

**The Effect of Exposure to Narrow versus Broad Categorizations on Subsequent  
Decision Making**

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We find that exposure to broad versus narrow categorizations in a task alters consumers' information processing styles, which in turn alters their categorizing and purchasing behavior in a variety of subsequent and unrelated tasks, from basic cognitive behaviors (e.g., grouping), and consumer decisions (e.g., new product adoptions), to more general decision making strategies (e.g., susceptibility to heuristics). Consumers previously exposed to a decision context with broad categorizations adopt a more lenient, and tolerant processing orientation. In contrast, consumers previously exposed to a decision context with narrow categorizations adopt a careful and critical processing orientation. Consequently, prior exposure to broad categorizations leads to greater susceptibility to many context effects and decision heuristics, whereas prior exposure to narrow categorizations leads to more careful and considered decisions, invariable across contexts.

The world that consumers encounter comprises a vast collection of objects and events that can be infinitely partitioned, generalized, or categorized. Changing the characteristics of these externally imposed categorizations in the decision environment can significantly influence how consumers perceive their environment and make decisions. For example, evaluating alternatives in a group can lead to different outcomes than evaluating them alone (Brenner, Rottenstreich, and Sood 1999). The nature of externally provided categorizations can also affect consumer evaluations due to tendencies such as partition dependence (Fox, Ratner, and Lieb 2005) and variety seeking (Ratner, Kahn, and Kahneman 1999). Recent research has studied the effects of organizing alternatives by taxonomic or goal-based categorizations (Poynor and Diehl 2007), by brand or by feature level (Simonson, Nowlis, and Lemon 1993), and with their complements or substitutes (van Herpen, Diehl, and Poynor 2007). Some researchers have also shown that the structure of an assortment in terms of organization and symmetry (Kahn and Wansink 2004), and the congruence between consumer and retailer organization schemes (Morales, Kahn, McAlister, and Broniarczyk 2005), impact consumer decisions. These various aspects of the externally imposed categories have been shown to influence important decision outcomes such as choice, decision difficulty, decision time, satisfaction with the assortment, and consumption quantity.

Thus, extensive research demonstrates that the manner in which products are categorized in a decision context can influence consumers' reactions in the *same* decision context. Our focus is on how exposure to different types of external categorizations in one decision environment can affect consumers' information processing and evaluations in *subsequent* and *unrelated* decision environments. While several aspects of a decision context can be considered, in particular, we look at whether the decision context involves many, narrow categorizations, or a few, broad

categorizations. In other words, what is the consequence of being exposed to a decision context with broad categorizations (e.g., movie choices classified as comedy or drama movies), as opposed to a decision context with narrow categorizations (e.g., movie choices classified as dark comedy, romantic comedy, etc.)? Thus, our main objective is to investigate how exposure to broad versus narrow categorizations in one decision context, affects judgments and decisions made in a subsequent and unrelated decision context.

For further illustration, consider two consumers, A and B, who each decide to rent a movie and order in pizza for a relaxing evening at home. A and B go to two different video stores. In A's store, movies are classified by genre, in a few, broad groups that include comedy and drama. In B's store, movies are also classified by genre, but in many, narrow groups that include comic action, dark comedy, romantic comedy, courtroom drama, and historical drama. After considering the options they both head home. When A and B call their local pizza parlor they are told that the parlor has a new line of pizzas available, with new innovative toppings. Who is more likely to try the new innovative pizzas? This research suggests that A will be more likely to try them. This research further suggests that the first task of deciding on a video, and in particular, the broad or narrow categorizations encountered in that first decision context, shapes the way in which information is processed, which in turn influences the subsequent decision about the pizza toppings.

More generally, we show that the effects of being exposed to broad versus narrow categorizations carry over to different kinds of subsequent decisions, ranging from basic cognitive tasks (e.g., grouping tasks, category inclusion decisions), to marketing-related tasks including purchase decisions (e.g., new product adoption), and general consumer decision-making strategies (e.g., susceptibility to heuristics). We next discuss the manner in which the

broad or narrow categorizations encountered in the first decision context affect consumers' information processing styles. We then develop hypotheses about how these changes in information processing styles affect different types of subsequent and unrelated decisions. We then present six studies that test our hypotheses. We end with a discussion of the general implications of our findings and avenues for future research.

### **Exposure to Broad-Narrow Categorizations and Effects on Information Processing**

People use concepts as tools to organize information and give meaning to the ever-changing world around them. Mental representations of concepts change in a dynamic manner (Barsalou 1993) in order to facilitate certain cognitive functions and allow people to adapt to new task demands. In fact, most contextual manipulations capitalize on the notion that certain situations can strategically instigate compatible cognitive organizations.

