method

Sixty-six undergraduate students from a large northwestern university participated in exchange for partial course credit. Instructions, manipulations and measures were the same as those used in study 1. However, the design was a 2 (goal: risk-seeking, risk-avoidance) x 2 (fluency: fluent, disfluent) mixed design with the first factor between subjects and the second factor within subjects rather than a fully between subjects design as was used in the first study.

Results

Means and standard deviations for the dependent measures are shown in table 4 and correlations between the variables are shown in table 5. A mixed model hierarchical linear regression analysis was conducted following the within-subject contrast approach

for repeated measures models outlined by Judd (2000; see appendix C). The regression coefficients for studies 2 and 3 are shown in table 6.

Affective Evaluations. The results indicate the absence of significant main effects for both goals (b_{01}) and fluency (b_{10}) on favorable affect. However, the fluency by goals interaction was significant (b_{11} = -.53, SE = .19, $t(65) = 2.71$, $p < .01$). This indicates that risk-seeking participants evaluated rides with disfluent, difficult to pronounce names more favorably (M = 5.25) than rides with fluent, easy to pronounce names (M = 4.96). Among risk avoiders, the opposite pattern of results emerged, with participants evaluating fluent, easy to pronounce ride names more favorably (M =5.30) than disfluent, difficult to pronounce ride names (M = 4.54). The preference reversal demonstrates that

TABLE 4

Mean Values on Dependent Measures by Goal Condition and Fluency – Study 2

		Goal	
DV	Fluency	Risk-Seeking	Risk-Avoidance
Favorability	Easy to pronounce	4.96 (1.13)	5.30 (.87)
	Difficult to pronounce	5.25 (1.45)	4.54 (.86)
Risk	Easy to pronounce	4.67 (1.01)	**4.89** (1.20)
	Difficult to pronounce	5.34 (1.31)	**5.74** (1.45)
Benefit	Easy to pronounce	**4.60** (1.01)	5.20 (.91)
	Difficult to pronounce	**5.01** (1.43)	4.31 (.94)

Note: Standard deviations are given in parentheses.

Bold indicates values for variables similar to those reported by Song and Schwarz (2009)

Increasing values indicate increasing favorability, risk or benefit respectively

TABLE 5

Correlations Among Measured Variables - Study 2

		Risk-Seeking	
		1	2
Fluent	1. Favorability		
	2. Risk	-.12	
	3. Benefit	.85**	.08
Disfluent	1. Favorability		
	2. Risk	-.24	
	3. Benefit	.92**	-.31
Overall	1. Favorability		
	2. Risk	-.15	
	3. Benefit	.89**	-.11
		Risk-Avoidance	
		1	2
Fluent	1. Favorability		
	2. Risk	-.65**	
	3. Benefit	.73**	-.44**
Disfluent	1. Favorability		
	2. Risk	-.35*	
	3. Benefit	.62**	-.23
Overall	1. Favorability		
	2. Risk	-.58**	
	3. Benefit	.73**	-.44**
		Overall	
		1	2
Fluent	1. Favorability		
	2. Risk	-.35**	
	3. Benefit	.81**	-.14
Disfluent	1. Favorability		
	2. Risk	-.31**	
	3. Benefit	.84**	-.31**
Overall	1. Favorability		
	2. Risk	-.34**	
	3. Benefit	.83**	-.26**

**$p \leq .01$
*$p \leq .05$

Table 6

Regression Coefficients - Studies 2 and 3

			Study 2				Study 3			
	b	Effect	*b*	*SE*	*t*	*p*	*b*	*SE*	*t*	*p*
DV: Benefits	*01*	Goal	-.05	.06	-.77	*n.s.*	-.20	.08	2.40	.02
	02	Favorability	.72	.10	7.39	<.01	.80	.11	7.01	<.01
	03	Goal x Favorability	.16	.10	1.64	*n.s.*	-.08	.11	.74	*n.s.*
	10	Fluency	.28	.12	2.44	.02	.31	.13	2.40	.02
	11	Fluency x Goal	-.20	.12	1.73	*n.s.*	-.34	.13	2.64	.01
	12	Favorability x Fluency	.85	.07	11.96	<.01	.69	.07	9.44	<.01
	13	Favorability x Goal x Fluency	.06	.07	.82	*n.s.*	.09	.07	1.26	*n.s.*
DV: Risk	*01*	Goal	-.11	.09	1.31	*n.s.*	-.06	.07	.74	*n.s.*
	02	Favorability	-.41	.14	2.84	.01	.49	.10	4.80	<.01
	03	Goal x Favorability	.06	.14	.44	*n.s.*	.14	.10	1.39	*n.s.*
	10	Fluency	-.55	.21	2.65	.01	-1.26	.18	6.94	<.01
	11	Fluency x Goal	-.10	.21	.46	.65	.02	.18	.12	*n.s.*
	12	Favorability x Fluency	-.36	.13	2.78	.01	-.41	.10	4.02	<.01
	13	Favorability x Goal x Fluency	.40	.13	3.15	<.01	.21	.10	2.08	.04
DV: Favorability	*01*	Goal	.10	.09	1.02	*n.s.*	.25	.08	3.26	<.01
	10	Fluency	.23	.19	1.20	*n.s.*	.98	.20	4.85	<.01
	11	Fluency x Goal	-.53	.19	2.71	.01	-.46	.20	2.30	.02

different goals can produce different interpretations of fluency experiences. Risk seekers preferred less fluent ride names, whereas risk avoiders favored more fluent ride names. It is possible that participants in Song and Schwarz (2009) may have experienced a similar change in preferences based on goal but that this effect was not found because favorable affect was measured without considering the goals held by participants.

Benefit Perceptions. The main effect of goal on benefit perceptions (b_{01}) was not significant. However, a significant main effect of favorable affective evaluations on perceptions of benefits was found (b_{02} = .72, *SE* = .10, $t(65) = 7.39$, $p < .01$). Across fluency conditions, more favorable affective evaluations correspond with increasing perceptions of benefits among each goal condition as predicted by the affect heuristic. The main effect of fluency on benefit perceptions was also found to be significant (b_{10} = .28, *SE* = .12, $t(65) = 2.44$, $p = .02$), indicating that the perceived benefits of easily pronounced ride names were greater than difficult to pronounce ride names after controlling for differences in favorable affective evaluations.

Main effects were qualified by a significant interaction between favorable affective evaluations and fluency (b_{12} = .85, *SE* = .07, $t(65) = 11.96$, $p < .01$). The positive regression coefficient indicates that as the benefits associated with easily pronounced ride names increased relative to difficult to pronounce ride names, easily pronounced ride names were favored over more difficult to pronounce ride names. An examination of the correlations between favorable affective evaluations and benefit perceptions clarifies this relationship (see table 5). The correlation between favorable

affective evaluations and perceived benefit was weaker (r = .81, p < .01) among easily pronounced ride names than among difficult to pronounce ride names (r = .84, p < .01).

Additionally, the interaction between fluency and goal condition was marginally significant (b_{11} = -.20, SE = .12, t(65) = 1.73, p = .09). This trend indicated that, controlling for differences in favorable affective evaluations between fluency conditions, participants assigned risk-seeking goals tended to evaluate difficult to pronounce rides as being more beneficial than easily pronounced ride names. In contrast, those assigned risk-avoidance goals tended to evaluate easy to pronounce ride names as more beneficial than difficult to pronounce ride names. Finally, the term (b_{13}) representing the interaction between differences in favorable affective evaluations between easy and difficult to pronounce ride names ($WS1_i$) with goals (X_i) on differences in perceptions of benefit between easy and difficult to pronounce names ($W1_i$) was not significant. This indicates that the effect of favorable affect differences between fluency conditions on benefit differences between fluency conditions does not vary as a function of the goals held by participants.

Risk Perceptions. The main effect of goal on risk perceptions was not found to be significant. However, as predicted by the affect heuristic, a significant main effect of favorable affective evaluation on risk was found (b_{02} = -.41, SE = .14, t(65) = 2.84, p < .01). Across fluency conditions, more favorable affective evaluations were found to correspond with reduced perceived risk for those in each goal condition. The main effect of fluency on risk perceptions was also found to be significant (b_{10} = -.55, SE = .21, t(65) = 2.65, p = .01), indicating that there were fewer perceived risks among easily

pronounced ride names compared to difficult to pronounce ride names after controlling for differences in favorable affective evaluations.

In addition to these main effects, significant interactions were also found. A significant interaction was observed between fluency and favorable affective evaluations (b_{12} = -.36, SE = .13, $t(65) = 2.78$, $p < .01$). The negative regression coefficient indicates that as the risks associated with easily pronounced ride names increased, relative to difficult to pronounce ride names, more difficult to pronounce ride names were favored over easier to pronounce ride names. An examination of the correlations between favorable affect and risk perceptions clarifies this relationship. Favorable Affective evaluations were found to be more strongly predictive of risk perceptions among easily pronounced ride names (r = -.35, $p < .01$) than among more difficult to pronounce ride names (r = -.31, p = .01).