Following this logic, we propose that an individual who is exposed to a very detailed environment with many, narrow categories (as opposed to a few, broad categories) in a task, will acknowledge that objects differ from each other in many different ways, and will fine tune her cognitive apparatus accordingly, using a more careful and critical approach to perceive and evaluate these objects. For example, let us revisit the scenario described earlier, in which B is exposed to the narrow movie categorizations (comic action, dark comedy, romantic comedy, courtroom drama, historical drama, or melodrama movies), while A is exposed to the broad movie categorizations (comedy or drama movies). We argue that simply being exposed to many, narrow categorizations, as opposed to a few, broad categorizations, should evoke a relatively more complicated worldview for B. B would therefore feel a greater need than A to organize and process stimuli in a more careful manner, perhaps employing multiple dimensions, since

acknowledging subtle details on these dimensions may be both important and consequential.

We further argue that as long as the subsequent context does not cue the need for a cognitive reorganization, the recently tuned cognitive apparatus will likely be used *as is* for the next task at hand. Past research documents numerous similar instances where activated cognitive procedures or “mindsets” are transferred and applied to new situations (e.g., Bargh and Chartrand 2000; Smith and Branscombe 1987). Thus we suggest that exposure to narrow and broad categorizations trigger changes in information processing styles that generalize to different decision contexts, and spill over to subsequent, unrelated tasks.<sup>1</sup>

So how exactly does exposure to narrow (versus broad) categorizations affect consumers’ information processing styles? We suggest that externally imposed broad or narrow categorizations will cause consumers to adopt corresponding information processing styles. Exposure to a decision context with broad categorizations should instigate a more lenient, tolerant and accepting processing orientation, and a state of readiness. Exposure to a decision context with narrow categorizations, on the other hand, will bring about a doubtful, careful, and critical processing orientation and a state of resistance.

Furthermore, consumers who adopt a less critical and less careful information processing style are prone to rely on a few, salient pieces of information, whereas those with a more critical and meticulous information processing style are likely to use multiple pieces of information and exhibit a preference for increased conceptual complexity in subsequent tasks. In characterizing conceptual complexity, Suedfeld and Coren (1992) state, “...conceptual complexity has two major components. The first is differentiation, referring to the individual’s ability to discern more than one dimension in a particular informational unit or to view that unit from more than

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<sup>1</sup> This prediction is contingent on the fact that there is no reactance to the first decision (e.g., if an environment is too detailed it might overwhelm the decision maker, and cause a contrast effect). In our studies we designed the manipulations appropriately, and moreover, found the data to be inconsistent with this possibility.

one perspective. The second is integration, which is the ability to combine these differentiated dimensions or perspectives—for example, by perceiving them in interaction, combination, or as parts of a larger superordinate entity.”

Accordingly, in subsequent decision environments, consumers who have previously been exposed to broad categorizations should discern only the most salient dimension(s), and be comfortable basing their evaluations only on these dimensions. As a consequence, they should be more susceptible to many context effects and decision heuristics. In contrast, when presented with a salient dimension, consumers who have been previously exposed to narrow categorizations should act doubtful, actively seek and discern other dimensions, and ultimately base their decisions on a combination of multiple cues in the environment. As a result, they should make more compensatory decisions, invariable across contexts.

### **Effect of Changes in Processing Style on Subsequent Tasks**

Figure 1 depicts how exposure to narrow (versus broad) categorizations affects consumer behavior in a wide range of different types of subsequent tasks. First, these effects should clearly manifest in subsequent grouping decisions. Consider, for example, a classic grouping task where the decision makers are asked to sort a set of objects into as many, or as few, groups as they wish. If decision makers who have previously been exposed to narrow categorizations become more careful in their subsequent decisions, they are likely to use many different pieces of information in their grouping decision, employing multiple dimensions in the sorting task. Naturally, these decision makers should sort the given objects into many, narrow groups. In contrast, if decision makers who have previously been exposed to broad categorizations become less careful and deliberate, they are likely to use relatively fewer pieces of information, employ

fewer dimensions in the sorting task, and consequently, sort the given objects into fewer, broad groups. Hence, we hypothesize:

**H1a:** Consumers who have been previously exposed to a decision context with narrow (broad) categorizations will, in a subsequent and unrelated grouping task, sort the given set of objects into more, relatively smaller (fewer, relatively larger) subcategories.

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Second, these effects should manifest in subsequent category inclusion judgments. Such tasks require decision makers to judge whether or not a series of stimulus objects (e.g., apple, orange, tomato, etc.) belong to a target category (e.g., fruits). The strictness of the category inclusion criteria employed by decision makers determines the number of objects that are granted category membership. If exposure to narrow categorizations in a prior task fosters a more careful information processing style, then in a subsequent, unrelated category inclusion task, these decision makers should be more stringent in their category inclusion decisions, judging membership according to many different pieces of information and thus allowing fewer objects to be admitted to a target category. In contrast, if exposure to broad categorizations in a prior task fosters a less careful processing style, these decision makers should be more lenient in their inclusion criterion, allowing many more stimulus objects to be included in the target category. Formally, we hypothesize:

**H1b:** Consumers who have been previously exposed to a decision context with narrow (broad) categorizations will include fewer (more) stimulus objects into a target category in a subsequent and unrelated category inclusion task.