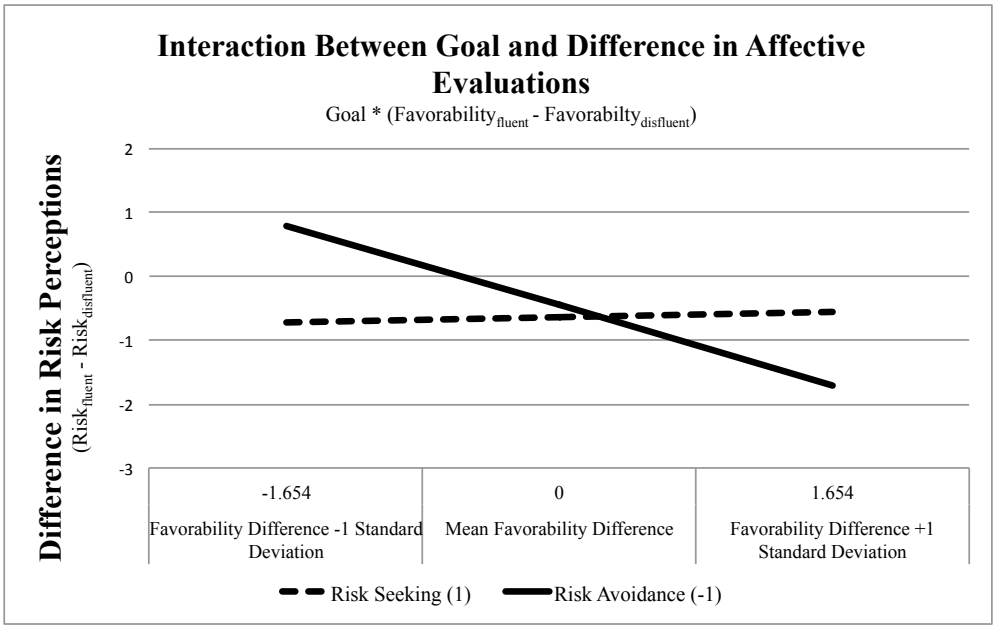
The interaction between fluency and goal condition (b_{11}) on risk evaluations was not significant indicating that after controlling for differences in favorable affective evaluations, the effect of fluency on risk perception did not depend on the goals held by participants. Finally, the term representing the interaction between favorable affective differences and goals on risk differences was found to be significant (b_{13} = .40, SE = .13, $t(65) = 3.15$, $p < .01$). This indicates that the ability of favorable affect differences between fluency conditions to predict risk differences between fluency conditions depends on the goals held by participants. The positive relationship indicates that the difference in favorable affect between fluency conditions was more predictive of risk differences between fluency conditions among those assigned avoidance goals than among those assigned risk-seeking goals. This interaction is graphically depicted

following the procedures outlined in Aiken and West (1991) in figure 1. Among risk avoiders, the relationship between WS1 and W1 was negative. This negative relationship indicates that as the favorability of easily pronounced ride names increased relative to difficult to pronounce ride names (WS1 Low to WS1 High), the perceived risks associated with easily pronounced ride names decreased relative to difficult to pronounce ride names. However, among those assigned to risk-seeking goals, the relationship between WS1 and W1 was weak. The lack of slope indicates that as favorability of easily pronounced ride names increased relative to difficult to pronounce ride names (WS1 Low to WS1 High), the risks associated with difficult to pronounce ride names did not change relative to easily pronounced ride names.

To clearly illustrate this interaction, the correlations between favorable affective evaluations and perceptions of risk were considered for each goal by fluency condition (see table 5). Among risk avoiders, the correlation between favorable affective evaluations and risk when evaluating easy to pronounce ride names was $r = -.65$ ($p < .01$) and $r = -.35$ ($p = .04$) among difficult to pronounce ride names. The relationships between favorable affective evaluations and risk were weaker among risk seekers. For risk seekers, the correlation between these two variables was $r = -.12$ (n.s.) for easily pronounced ride names and $r = -.24$ (n.s.) among difficult to pronounce ride names.

FIGURE 1

INTERACTION BETWEEN GOALS AND WS1 (DIFFERENCES IN FAVORABILITY EVALUATIONS BETWEEN FLUENCY CONDITIONS) ON W1 (DIFFERENCES IN RISK PERCEPTIONS BETWEEN FLUENCY CONDITIONS) - STUDY 2



Study 2 Discussion

The results of study 2 stand in contrast to those of study 1. The within subjects manipulation of fluency used in study 2 produced a number of significant effects that were not present with the between subjects manipulation used in study 1. This difference does not appear to be attributable to the greater statistical power offered by the within

subjects design of study 2. The second study included fewer participants than were used in the first study (n = 66 versus n = 87). In addition, the differences observed in study 1 were relatively small compared to those found in the second study. Instead, the differences in results between the two studies indicate that the influence of ease of processing on judgment may be best characterized as a comparative rather than an absolute process. It appears that the *relative* ease or difficulty of processing informs judgment to a greater extent than the *absolute* ease of processing. Participants who were able to compare easily pronounced names to difficult to pronounce ride names (study 2) formed different judgments than those who were presented with only easy, or only difficult to pronounce ride names (study 1).

In addition, the results of study 2 replicated the findings reported by Song and Schwarz (2009). Risk seekers indicated greater benefits among difficult to pronounce ride names than among easily pronounced ride names. In addition, risk avoiders found difficult to pronounce ride names to be more risky than easy to pronounce ride names (compare tables 1 and 4). However, study 2 also measured favorable affective evaluations, as well as risk and benefit perceptions in all conditions. The analysis of these additional measures indicated that preferences for fluent versus disfluent ride names reversed as a function of the goals held by participants. Among risk seekers, difficult to pronounce ride names were preferred over easily pronounced ride names. Risk avoiders preferred the opposite and evaluated ride names that were easily pronounced more favorably than ride names that were more difficult to pronounce. The interaction between goals and fluency illuminates the interpretation of the remaining results.

As predicted by the affect heuristic, more favorable affective evaluations were found to correspond with increased benefits and decreased risks in all conditions. However, the strength of these relationships varied based upon differences in goals and processing difficulty. Differences in favorable affect between fluency conditions (WS1) was found to predict differences in benefit perceptions between fluency conditions regardless of the goals held by study participants. In contrast, the ability of favorable affect differences between fluency conditions to predict risk differences between fluency conditions was found to depend on the goals held by participants. The relationship was stronger among risk avoiders and weaker among risk seekers.

The results are compatible with the idea that risks, among risk seekers, are desirable and match with the observed reversal in affective evaluations based upon the interaction between fluency and goals. As a whole, the results demonstrate that favorable affective evaluations predict risk and benefit perceptions. However, differences in favorable affective evaluations between fluent and disfluent ride names were more predictive of differences in risk perceptions among risk avoiders than among risk seekers.

STUDY 3

Study 3 was designed to test whether the findings from study 2 could be replicated in another context. In study 3, fluency was manipulated by altering the difficulty associated with pronouncing prescription drug names. Medications were selected because they often carry both a brand name that is easy to pronounce and a

generic name that is more difficult to pronounce. In addition, the risks associated with medications may be desirable or undesirable depending on the goals of those who evaluate them. In many situations, patients may try to select safe medications with minimal side effects and minimal potential for interactions with other drugs. However, medications are also promoted based on strength along with claims that stronger medications are more effective or are faster to resolve symptoms. In study 3, participants were either told to imagine that they wanted to select the safest medication possible to treat an illness or to select the strongest medication possible to treat an illness. Following the instructions, all participants were presented with a randomized list of three different medications presented using both the generic and brand name. Participants were asked to complete the same measures used in studies 1 and 2.

Method

Eighty-one undergraduate students from a large northwestern university participated in exchange for partial course credit. Instructions informed participants that the purpose of the study was to better understand how people evaluate prescription medications. The design was a 2 (goal: risk-seeking, risk-avoidance) x 2 (fluency: fluent, disfluent) mixed design with the first factor between subjects and the second factor within subjects. All participants received instructions asking them to imagine that someone they knew had been diagnosed with a serious medical condition and that a physician had suggested several medications which could be taken to help treat the illness. Each of the medication was evaluated using the favorability, risk and benefit

measures that were used in the first and second study. A manipulation check was also included, and any participants who were familiar with any of the medication names were removed from the analysis.

Independent Variables

Goal. Participants were randomly assigned to one of two goal conditions, both of which represented a promotion regulatory focus. Participants in the risk-seeking goal condition were told that the person who was sick wanted to get well as soon as possible and should therefore try to identify the strongest and most effective medicines from the list. Participants assigned to the risk-avoidance goal condition were told that the person who was sick often had had complications when taking medications so they should choose the safest medication to treat their condition.

Fluency. All participants received a list of actual medications that included three fluent, easily pronounced medication names (Tegretol, Vasotec, Gleevec) and three disfluent, difficult to pronounce medication names (Carbamazepine, Enalapril Maleate, Imatinib Mesylate) in random order. A pre-test confirmed that the fluent and disfluent medications differed on the basis of how easy they were to pronounce ($t(113) = 25.58$, $p < .01$). Both the easy and difficult to pronounce drug names were actually different names for identical medications. The difficult to pronounce medication names were the generic drug names, whereas the easily pronounceable medication names were the brand names of the drugs.

Results

Means and standard deviations for the dependent measures are shown in table 7 and correlations between the variables are shown in table 8. The analysis followed that of study 2 (see Appendix C). Regression coefficients from this analysis are shown in table 6.

TABLE 7

Mean Values on Dependent Measures by Goal Condition and Fluency – Study 3

		Goal	
DV	Fluency	Risk-seeking	Risk-Avoidance
Favorability	Easy to pronounce	5.59 (1.18)	5.55 (0.96)
	Difficult to pronounce	5.08 (1.24)	4.11 (1.12)
Risk	Easy to pronounce	4.46 (1.13)	**4.64** (0.96)
	Difficult to pronounce	5.66 (1.13)	**6.20** (1.14)
Benefit	Easy to pronounce	**5.06** (1.25)	5.70 (0.76)
	Difficult to pronounce	**5.42** (1.27)	4.74 (1.46)

Note: Standard deviations are given in parentheses.

Bold indicates values for variables similar to those reported by Song and Schwarz (2009)

Increasing values indicate increasing favorability, risk or benefit respectively

Affective Evaluations. The analysis indicated a significant main effect for both goals (b_{01} = .25, *SE* = .08, $t(80) = 3.26$, $p < .01$) and fluency (b_{10} = .98, *SE* = .20, $t(80) = 4.85$, $p < .01$) on favorable affective evaluations. On average, risk seekers evaluated the medication names more favorably than risk avoiders. Further, easily pronounced (brand

TABLE 8

Correlations Among Measured Variables - Study 3

		Risk-Seeking	
		1	2
Fluent	1. Favorability		
	2. Risk	-.43**	
	3. Benefit	.73**	-.24
Disfluent	1. Favorability		
	2. Risk	-.11	
	3. Benefit	.73**	.11
Overall	1. Favorability		
	2. Risk	-.33**	
	3. Benefit	.67**	.01
		Risk-Avoidance	
		1	2
Fluent	1. Favorability		
	2. Risk	-.51**	
	3. Benefit	.67**	-.22
Disfluent	1. Favorability		
	2. Risk	-.69**	
	3. Benefit	.64**	-.38*
Overall	1. Favorability		
	2. Risk	-.75**	
	3. Benefit	.70**	-.47**
		Overall	
		1	2
Fluent	1. Favorability		
	2. Risk	-.46**	
	3. Benefit	.67**	-.20
Disfluent	1. Favorability		
	2. Risk	-.41**	
	3. Benefit	.70**	-.17
Overall	1. Favorability		
	2. Risk	-.53**	
	3. Benefit	.67**	-.20**

**$p \leq .01$
*$p \leq .05$

name) medications were preferred over difficult to pronounce (generic) medications. These effects were qualified by a significant goal x fluency interaction (b_{11} = -.46, *SE* = .20, $t(80) = 2.30$, $p = .02$). Risk seekers evaluated medications with easily pronounced names ($M = 5.59$) as being nearly equally favorable to risk avoiders ($M = 5.55$). However, difficult to pronounce medication names were evaluated more favorability among risk seekers ($M = 5.08$) relative to risk avoiders ($M = 4.11$).

Benefit Perceptions. The analysis indicated a significant main effect of goals on benefit perceptions (b_{01} = -.20, *SE* = .08, $t(80) = 2.40$, $p = .02$). Risk-seeking participants perceived all medications to be more beneficial on average than risk avoiders. A significant main effect of favorable affective evaluations on perceptions of benefits was also found (b_{02} = .80, *SE* = .11, $t(80) = 7.01$, $p < .01$). As predicted by the affect heuristic, across fluency and goal conditions, more favorable affective evaluations of the medications correspond with increased benefits. The main effect of fluency on benefits was also significant (b_{10} = .31, *SE* = .13, $t(80) = 2.40$, $p = .02$), indicating that the perceived benefits of easily pronounced medications were greater than difficult to pronounce medications after controlling for differences in favorable affect.

Paralleling the results of study 2, the main effects were also qualified by a significant fluency x favorable affect interaction (b_{12} = .69, *SE* = .07, $t(80) = 9.44$, $p <$ .01). The positive regression coefficient indicates that as the benefits associated with easily pronounced medications increased, they became preferred over more difficult to pronounce medications. The correlations between favorable affective evaluations and benefit perceptions were also examined (see table 8). The relationship between favorable

affective evaluations and perceptions of benefit was weaker ($r = .67$, $p < .01$) among easily pronounced medications than among difficult to pronounce medications ($r = .70$, $p < .01$).

Additionally, the fluency x goal interaction was significant ($b_{11} = -.34$, $SE = .13$, $t(80) = 2.64$, $p = .01$). This interaction indicates that, controlling for favorability differences between fluency conditions, risk seekers evaluated medications that were difficult to pronounce as being more beneficial than easily pronounced medications. In contrast, risk avoiders evaluated easily pronounced medications as more beneficial than difficult to pronounce medications. Finally, the term representing the interaction between favorability differences between fluency conditions and goals on benefit differences between fluency conditions (b_{13}) was not significant. This indicates that the effect of favorability differences between fluency conditions on benefit differences between fluency conditions does not vary as a function of the goals held by participants.

Risk Perceptions. No main effect of goals on risk was found. However, a significant main effect of favorable affect on risk was found ($b_{02} = - .49$, $SE = .10$, $t(80) = 4.80$, $p < .01$). Across fluency conditions, more favorable evaluations correspond with increased perceptions of risk for each goal condition. The main effect of fluency on risk was also significant ($b_{10} = -1.26$, $SE = .18$, $t(80) = 6.94$, $p < .01$), indicating that there were fewer perceived risks of easily pronounced medications compared to difficult to pronounce medications after controlling for favorability differences.

A significant fluency x favorable affect interaction ($b_{12} = -.41$, $SE = .10$, $t(80) = 4.02$, $p < .01$) was also found. The coefficient indicates that as perceptions of risks

associated with easily pronounced medications increased relative to difficult to pronounce medications, difficult to pronounce medications were favored over more easily pronounced medications. An examination of the correlations between favorable affective evaluations and risk perceptions clarifies this relationship. The correlation between favorable affective evaluations and perceptions of risk was stronger (r = -.46, p < .01) among easily pronounced ride names than among difficult to pronounce ride names (r = -.41, p < .01).

The fluency x goal interaction (b_{11}) on risk evaluations was not significant indicating that after controlling for favorability differences, the effect of fluency on risk perception did not depend on the goals held by participants. Finally, the term representing the interaction between favorability differences and goals on risk differences was significant (b_{13} = .21, SE = .10, t(80) = 2.08, p = .04). The interaction indicates that the ability of favorability differences across fluency conditions to predict risk differences across fluency conditions depends on the goals held by participants. The positive relationship indicates that favorability difference between fluency conditions was more predictive of risk differences between fluency conditions among risk avoiders than among those risk seekers. This interaction is shown in figure 2. As in study 2, the relationship between WS1 and W1 was negative among risk avoiders indicating that as the favorability of easily pronounced drug names increased relative to difficult to pronounce medication names (WS1 Low to WS1 High), the perceived risks associated with easily pronounced drug names decreased relative to difficult to pronounce drug names. Further mirroring the results of study 2, among risk seekers, the relationship between WS1 and W1 was weaker. The reduced slope indicates that as favorability of

easily pronounced drug names increases relative to difficult to pronounce drug names (WS1 Low to WS1 High), the risks associated with difficult to pronounce medication names did not change relative to easily pronounced drug names to the same extent as for risk avoiders.

The correlations between favorable affective evaluations and perceptions of risk were considered for each goal by fluency condition (see table 8). Among risk avoiders, the correlation between favorable affect and risk when evaluating easily pronounced medication names was $r = -.51$ ($p < .01$) and $r = -.69$ ($p = .04$) among difficult to pronounce medications. As in study 2, the relationships between favorable affect and perceptions of risk were weaker among risk seekers. For those with risk-seeking goals, the correlation between these two variables was $r = -.43$ ($p < .01$) for easily pronounced medications and $r = -.11$ (n.s.) among difficult to pronounce medications.

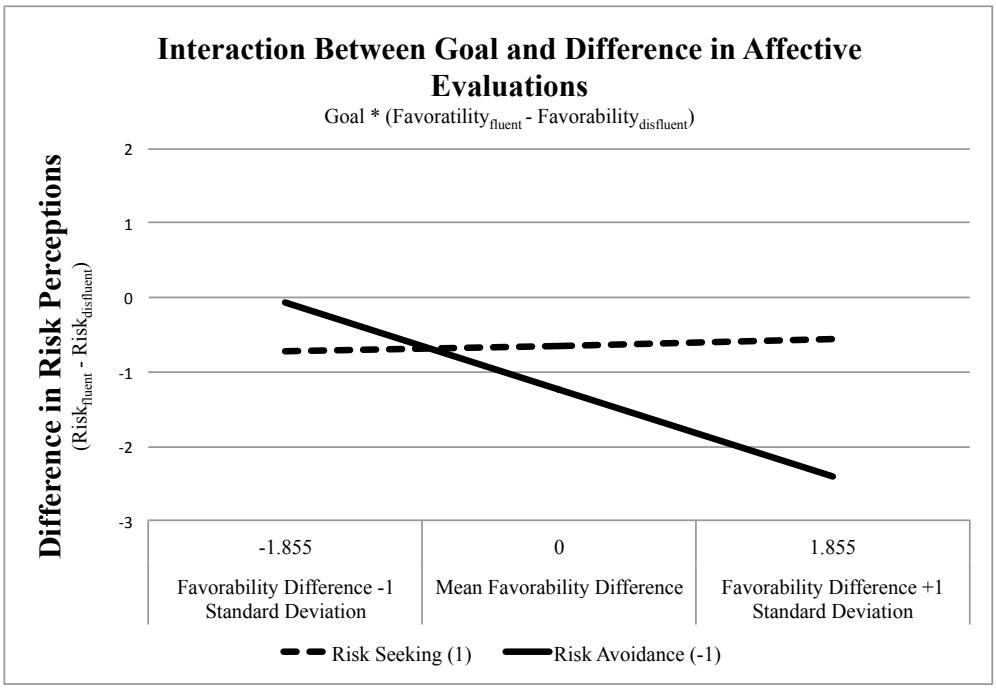
Study 3 Discussion

Study 3 replicated the principal results of the second study using a different context and with an alternative set of words to manipulate fluency. Again, a significant interaction was observed between goals and fluency on favorable affective evaluations. However, unlike study 2, difficult to pronounce (generic) medications were not preferred over easily pronounced (brand name) medications, even among those with risk-seeking goals. Instead, evaluations of easy to pronounce medications remained consistently favorable in both goal conditions. Goals did produce a noticeable change in evaluations

of difficult to pronounce medication names. Less fluent medication names were evaluated more favorably by risk seekers than risk avoiders, matching the results from study 2.

FIGURE 2

INTERACTION BETWEEN GOALS AND WS1 (DIFFERENCES IN FAVORABILITY EVALUATIONS BETWEEN FLUENCY CONDITIONS) ON W1 (DIFFERENCES IN RISK PERCEPTIONS BETWEEN FLUENCY CONDITIONS) - STUDY 3



Evidence was also found to support the role of affect in judgments of risk and benefit. As in study 2, favorable affective evaluations were negatively related to risk and positively related to benefit in all conditions. Also in line with study 2 results, favorability differences between fluency conditions predicted benefit differences between

fluency conditions equally well for risk seekers and risk avoiders. However, favorability differences between fluency conditions were more predictive of risk differences among risk avoiders than risk seekers.

GENERAL DISCUSSION

Metacognitive experiences of fluency are known to influence a variety of judgments, yet the process underlying these effects has been debated. The recent research reported by Song and Schwarz (2009) found no support for the hypothesis that fluency-elicited affect informs risk judgments. Instead, their results suggested that fluency influences risk perception only through differences in familiarity. The present research re-examined the experimental paradigm used by Song and Schwarz (2009) in an effort to clarify the role of favorable affect in explaining the relationship between fluency experiences and risk. In the reported studies, favorable affect and judgments of risk and benefit were measured for *each* experimental condition. The inclusion of these measures made apparent the previously overlooked reversal in evaluations due to goal differences. A more detailed examination of the data revealed that the relationship between favorable affect and risk/benefit perceptions in studies 2 and 3 were consistent with reliance on an affect heuristic (Finucane et al. 2000; Slovic et al. 2007). The results of these studies do not contradict those reported by Song and Schwarz (2009), however the additional measures make it possible to reach different conclusions and to demonstrate that fluency-elicited affect does influence perceptions of both risk and benefit.

This research makes a number of important theoretical contributions. In studies 2 and 3 less fluent processing was shown to increase perceived risk when manipulated within subjects. This effect did not emerge in study 1 using a between subjects manipulation of fluency. Between subjects manipulations of fluency are relatively common in the literature (Labroo and Kim 2009; Novemsky et al. 2007; Schwarz et al. 1991; etc.). However, studies which have manipulated fluency by varying the ease of pronunciation typically use within-subjects manipulations (Alter and Oppenheimer 2006, 2008; Johnston et al. 1985; Song and Schwarz 2009; Whittlesea and Williams 1998). Such within subjects manipulations may be more representative of the situations encountered outside the laboratory environment. The contrasting results of study 1 to those of studies 2 and 3 suggest that feelings of difficulty derived from ease of pronunciation may be more evaluable when compared to other words. Words that are similarly difficult to pronounce appear to provide little value as a basis for judgment. However, when words that are relatively easy to pronounce are compared with more difficult to pronounce words, the relative difficulty of processing is meaningful and influences evaluations of those names. This result is consistent with other research (Whittlesea and Williams 1998) suggesting that the effects of fluency on familiarity judgments is driven by the disconfirmation of expected processing difficulty. When a person encounters a level of processing difficulty that matches their expectations, it is uninformative and produces no feelings. However, when the difficulty of processing violates expectations, either by being easier or more difficult than expected, the relative difference between expected and experienced processing difficulty provides potentially useful information which is used as a basis for judgments. In situations where no

expectations exist, a uniform level of difficulty (as in study 1) is likely to be less informative than a comparison between high and low difficulties (as in studies 2 and 3).

The results of this research also provide initial insight into the role of fluency and affect in situations where risk may be seen as desirable. Risk is commonly conceptualized as a negative attribute to be minimized or avoided. However, in many situations, people deliberately seek out risk. The risk-seeking goals presented to participants in the current studies are examples of some of these situations. Other common situations include the risks associated with risk recreation (e.g. hang gliding, sky diving, etc.), gambling and certain types of drug use (Machlis and Rosa 1990). The results of the current research demonstrated that less fluent processing leads to increased perceptions of risk. However, less fluent ride and medication names were more favorably evaluated by risk seekers than by risk avoiders. Consequently, the relationship between favorable affect and risk was found to differ depending on participants' goals. For risk avoiders, favorable affective evaluations and risks were found to be negatively related (i.e. more favorable names were perceived as less risky), matching the results of previous investigations of the affect heuristic (Finucane et al. 2000). However, this relationship was attenuated among risk seekers. The pattern of results fits what would be expected if risks were viewed as being more desirable among risk seekers than for risk avoiders.

The findings therefore, have implications to research on the affect heuristic. The affect heuristic is based on the idea that people consult their overall affective impression of an object when making subsequent judgments. In situations where risk is desirable, decision makers consulting their feelings to construct risk judgments would not be

expected to report the typical inverse relationship between favorable affective evaluations and risk perceptions. Instead, this relationship is expected to be weak or even positive. Previous research has not investigated the role of affect as a basis for judgments in such contexts. Thus, further research is needed to better understand how favorable affective evaluations may influence risk perceptions in these situations. For example, future research may explore whether risks of a certain degree and nature are more desirable than others among risk seekers. It is likely that even in situations where risk is desirable, unnecessary or especially harmful risks may remain objectionable. Future research may be able to clarify the nature of desired risk among those with risk-seeking objectives.

This research also suggests that fluency may serve as one potential input to the affect heuristic. Affect used to inform judgments may come from many sources. However, fluency experiences can provide information distinct from the content of information that is processed (Schwarz et al. 1991). The understanding that subjective feelings of ease or difficulty produce affect that is then consulted as a basis for subsequent judgments helps to address the question of how affective evaluations arise in the absence of other potential sources.

In studies 2 and 3, the effect of fluency on affective evaluations was found to depend on participants' goals. This finding is in line with other recent research that has found that objects that are more effortful to process are perceived as more instrumental towards goal achievement, and thus favored (Labroo and Kim 2009). As previously discussed, this relationship was reported only among objects perceived as being useful in achieving a goal. Labroo and Kim (2009) reported that advertisements for chocolates that were easier to process were preferred over advertisements that were more difficult to

process when consumers held neutral or self-control goals. However, chocolates presented with less fluency were preferred if consumers held feel-good goals. Those advertisements requiring more effortful processing were desirable among those with feel-good goals because the chocolates were perceived as being more instrumental in achieving the goal of feeling good. However, greater processing difficulty did not lead to more favorable evaluations among those with neutral or self-control goals because the achievement of those goals conflicted with the benefits offered by the chocolates.

Although perceived instrumentality of the stimuli was not measured in the current research, a similar finding was reported. Difficult to pronounce ride names and medication names were preferred among those with risk-seeking goals. The difficulty associated with pronouncing those names may have caused them to seem more instrumental in achieving the goals of identifying the most adventurous rides or the strongest medications. However, the same cannot be said for risk avoiders. Among these individuals, easily pronounced ride and medication names were preferred over difficult to pronounce names. It is not readily apparent why these participants would not prefer difficult to pronounce names if processing difficulty is used to infer instrumentality during goal pursuit. For example, risk avoiders in study 3 were instructed to identify the safest medications that would be the least likely to cause problems. If effort is associated with goal advancement, difficult to pronounce medications should be preferred. However, brand name medications were preferred over more easily pronounced medications. This pattern may imply that increased ease of processing (decreased effort) leads to increases in the perceived instrumentality of objects for achieving some types of

goals, such as those emphasizing safety or avoidance of uncertainty. Additional research is needed to further explore this possibility.

Both the design of the experiment and the sample that was used in the third study may have contributed to the differences in effects that were observed between the second and third study. For example, it is possible that stronger effects would have been found using a different scenario for risk-seeking goals. In the risk-avoidance condition of study 3 participants were instructed to select the safest medications in order to avoid potential side effects. In the risk-seeking condition, participants were instructed to select the strongest and most effective medications. While these conditions produced effects similar to those of study 2, a risk-seeking scenario that referenced side effects or more directly the desire to assume risks may have strengthened the results. Additionally, the student sample that was used for the third study may have related more readily to the rollercoaster context used in the second study than to treatment of serious illnesses that was used in the third study. A more diverse sample may be used in future research to overcome this limitation.

The results of this research also have a number of practical implications. Because people approach similar situations with different goals, they may reach different conclusions from similar experiences. Goals appear to be capable of influencing which naïve theories are selected to make sense of fluency experiences. These naïve theories may have profound implications for the inferences people draw from these experiences. For example, differences in the application of naïve theories may partially explain why complex, difficult processing experiences may be desirable to an expert yet disliked by a novice. In some situations, goals lead to the selection of naïve theories that elicit

favorable inferences from more effortful processing. In forming communications, it is important to understand how a specific audience might interpret this subjective feeling of effort. The goals held by that audience may be one indicator of the naïve theory that will be applied to interpret the experience.

Supporting the findings of Song and Schwarz (2009), perceptions of risk were found to be influenced by fluency differences. This implies that practitioners should be aware that difficulty associated with processing information increases perceived risk. Knowledge of this relationship may be useful in conveying information in the case of health risks. This application was further emphasized in study 3, as more difficult to pronounce (generic) medication names were judged as riskier than more pronounceable (brand name) medications within each goal condition. This finding has public policy implications because objectively, the medications should have been evaluated similarly because they were different names for identical medications. This result implies that advertisements featuring easily pronounced medication names almost certainly produce lower perceptions of risk compared to advertisements featuring more difficult to pronounce generic equivalents. Further, unlike the rollercoaster rides used in study 2, easily pronounced medication names were preferred over less pronounceable medication names in both goal conditions. This uniform preference for brand name medications occurred in the presence of a reversal in perceptions of benefit (difficult to pronounce medications were perceived as more beneficial than easy to pronounce medications among those with risk-seeking goals, but easy to pronounce medications were perceived as more beneficial than difficult to pronounce medications among those with risk-avoidance goals). While the role of fluency in risk perception of medications is deserving

of further study, the current findings suggest that branded medications may be preferred over generic equivalents even in situations where generic drugs are perceived as more beneficial because they are processed with greater fluency.

As discussed previously, the findings of this research suggest that affect influences risk judgments differently under risk-seeking goal conditions than it does under risk-avoidance goal conditions. When risk is a desirable attribute, risk estimates derived from overall affective evaluations may be inflated. For those communicating with participants who engage in activities where risk is desirable, more detailed or intimidating wording may have the unintended effect of making those descriptions appear more desirable. Thus, caution is called for to ensure that communications about risk produce the appropriate behavioral response.

Overall, the findings suggest that fluency-elicited affect can help to explain subsequent judgments of risk and benefit. However, the results do not preclude the influence that feelings of familiarity may have in shaping risk perceptions. The results reported from the current studies do not contradict those of Song and Schwarz (2009). Rather, additional measures make it possible to observe a previously unreported reversal in favorable affect that led to a different conclusion from the data. It is possible that both affect and familiarity underlie the effects of fluency on perceptions of risk. As noted by Schwarz (2004), the relation between familiarity and favorable affective response is best characterized as bidirectional. Thus, while fluency may trigger positive affect that influences familiarity (Monin 2003) the converse may also be true that familiarity triggers more favorable affective responses.

CONCLUSION

In sum, this research has shown that the effect of fluency experiences on judgments depends on which naïve theories are brought to bear in an effort to make sense of the experience. Goals appear to be one way that people decide which naïve theories are appropriate to apply in a given situation. In support of this idea, the results of the current research document a previously unreported reversal in preferences for less fluently processed stimuli due to goal differences. Study 3 replicates these results using generic versus brand name medications as a context. The results of these studies also demonstrate that favorable affect elicited from fluency experiences may be used to explain how people form judgments of risk and benefit, but that these relationships vary in association with the desirability of risk. Finally, the fluency effects observed in the current studies emerged only when participants were able to compare easily pronounced names to those more difficult to pronounce. The relative nature of fluency judgments is deserving of additional study but the findings support the idea that processing experiences are not informative unless they diverge from some reference expectation.

CHAPTER IV

CONCLUSION

The research presented in essay 1 and 2 address research questions relating to the affect heuristic and contribute to both the consumer behavior and decision making literatures. As a whole, the results suggest that affect can critically inform perceptions of risk and benefit associated with novel stimuli. In general, the findings match those that would be expected if participants based their responses on an affect heuristic. Especially under conditions of uncertainty or when not otherwise motivated, consumers appear to readily rely on their overall feeling state when forming judgments. Previous research has shown that affect can serve as an important source of information and that it is used as a basis for other judgments (Finucane et al. 2000; Ganzach 2000; MacGregor et al. 2000). However, these studies are the first to demonstrate that affect underlies intuitive judgments of new product attributes. The innovation adoption literature has construed these types of judgments as largely analytical in nature. There has also been past research demonstrating the potential for fluency experiences to produce affective reactions. Again, however, the current studies are the first to demonstrate that fluency-elicited affect can inform judgments of the risks and benefits associated with different stimuli.

The first essay was motivated by the question of how affect influences consumer judgments of risk and benefit associated with new products. Although recognized as an inherently uncertain context, the innovation adoption literature has largely maintained a analytical perspective on how consumers make decisions about new products (Wood and

Moreau 2006). However, research suggests that heuristic decision making styles may be influential or potentially dominant in conditions of high uncertainty. Specifically, the affect heuristic (Finucane et al. 2000) suggests that in many situations, people perceive risks and benefits to be inversely related. This inverse relationship occurs because perceptions of both risk and benefit are derived from a common underlying affective evaluation (like/dislike). Liking an object promotes a favorable assessment of benefits, and a deflated assessment of risks. Disliking produces the opposite pattern. Drawing from this research, the first essay presented four studies examining the relationship between affective evaluations of new products and consumer judgments of risk and benefit.

The first study demonstrated that participants, if allowed to form judgments without any instruction or when placed under conditions which favored heuristic processing styles, perceived the familiar inverse relationship between risk and benefit across a variety of new products. The results indicate that affect may function as a common basis for judgments of these products supporting previous research (Peters 2006). Further support for the affect heuristic was found by considering an additional group of participants who were encouraged to use a more analytical decision making style as they considered the risks and benefits associated with the new products. Among these participants, the perceived relationship between perceived risk and benefit was attenuated. This pattern is consistent with prior research suggesting that affective decision making processes are used by default when forming judgments, but that people are capable of using more analytical decision making styles in certain situations (Pham et al. 2001; Slovic et al. 2010).

The second study further tested the way in which affect is used to inform judgments of risk and benefit by manipulating the information provided to participants and measuring changes in risk and benefit perceptions. Underlying this study was the idea that information provided about the risks associated with some product, objectively, does not provide information about the benefits associated with a product. However, if people form their judgments of risk and benefit using their overall affective evaluation, information about one attribute should influence perceptions of the other. The analysis from study two indicated that participants perceived changes to the non-manipulated attribute, despite not receiving any information about that attribute. In addition, changes in the non-manipulated were generally opposite (and affectively congruent) to that of the manipulated attribute. For example, information that lowered risk perceptions tended to increase benefit perceptions because the latter were derived from a positive affective response to the former.

The third study of the first essay was similar to the second study. However, in the third study, affective evaluations were manipulated independent of information about either risks or benefits. The prediction was that if people relied on affect to form their evaluations, then more polarized affective evaluations (I love it / I hate it) relative to neutral evaluations (neither like nor dislike) should produce greater differences in risk and benefit perceptions. The analysis supported this hypothesis and indicated that more (versus less) affectively extreme evaluations corresponded with greater differences in perceived risk and benefit.

The final study of the first essay sought to determine if product level characteristics might moderate the use of the affect heuristic. The study addressed the hypothesis that

consumers may be more likely to rely on affect when making judgments of more hedonic products, but that they may be less likely to rely on affect when making judgments of more utilitarian products. In addition to these dimensions, the fourth study examined other factors including product radicalness, aesthetic appeal, product understanding and category knowledge to test if any might moderate the reliance on affect when making judgments of risk and benefit. The results found no evidence that any of the measured product-level attributes moderated the use of the affect heuristic. The finding again, suggests that affect may be used by default when forming new product judgments.

The second essay extended the findings of the first by considering the role of fluency as an input to the affect heuristic and subsequent risk and benefit judgments. Fluency relates to the subjective ease or difficulty associated with processing information. Research has shown that differences in processing difficulty influence a variety of judgments with the general finding that more fluent processing leads to more favorable evaluations (Reber et al. 2004; Reber et al. 1998; Winkielman and Cacioppo 2001). Song and Schwarz (2009) reported that fluency experiences influence perceived risk because of familiarity differences and not because of affect resulting from fluency experiences. The second essay re-evaluated these findings to determine if favorable affect elicited in response to processing experiences might also be related to perceptions of risk.

The three studies presented in the second essay were each variations of the methodology outlined by Song and Schwarz (2009). However, each of the experiments reported in the second essay also included additional measures that were not included in the original study. In the first study of essay 2, participants were presented either risk-

seeking or risk-avoidance goals as well as either easy or difficult to pronounce rollercoaster ride names in a fully between subjects design. This design was different than the original Song and Schwarz (2009) study in which fluency was manipulated within subjects. The between subjects design was selected to help further understand the nature of fluency judgments. Surprisingly, the results of the first study were largely non-significant and failed to replicate those reported by Song and Schwarz (2009). The second study was identical to the first with the exception that fluency was manipulated within subjects. All participants were presented with both easy and difficult to pronounce ride names. The findings of the second study replicated those of Song and Schwarz (2009) but also revealed a previously unreported reversal in preference for less fluent stimuli among those with risk-seeking goals. The analysis further revealed that favorable affective evaluations corresponded with increased perceptions of benefits and decreased perceptions of risk as predicted by the affect heuristic. However, the strength of the relationship between favorable affect, risk and benefit varied as a function of both goals and fluency.

The third study further validated the findings of the second study in a different context, using brand name (more fluent) versus generic (less fluent) medications as a manipulation of fluency. The results aligned closely with those of the second study, and offered further support for the role of fluency-elicited affect as a basis for risk and benefit judgments. The findings from the studies presented in the second essay do not contradict those reported by Song and Schwarz (2009). However, the inclusion of additional measures, not used in the original study, made it possible to reach different conclusions.

Together the studies from both essays extend previous research on the affect heuristic. The studies suggest that people often rely on affect as a heuristic to help construct other judgments even when confronted with novel stimuli. The use of novel stimuli in both essays ensured that observed risk and benefit judgments were not based on the retrieval of previously formed evaluations. Admittedly, the situations employed in these studies were shrouded in uncertainty. Such contexts favor heuristic processing styles because they simplify the decision making task (Tversky and Kahneman 1974). Although limited information was provided to participants in these studies, the relative lack of information did not preclude the use of more analytical processing styles. Indeed, the first study of the first essay demonstrated that if participants are encouraged to analytically consider the risks and benefits associated with a new product, the influence of their overall affective evaluation is reduced as evidenced by the attenuated inverse relationship between perceptions of risks and benefits. The participants in the analytical condition received no additional information relative to those in the control or cognitive load conditions. Even when provided with additional information, such as in the second study of the first essay, participants appeared to rely on changes in affective evaluations to form judgments of the non-manipulated attributes. Across the studies in both essays, participants were found to readily rely upon affect to make judgments.

The studies in the second essay suggested fluency might serve as one source of affect upon which to base subsequent judgments. The null results observed using between subjects manipulation of fluency (study 1) provide additional insight into the way in which fluency perceptions are incorporated so as to elicit affective reactions. The findings suggest that fluency-elicited affect may arise as the result of a comparative

process rather than as the result of an absolute judgment. This observation supports previous research that has found fluency effects arising from the disconfirmation of expectations (Whittlesea and Williams 1998, 2000). The second essay makes a similar assertion but demonstrates a comparative effect in a situation in which expectations are not pre-established. Instead, expectations appear to be constructed relative to other experiences of fluency in the within subjects conditions. Recent research has shown that people are more biased by relative judgments when they rely on intuitive over analytical reasoning (Saini and Thota 2010). Manipulations that influence processing differences may be one avenue for future research.

Beyond fluency, other sources of information can undoubtedly serve as inputs to the affect heuristic. Chief among these, the content of information that is processed will elicit affective reactions. Even when confronted with novel stimuli, associations are drawn from memory that may be laced with feelings that can subsequently inform judgments. However, these associations are likely to be idiosyncratic and difficult to predict. For example, the Uno Bike included in the first essay is similar to traditional motorcycles in appearance, but it balances like a Segway (see appendix A). A consumer evaluating this product may draw on associations between either motorcycles or Segway vehicles but the valence of the affect arising from either is likely to depend on previous experiences. Whereas one person evaluating the Uno Bike may have been raised in a family of avid motorcyclists, another may have known a close friend who died in a motorcycle accident. Thus, the valence of associations derived from the content of thoughts may be difficult to predict. In contrast, fluency relates to the ease or difficulty associated with processing information and can inform judgments independent of the

content that processed (Schwarz et al. 1991). Differences in the ease of processing has been shown to produce remarkably similar effects on many types of judgments (Alter and Oppenheimer 2009). Thus, difficulty associated with information processing may provide a more reliable, if not necessarily dominant, effect on affective evaluations relative to the content of information processed.

Adding further complexity, the second essay demonstrates that preference for less fluent stimuli can reverse depending upon salient goals. People holding risk-seeking (versus risk-avoidance) goals evaluated names that were difficult to pronounce more favorably. Empirical demonstrations of reversals in the interpretation of fluency are relatively uncommon and new in the fluency literature (Briñol et al. 2006; Tsai and McGill 2011). However, existing research does suggest that less fluent processing may lead to favorable evaluations during goal pursuit (Labroo and Kim 2009) as less fluently processed objects may be perceived as more instrumental to fulfilling a goal. Evidence supporting this observation was found in the second essay for those holding risk-seeking goals, but not for those holding risk-avoidance goals. Additional research is needed to help clarify situations in which less fluent processing is associated with increased perceptions of instrumentality. The risk-avoidance goals used in the second essay may represent a boundary condition to the instrumentality heuristic. That is, when pursuing goals related to safety or avoidance of uncertainty, more fluently processed objects may be perceived as more instrumental relative to more difficult to process objects.

The relationship between affect and risk perceptions for those with risk-seeking goals has not been explored by previous research on the affect heuristic. Individuals holding risk-seeking goals are likely to perceive certain risks as desirable. As such, if

affect were consulted when forming risk judgments, more favorable evaluations may not be associated with judgments of reduced risk. Such a pattern was observed in studies 2 and 3 of the second essay. Although, the relationship between affective evaluations and perceptions of benefit was observed to differ as a function of fluency, it remained constant across goal conditions. In contrast, the relationship between affective evaluations and perceptions of risk varied both as a function of goals and differences in fluency. The result matches what would be expected if participants turned to affect to construct judgments of risk and benefit. However, additional research is needed to clarify how affect is used to inform judgments of risk in situations in which risk is desirable.

One interesting extension using the methods presented in this dissertation may be to replicate the second and third studies of the first essay among participants holding risk-seeking goals. The finding that more affectively extreme evaluations correspond with smaller differences in risk and benefit perceptions among those with risk-avoidance goals (a reversal to the current findings) would provide further evidence that these perceptions are based on affect even in situations where risk is desirable. Further, information provided that serves to increase perceived risk (as in study 2 of essay 1) should produce increased benefit perceptions in situations where risks are desirable. If such a relationship is found, it may be possible to gain further insight into the nature of the relationship between affect and risk perceptions by exploring those situations in which increased risk fails to trigger increased benefit perceptions. It is likely that even in situations where risk is desirable, unnecessary or especially harmful risks may remain objectionable. A better understanding of the way in which affect is related to risk

perceptions in situations where risk is desirable may have a number of applications for marketers and for public policy.

Other extensions of the studies presented in this dissertation may yield interesting results. For example, study 4 of the first essay asked participants to rate the utilitarian and hedonic attributes of 16 new products. Then, the four most highly rated products were compared to the four lowest rated products within each category. This approach has some limitations. For example, products in either group may have differed on other dimensions besides their hedonic nature. Many products can be both utilitarian and hedonic, whereas others may be predominantly hedonic, or neither. Identifying product innovations that are uniquely hedonic or utilitarian poses a challenge. Additionally, the products that fell into the high and low hedonic groups may have not been considered as such if a wider variety of products had been considered. That is, the products that representing highly hedonic products in this study may have not been considered highly hedonic within a broader context. Future research may consider manipulating the information about the type of benefits provided by a product, rather than measuring the inherent attributes of the product. For example, participants could be given information about either the utilitarian or hedonic benefits offered by a product. Such a manipulation would allow the same product to be used in both conditions, controlling for other differences between products that may confound the results. Affect may be more relevant to decisions about a new product that is expected to deliver experiential benefits (e.g., fun/enjoyment) whereas affect may be less relevant for decisions about an innovation which will have instrumental uses (e.g., used for work; Pham 1998; Pham and Avnet 2009).

Future research could also explore other goals and additional methods of assigning goals. For example, goals of variety or consistency-seeking may also influence which naïve theories are selected to interpret fluency experiences. Less fluent stimuli may be favored among those seeking variety if increased processing difficulty is interpreted as a reflection of the object's novelty. The way that goals are assigned to participants could also be varied. In the studies reported in the second essay, participants were asked to imagine that they held specific goals. However, goals could also be manipulated through priming procedures. One possibility would be to adapt a paradigm used by Shen and Wyer (2010) who found that consumers tend to rely on decision strategies used to make previous decisions. For example, if people make a series of varied decisions in one domain (e.g. shopping for juice drinks) they are likely to seek variety in subsequent decisions (e.g. the variety of shoes worn in a week). Thus, goals of variety or consistency-seeking may be primed by asking participants to make varied or consistent decisions in a separate study before confronting the focal stimuli.

Other situations may also prime goals. For example, when confronted with a possible loss, people tend to become more risk-seeking and when confronted with a gain people are more likely to avoid risk (Kahneman and Tversky 1979). Future research may explore this tendency as a way in which to prime different goals. Would participants who are confronted with a potential loss prefer stock ticker symbols that are more difficult to pronounce over those that are easier to pronounce? Such results would provide a boundary condition for existing research that suggests that more fluent stock tickers are preferred (Alter and Oppenheimer 2006) and would have important practical implications.

The research presented in this dissertation can be extended in a number of other directions as well. The first essay demonstrates that the affect heuristic explains how consumers make judgments about the risks and benefits associated with new products. The second essay suggests that fluency experiences serve as one input to the affect heuristic. Additional research may wish to consider if the affect heuristic influences the type of information that is attended to and ultimately, choice behavior. Previous research on the affect heuristic has used social hazards, such as nuclear power or pesticides, about which people are likely to have established attitudes (Alhakami and Slovic 1994; Finucane et al. 2000). In contrast, the affective evaluations formed in the current research were in response to novel stimuli and were based upon sparse information. They were, therefore, likely to be relatively unstable and easily manipulated (as evidenced in study 2 and 3 of essay 1). These initial impressions, however, could be important and influence behavior by biasing the type of information to which people choose to attend. For example, initial affective evaluations may predict whether people choose to read favorable or unfavorable review. This information may then reinforce the original feeling. A number of other individual and situational variables might moderate which information is selected. The current research could be extended even further to explore the ability of affect to predict trial or actual purchase decisions involving new products relative to cognitions. This research may show, for example, that early affective evaluations are more predictive of trial behavior than cognitive evaluations of the same products (Dempsey and Mitchell 2010).

As a whole, the research presented in this dissertation makes a number of contributions to existing literatures, but also offers avenues for continued exploration.

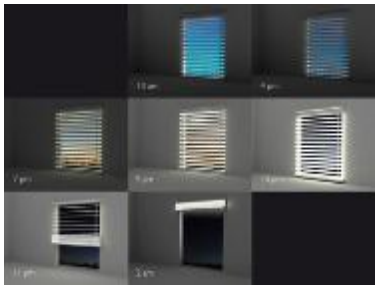
Across two essays composed of seven total studies (with additional pre-tests), this work demonstrates that our feelings often serve as the basis for constructing judgments and making inferences in uncertain situations. Both the antecedents that produce these feelings and the way in which these feelings impact subsequent judgments were considered. The results complement existing theory but also challenge established perspectives and foster additional research questions.

APPENDIX A

INNOVATION STIMULI

	Innovation	Picture	Description
1	Vaccine Strips		These are thin, dissolving strips similar to breath fresheners, which are used to vaccinate infants. The strips dissolve in the infant's mouth and also stick to the roof of the mouth so that the vaccine cannot be spit out.
2	Uno Bike		A self-balancing motorcycle with only one wheel.
3	Solar Phone		A cellular phone that can be recharged using a solar back panel.
4	Children's Training TriCycle		As the child rides faster on this tricycle, the back wheels are drawn together to allow the child to balance like a bicycle. When the child slows down, the wheels spread back out for stability like a tricycle.

5	Power Mat		Electronics placed on this mat can be inductively charged without having to be plugged into the wall. The mat is compatible with existing electronics.
6	Fruit Bowl		A pocketed bowl that expands to hold fruit.
7	Sliding Door Refrigerator		Rather than traditional doors, food items are stored in compartments, which slide out on rails. Each compartment is sealed to decrease the loss of cold air.
8	Dog Bowl		This dog food bowl partitions food into four zones that help to slow down how fast a dog can eat their food.
9	Cord Lock Light		A waterproof LED flashlight combined with a cord lock for attaching to outdoor gear.
10	Bottle Cooler		A rechargeable cooler that chills individual bottles.

11	Composting Garbage Disposal		A garbage disposal that collects food waste for composting.
12	In-Line Water Meter		A water meter that tracks water consumption at the point of use.
13	Solar Blinds		These blinds have solar panels that face the window and a led light strips directed into the house. They charge by absorbing solar energy during the day and illuminate to provide light in the evening.
14	Bike Light		This battery powered bike light projects a lane around the rider.
15	Simple GPS		This device allows the user to mark a location, then will point back to that location.
16	Recessed Light to Pedant Light Converter	 	This light fixture installs over existing recessed light cans to convert them to pendant lights.

APPENDIX B

RISK AND BENEFIT INFORMATION: STUDY 2

Innovation	Condition	Information
Power Mat	High Risk	The power mat has significant safety concerns. Because the system charges through induction it produces heat in the device being recharged. The heat produced will not damage the device because the adapters are built with a heat shield facing the device. However, it is not possible to shield the side facing down toward the mat which can make the device uncomfortably hot if it is picked up mid charge without being allowed to cool.
	Low Risk	The Power Mat technology has been evaluated in a number of independent studies involving many households. Each of these studies have concluded that the device is safe for users and the devices being charged. The Power Mat has also been safety tested to meet both UL and CE electrical standards for consumer electronics. Both of these certifications require safeguards in the charging circuitry and include extensive testing to ensure that the device will not overheat or cause harm to users. The product is also back by a 3-year warranty.
	High Benefit	The Power Mat has a number of advantages over wall chargers. For example, it eliminates the need for large "wall worts" and the cords associated with each electronic device. In addition, the inductive charging method used by the Power Mat is also a more environmentally friendly option because it is more efficient than the AC to DC conversion required to charge batteries with normal chargers. Finally, the technology works with almost any existing mobile device including laptop computers, mp3 players, phones, Bluetooth headsets, GPS systems, and portable gaming devices.
	Low Benefit	The Power Mat serves essentially the same function as existing wall chargers that come with every rechargeable device. In addition, electronic devices recharge in about the same amount of time that it takes conventional devices to charge.

Innovation	Condition	Information
Simple GPS	High Risk	There are a number of risks associated with using this GPS system. For example, the device has a short, 30-day limited warranty. In addition users have reported that the device is easy to loose because it is so small. Some people have reported that this device ran out of battery before they returned to their marked destination. There have also been reports of more "hardcore" outdoor enthusiasts making fun of people who use such a simple GPS.
	Low Risk	This GPS system features a weather-resistant construction that stands up to the rigors of outdoor use. The product is backed by a 3-year warranty from a reputable manufacturer. A lanyard is included with the device so that it can be tied to a jacket or pack to ensure that it is not lost. Finally, the battery life has been reported to be very good, lasting around 36-hours of continuous use.
	High Benefit	Many people could benefit from using a Simple GPS system. While most GPS systems are complicated to use and present information in a way that is confusing, this device always points back to the destination that was marked so hikers can find their way back to camp, or families can find their car in an oversized parking lot. In addition this GPS is easy enough for parents to send with children and small enough to fit in a pocket.
	Low Benefit	This device lacks many of the features of other handheld GPS systems, while costing almost as much. For example, the device does not show what path you took to get to a point but only an arrow indicating the direction from your current position to the point that was marked. In many situations, a direct line is not the best path to take. It is also only possible to store one point to return to at time. Finally, this device cannot be connected to a computer so there is no way upload waypoints or download any route information.

Innovation	Condition	Information
Vaccine Strips	High Risk	These vaccine strips carry a number of risks compared to injections or medications. For example, the person giving the strip to the child risks touching both the strip and the inside of the child's mouth, both of which could spread disease. There are also safety concerns because the dosage is difficult to adjust. In some instances there have been reports of children gagging if the strip is incorrectly positioned in the child's mouth.
	Low Risk	These vaccine strips are a safe alternative to injections or medications. The strips have been certified by both the FDA, in the United States and the EMEA, in the European Union to be safe for delivering a wide variety of different drugs and to be compliant with safe prescription manufacturing practices. In addition, a number of independent studies have found no adverse side effects to using these strips.
	High Benefit	These vaccine strips provide a number of benefits over injections or medications. For example, they are painless and easy to administer. Also, because children cannot spit them out, they ensure that the child gets the correct and full dosage.
	Low Benefit	These vaccine strips have very few advantages over injections or medications that are already used to deliver vaccines. Most parents find pills or syrups to be just as easy to administer as these strips. Also, vaccinations delivered using vaccine strips have been shown to be no more effective than those delivered using other delivery methods.

APPENDIX C

REGRESSION ANALYSIS: STUDIES 2 AND 3

The results of studies 2 and 3 were analyzed using a mixed model hierarchical linear regression analysis following the within-subject contrast approach for repeated measures models outlined by Judd (2000). The regression analysis used for the first study was not appropriate for studies 2 and 3 because fluency, in these studies, was manipulated within subjects. Additionally, an ANCOVA analysis was not appropriate because the within subjects measure of favorable affect was expected to interact with goals and fluency. The within subjects regression analysis however allows for continuous variables measured at each level of the within subjects factor to be included in the regression models along with potential interactions between those variables and other manipulated variables of interest.

The first step in the analysis was the coding of the between subjects factor (goal). In studies 2 and 3 participants were assigned to either a risk-seeking or a risk-avoidance goal. Thus, only a single set of contrast-coded predictors were needed to represent the two levels. The contrast weights were 1 for those assigned risk-seeking goals and -1 for those assigned risk-avoidance goals.

In studies 2 and 3 fluency was manipulated within subjects and has two levels. Therefore, the analysis requires two regression equations, one that considers a within subjects contrast of fluency and another using the average level of fluency. To test for the effect of goals and fluency on favorable affective evaluations, W variables were calculated to represent the dependent variables following Judd (2000).

To analyze the effects of goals and fluency on favorable affective evaluations $W0_i$ was calculated. This variable represented the average favorable affective evaluation of the names for each participant across fluency conditions. $W1_i$ represents the difference in favorable affective evaluations between the easy to pronounce and difficult to pronounce names. These W scores were regressed onto the contrast-coded variable representing the goal condition to which participants were assigned, creating the regression equations shown below:

$$W0_i = b_{00} + b_{01}X_i \quad \textbf{(1)}$$

$$W1_i = b_{10} + b_{11}X_i \quad \textbf{(2)}$$

In these regression equations, b_{00} is the intercept value. The term b_{01} tests if the average favorability evaluation is different for those assigned to risk-seeking or risk-avoidance goal conditions. Thus, b_{01} represents the main effect of goals on favorable affect. In the second equation, b_{10} estimates the difference in favorable affect between fluency conditions on average across goals and represents the main effect of fluency on favorable affect. Finally, b_{11} tests if the difference in favorable affect varies as a function of goals and represents the interaction between goals and fluency on favorable affect.

An analysis of the effects of goals, processing difficulty and favorable affect on benefit and risk also followed the regression analysis described by Judd (2000). Again, two regression equations were needed for each dependent variable (risk and benefit). $W0_i$ represents the average benefit (risk) reported by each participant across fluency

conditions. $W1_i$ represents the difference in benefit (risk) between easy to pronounce and difficult to pronounce ride names. In addition, two within subjects variables were calculated to account for the influence of favorable affect on benefit (risk). $WS0_i$ represented the mean favorable affective evaluation across fluency conditions for each participant. $WS1_i$ represented the difference in favorable affect between the fluency conditions for each participant. Each of these within subject predictors was centered to reduce multicollinearity. Two interaction terms (X_iWS0_i and X_iWS1_i) were also calculated to evaluate the interaction between average favorable affective evaluations and goals (b_{03}) and the interaction between differences in favorable affective evaluations between easy and difficult to pronounce ride names and goals (b_{13}). Each of the benefit (risk) W scores was regressed onto the contrast-coded goal condition variable (X_i) and the matching within subjects favorable affect measures ($WS0_i$ and $WS1_i$). The regression equations are shown below:

$$W0_i = b_{00} + b_{01}X_i + b_{02}WS0_i + b_{03}X_i * WS0_i \quad \textbf{(3)}$$

$$W1_i = b_{10} + b_{11}X_i + b_{12}WS1_i + b_{13}X_i * WS1_i \quad \textbf{(4)}$$

As in equations 1 and 2 described above b_{00}, b_{01}, b_{10}, and b_{11} in equations 3 and 4 represent the intercept, main effects of goals, main effects of fluency and goals x fluency interaction respectively on the dependent measures (risk or benefit). In addition, b_{02} represents the main effects of favorable affective evaluations on the dependent measures (risk or benefit). Additional interactions between favorable affective evaluations, goals

and fluency are represented by b_{03}, b_{12}, and b_{13}. The interaction between favorable affect and goals is represented by b_{03}. The coefficient b_{12} represents the extent to which differences in benefit (risk) between fluency conditions depends on differences in favorable affect between fluency conditions and thus represents the interaction between favorable affect and fluency. Finally, the coefficient b_{13} captures the interaction between favorable affect differences between easy and difficult to pronounce ride names and goals on dependent measure (risk or benefit) differences between easy and difficult to pronounce ride names. It provides information about whether favorable affect differences between the two fluency conditions are more predictive of the dependent measure (risk or benefit) differences in one goal condition than in the other. Thus, this term represents the interaction between favorable affect, goals and fluency. Table 6 in the second essay presents these regression coefficients for studies 2 and 3.

REFERENCES CITED

Aiken, Leona and Stephen West (1991), *Multiple Regression: Testing and Interpreting Interactions*, Thousand Oaks, CA: Sage.

Ajzen, Icek and Martin Fishbein (1980), *Understanding Attitudes and Predicting Social Behavior*, Englewood Cliffs, NJ: Prentice-Hall.

Alhakami, Ali and Paul Slovic (1994), "A Psychological Study of the Inverse Relationship between Perceived Risk and Perceived Benefit," *Risk Analysis*, 14 (6), 1085-96.

Alter, Adam L. and Daniel M. Oppenheimer (2006), "Predicting Short-Term Stock Fluctuations by Using Processing Fluency," *Proceedings of the National Academy of Sciences*, 103 (24), 9369-72.

_____ (2008), "Effects of Fluency on Psychological Distance and Mental Construal (or Why New York Is a Large City, but New York Is a Civilized Jungle)," *Psychological Science*, 19 (2), 161-67.

_____ (2009), "Uniting the Tribes of Fluency to Form a Metacognitive Nation," *Personality and Social Psychology Review*, 13 (3), 219-35.

Batra, Rajeev and Olli Ahtola (1991), "Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes," *Marketing letters*, 2 (2), 159-70.

Bornstein, Robert F and Paul R D'Agostino (1994), "The Attribution and Discounting of Perceptual Fluency: Preliminary Tests of a Perceptual Fluency/Attributional Model of the Mere Exposure Effect," *Social Cognition*, 12, 103-03.

Bornstein, Robert F. and Paul R. D'Agostino (1992), "Stimulus Recognition and the Mere Exposure Effect," *Journal of Personality and Social Psychology*, 63, 545-45.

Briñol, Pablo, Richard E. Petty, and Zakary L. Tormala (2006), "The Malleable Meaning of Subjective Ease," *Psychological Science*, 17 (3), 200-06.

Burnkrant, Robert E. and Alain Cousineau (1975), "Informational and Normative Social Influence on Buyer Behavior," *Journal of Consumer Research*, 2 (3), 206-15.

Dahl, Darren W. and Steve Hoeffler (2004), "Visualizing the Self: Exploring the Potential Benefits and Drawbacks for New Product Evaluation," *Journal of Product Innovation Management*, 21 (4), 259-67.

Damasio, Antonio R. (2000), *Descartes' Error: Emotion, Reason, and the Human Brain*, New York: Quill.

Dempsey, Melanie¬†A and Andrew¬†A Mitchell (2010), "The Influence of Implicit Attitudes on Choice When Consumers Are Confronted with Conflicting Attribute Information," *The Journal of Consumer Research*, 37 (4), 614-25.

Fang, Xiang, Surendra Singh, and Rohini Ahluwalia (2007), "An Examination of Different Explanations for the Mere Exposure Effect," *Journal of Consumer Research*, 34, 97-103.

Finucane, Melissa, Ali Alhakami, Paul Slovic, and Stephen Johnson (2000), "The Affect Heuristic in Judgments of Risks and Benefits," *Journal of Behavioral Decision Making*, 13 (1), 1-17.

Ganzach, Yoav (2000), "Judging Risk and Return of Financial Assets," *Organizational Behavior and Human Decision Processes*, 83 (2), 353-70.

Gatignon, Hubert and Thomas S. Robertson (1991), "Innovative Decision Processes," in *Handbook of Consumer Behavior*, ed. Thomas S. Robertson and Harold H. Kassarjian, Englewood Cliffs, NJ: Prentice-Hall, 316-48.

Gatignon, Hubert, Michael L. Tushman, Wendy Smith, and Philip Anderson (2002), "A Structural Approach to Assessing Innovation: Construct Development of Innovation Locus, Type, and Characteristics," *Management Science*, 48 (9), 1103-22.

Hauser, John R, Gerard J Tellis, and Abbie Griffin (2006), "Research on Innovation: A Review and Agenda for Marketing Science," *Marketing Science*, 25 (6), 687-717.

Herzenstein, Michal, Steven S. Posavac, and J. Josko Brakus (2007), "Adoption of New and Really New Products: The Effects of Self-Regulation Systems and Risk Salience," *Journal of Marketing Research*, 44 (2), 251-60.

Hirschman, Elizabeth C. (1980), "Innovativeness, Novelty Seeking, and Consumer Creativity," *Journal of Consumer Research*, 7 (3), 283-95.

_____ (1986), "The Effect of Verbal and Pictoral Advertising Stimuli on Aesthetic, Utilitarian and Familiarity Perceptions," *Journal of Advertising*, 15 (2), 27-34.

Hirschman, Elizabeth C. and Morris B. Holbrook (1982), "Hedonic Consumption: Emerging Concepts, Methods and Propositions," *Journal of Marketing*, 46 (3), 92-101.

Hoeffler, Steve (2003), "Measuring Preferences for Really New Products," *Journal of Marketing Research*, 40 (4), 406-20.

Johnston, William A., Veronica J. Dark, and Larry L. Jacoby (1985), "Perceptual Fluency and Recognition Judgments," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 11 (1), 3-11.

Judd, Charles (2000), "Everyday Data Analysis in Social Psychology: Comparisons of Linear Models," in *Handbook of Research Methods in Social and Personality Psychology*, ed. Harry Reis and Charles Judd, Cambridge, United Kingdom: Cambridge University Press, 370-92.

Kahneman, Daniel (2003), "Maps of Bounded Rationality: A Perspective on Intuitive Judgment and Choice," in *Les Prix Nobel*, Vol. The Nobel Prizes 2002, ed. Tore Frängsmyr, Stockholm: Nobel Foundation.

Kahneman, Daniel and Amos Tversky (1979), "Prospect Theory: An Analysis of Decision under Risk," *Econometrica*, 47 (2), 263-91.

Kardes, Frank R., Steven S. Posavac, and Maria L. Cronley (2004), "Consumer Inference: A Review of Processes, Bases, and Judgment Contexts," *Journal of Consumer Psychology*, 14 (3), 230-56.

Labroo, Aparna A. and Sara Kim (2009), "The "Instrumentality" Heuristic: Why Metacognitive Difficulty Is Desirable During Goal Pursuit," *Psychological Science*, 20 (1), 127-34.

Lowenstein, George F., Elke U. Weber, Christopher K. Hsee, and Ned Welch (2001), "Risk as Feelings," *Psychological Bulletin*, 127 (2), 267-86.

MacGregor, Donald G., Paul Slovic, David Dreman, and Michael Berry (2000), "Imagery, Affect, and Financial Judgment," *Journal of Behavioral Finance*, 1 (2), 104-10.

Machlis, Gary E. and Eugene A. Rosa (1990), "Desired Risk: Broadening the Social Amplification of Risk Framework," *Risk Analysis*, 10 (1), 161-68.

Mahajan, Vijay, Eitan Muller, and Frank M. Bass (1990), "New Product Diffusion Models in Marketing: A Review and Directions for Research," *Journal of Marketing*, 54 (1), 1-26.

Manning, Kenneth C., William O. Bearden, and Thomas J. Madden (1995), "Consumer Innovativeness and the Adoption Process," *Journal of Consumer Psychology*, 4 (4), 329.

Monin, Benoît (2003), "The Warm Glow Heuristic: When Liking Leads to Familiarity," *Journal of Personality and Social Psychology*, 85 (6), 1035-48.

Moreau, C. Page, Donald R. Lehmann, and Arthur B. Markman (2001), "Entrenched Knowledge Structures and Consumer Response to New Products," *Journal of Marketing Research*, 38 (1), 14-29.

Morwitz, Vicki G. and Carol Pluzinski (1996), "Do Polls Reflect Opinions or Do Opinions Reflect Polls? The Impact of Political Polling on Voters' Expectations, Preferences, and Behavior," *The Journal of Consumer Research*, 23 (1), 53-67.

Nielsen, Jesper H. and Jennifer Edson Escalas (2010), "Easier Is Not Always Better: The Moderating Role of Processing Type on Preference Fluency," *Journal of Consumer Psychology*, 20 (3), 295-305.

Novemsky, Nathan, Ravi Dhar, Norbert Schwarz, and Itamar Simonson (2007), "Preference Fluency in Choice," *Journal of Marketing Research*, 44 (3), 347-56.

Oliver, Richard L., Thomas S. Robertson, and Deborah J. Mitchell (1993), "Imaging and Analyzing in Response to New Product Advertising," *Journal of Advertising*, 22 (4), 35-50.

Palda, Kristian S. (1966), "The Hypothesis of a Hierarchy of Effects: A Partial Evaluation," *Journal of Marketing Research*, 3 (1), 13-24.

Payne, John W., James R. Bettman, and Eric J. Johnson (1988), "Adaptive Strategy Selection in Decision Making," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 14 (3), 534-52.

Peters, Ellen (2006), "The Functions of Affect in the Construction of Preferences," in *The Construction of Preference*, ed. Sarah Lichtenstein and Paul Slovic, 454ñ63.

Pham, Michel Tuan (1998), "Representativeness, Relevance, and the Use of Feelings in Decision Making," *Journal of Consumer Research*, 25 (2), 144-59.

Pham, Michel Tuan and Tamar Avnet (2009), "Contingent Reliance on the Affect Heuristic as a Function of Regulatory Focus," *Organizational Behavior and Human Decision Processes*, 108 (2), 267-78.

Pham, Michel Tuan, Joel B. Cohen, John W. Pracejus, David G. Hughes, David Glen Mick, and Hans Baumgartner (2001), "Affect Monitoring and the Primacy of Feelings in Judgment," *Journal of Consumer Research*, 28 (2), 167-88.

Pocheptsova, Anastasiya, Aparna A. Labroo, and Ravi Dhar (2010), "Making Products Feel Special: When Metacognitive Difficulty Enhances Evaluation," *Journal of Marketing Research*, 47 (6), 1059-69.

Pogue, David (2010), "Looking at the Ipad from Two Angles," *The New York Times*, March 10, 2010.

Ram, Sundaresan and Jagdish N. Sheth (1989), "Consumer Resistance to Innovations: The Marketing Problem and Its Solutions," *Journal of Consumer Marketing*, 6 (2), 5-14.

Reber, Rolf, Norbert Schwarz, and Piotr Winkielman (2004), "Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience?," *Personality & Social Psychology Review*, 8 (4), 364-82.

Reber, Rolf, Piotr Winkielman, and Norbert Schwarz (1998), "Effects of Perceptual Fluency on Affective Judgments," *Psychological Science*, 9 (1), 45-48.

Rogers, Everett M. (1976), "New Product Adoption and Diffusion," *The Journal of Consumer Research*, 2 (4), 290-301.

_____ (1995), *Diffusion of Innovations*, New York, NY: The Free Press.

_____ (2003), *Diffusion of Innovations*, New York, NY: The Free Press.

Saini, Ritesh and Sweta C. Thota (2010), "The Psychological Underpinnings of Relative Thinking in Price Comparisons," *Journal of Consumer Psychology*, 20 (2), 185-92.

Schwarz, Norbert (2004), "Metacognitive Experiences in Consumer Judgment and Decision Making," *Journal of Consumer Psychology*, 14 (4), 332-48.

Schwarz, Norbert, Herbert Bless, Fritz Strack, Gisela Klumpp, Helga Rittenauer-Schatka, and Annette Simons (1991), "Ease of Retrieval as Information: Another Look at the Availability Heuristic," *Journal of Personality and Social Psychology*, 61 (2), 195-202.

Schwarz, Norbert, Lawrence J. Sanna, Ian I. Skurnik, and Carolyn Yoon (2007), "Metacognitive Experiences and the Intricacies of Setting People Straight: Implications for Debiasing and Public Information Campaigns," *Advances in experimental social psychology*, 39, 127-61.

Schwarz, Norbert and Leigh Ann Vaughn, eds. (2002), *The Availability Heuristic Revisited: Ease of Recall and Content of Recall as Distinct Sources of Information*, Cambridge, England: Cambridge University Press.

Shen, Hao and Robert S. Wyer Jr (2010), "The Effect of Past Behavior on Variety Seeking: Automatic and Deliberative Influences," *Journal of Consumer Psychology*, 20 (1), 33-42.

Shiv, Baba and Joel Huber (2000), "The Impact of Anticipating Satisfaction on Consumer Choice," *Journal of Consumer Research*, 27 (2), 202-16.

Slovic, Paul, Melissa L. Finucane, Ellen Peters, and Donald G. MacGregor (2007), "The Affect Heuristic," *European Journal of Operational Research*, 177 (3), 1333-52.

_____ (2010), "Risk as Analysis and Risk as Feelings: Some Thoughts About Affect, Reason, Risk and Rationality," in *The Feeling of Risk*, ed. Paul Slovic, Washington DC: Earthscan.

Song, Hyunjin and Norbert Schwarz (2009), "If It's Difficult to Pronounce, It Must Be Risky: Fluency, Familiarity and Risk Perception," *Psychological Science*, 20 (2), 135-38.

Tsai, Claire I. and Ann L. McGill (2011), "No Pain, No Gain? How Fluency and Construal Level Affect Consumer Confidence," *The Journal of Consumer Research*, 37 (5), 807-21.

Tversky, Amos and Daniel Kahneman (1974), "Judgment and Uncertainty: Heuristics and Biases," *Science*, 185 (4157), 1124-31.

Voss, Kevin. E., Eric R. Spangenberg, and Bianca Grohmann (2003), "Measuring the Hedonic and Utilitarian Dimensions of Consumer Attitude," *Journal of Marketing Research*, 40 (3), 310-20.

Whittlesea, Bruce (1993), "Illusions of Familiarity," *Journal of Experimental Psychology Learning Memory and Cognition*, 19 (6), 1235-35.

Whittlesea, Bruce W. A., Larry L. Jacoby, and Krista Girard (1990), "Illusions of Immediate Memory: Evidence of an Attributional Basis for Feelings of Familiarity and Perceptual Quality," *Journal of Memory and Language*, 29 (6), 716-32.

Whittlesea, Bruce W. A. and Lisa D. Williams (1998), "Why Do Strangers Feel Familiar, but Friends Don't? A Discrepancy-Attribution Account of Feelings of Familiarity," *Acta Psychologica*, 98 (2-3), 141-65.

_____ (2000), "The Source of Feelings of Familiarity: The Discrepancy-Attribution Hypothesis," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26 (3), 547-65.

Winkielman, Piotr and John T. Cacioppo (2001), "Mind at Ease Puts a Smile on the Face: Psychophysiological Evidence That Trocessing Facilitation Elicits Positive Affect," *Journal of Personality and Social Psychology*, 81 (6), 989-1000.

Wood, Stacy L. and C. Page Moreau (2006), "From Fear to Loathing? How Emotion Influences the Evaluation and Early Use of Innovations," *Journal of Marketing*, 70 (3), 44-57.

Wood, Stacy L. and Joffre Swait (2002), "Psychological Indicators of Innovation Adoption: Cross-Classification Based on Need for Cognition and Need for Change," *Journal of Consumer Psychology*, 12 (1), 1-13.

Yeung, Catherine W. M. and Robert S. Wyer Jr (2004), "Affect, Appraisal, and Consumer Judgment," *Journal of Consumer Research*, 31 (2), 412-24.

Zajonc, Robert B. (1968), "Attitudinal Effects of Mere Exposure," *Journal of Personality and Social Psychology*, 9 (2(2)), 1-27.

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

Zhao, Min, Steve Hoeffler, and Darren W. Dahl (2009), "The Role of Imagination-Focused Visualization on New Product Evaluation," *Journal of Marketing Research*, 46 (1), 46-55.

Ziamou, Paschalina and S. Ratneshwar (2002), "Promoting Consumer Adoption of High-Technology Products: Is More Information Always Better?," *Journal of Consumer Psychology*, 12 (4), 341-51.