The broad-narrow nature of external categorizations that consumers encounter will also effect their subsequent product evaluations and choices. For example, when consumers contemplate the purchase of a new product, they should carefully consider both the degree of innovation that the product offers and the concomitant risk of failure. However, many decision contexts make only one of these dimensions salient. For example, in some product categories, such as laptops and high-tech electronics, consumers might focus primarily on product innovativeness, perhaps because the products are relatively fun, or marketing efforts selectively highlight innovation. In contrast, in other product categories, such as laser eye surgery, the risk of failure might be the more dominant environmental cue.

Nevertheless, for all new products, it is important to both consider information that is and is not made salient by the decision environment. Focusing on only one of these dimensions can lead to biased decisions, especially because perceived innovation and risk are negatively related to each other in how they affect new product adoption decisions (Holak and Lehmann 1990). For example, in the former case, it is important to consider risk, even though it is less salient, as new products are often based on immature technologies that may fail to deliver the promised benefits, malfunction, or pose compatibility problems. In the latter case, it is important to consider the potential benefit that one might forgo by not adopting an innovative new product. While most decision makers will consider the salient aspects of a decision, only the more careful decision makers ferret out the less salient aspects.

Since exposure to narrow categorizations encourages a careful, deliberate, and multi-dimensional information processing style, in subsequent new product adoption decisions we expect these consumers to carefully take into account both information that is more and less salient in the decision environment. In contrast, consumers exposed to broad categorizations

should allow the more salient aspects of a decision context to guide their decisions.

For example, in new product domains where product innovativeness may be more salient (e.g., high-tech electronics), we expect prior exposure to broad categorizations to lead to adoption judgments that are based primarily on the salient innovativeness attribute. Exposure to narrow categorizations, on the other hand, should lead to more meticulous decision-making, with adoption decisions being based on both the salient, innovative aspects, and the less salient, risk aspects. Consequently, we should observe that consumers exposed to broad (versus narrow) categorizations in a prior task, both hold more favorable attitudes toward new products and are more likely to buy them. However, in product domains where risk is the more salient environmental cue (e.g., laser eye surgery), we expect exposure to broad categorizations to encourage consumers to primarily base their decisions on the salient risk dimension, but expect exposure to narrow categorizations to encourage consumers to look at both the salient risk dimension, as well as the less salient, innovativeness dimension. In such product domains, then, we should observe that consumers exposed to broad (versus narrow) categorizations in a prior task hold less favorable attitudes toward new products.

**H2:** For new products primarily associated with innovation (risk), consumers exposed to broad categorizations in a prior task will have more (less) favorable preferences toward those new products than consumers exposed to narrow categorizations.

We also expect previous exposure to broad and narrow categorizations to differentially affect consumers' reactions to the *degree of newness* of a new product. While some new products are perceived as radically different from existing products, others can be perceived simply as minor variants of existing products in the market. As new products start becoming progressively more different from existing products in the market, each unit of difference may be construed

either as an increase in innovation, an increase in risk, or an increase in both. We propose that exposure to broad versus narrow categorizations in a previous task plays a critical role in determining which of these three possible construals dominate in adoption decisions.

Since consumers exposed to broad categorizations focus on the more salient aspects of the decision environment, in innovation (risk) salient domains, they will construe differences as indicative of innovativeness (risk), and therefore their evaluations of a new product should become progressively more (less) favorable as they perceive it to be increasingly more different than the conventional product offerings on the market. In contrast, exposure to narrow categorizations should lead to a more balanced consideration of both innovation and risk, irrespective of which dimension is more salient in the decision environment. As a result, for these consumers, evaluations of a new product should not vary according to how different they perceive the new product to be, since they would associate highly different products with both, a greater amount of risk, as well as a greater amount of innovation. In short, we expect that exposure to broad versus narrow categorizations will make consumers differentially interpret, and react to, the newness of a new product.

**H3:** The effect (in H2) will be moderated by the degree of newness of the new product.

On exposure to broad categorizations in a previous task, in new product domains primarily associated with innovation (risk), preferences will increase (decrease) with the degree of newness. On exposure to narrow categorizations in a previous task, the preferences will not vary with the newness of a new product.

As a process explanation for the effects described in H1-H3, we contend that in multi-attribute decision environments, consumers exposed to broad categorizations will be comfortable basing their decision on the most salient dimension(s). In contrast, consumers exposed to narrow

categorizations, when presented with a salient dimension, will actively seek other dimensions, and ultimately base their decision on a combination of available cues in the environment.

Formally, we hypothesize:

**H4:** Consumers previously exposed to broad categorizations in a previous task will base their decision on fewer, more salient dimensions than consumers exposed to narrow categorizations in a previous task.

More generally, we expect these categorization-induced changes in information processing style to also affect consumers' susceptibility to common biases in subsequent and unrelated product decisions. Consumers exposed to broad categorizations will be more susceptible to these biases since they tend to base their decisions on few salient cues in the environment. In contrast, those exposed to narrow categorizations will be less susceptible since they use many more cues in their decision making. Thus, we hypothesize:

**H5:** Consumers exposed to broad categorizations in a previous task will be more susceptible to decision biases in a subsequent product decision, in comparison to consumers exposed to narrow categorizations in a previous task.

We next test these predictions in six studies.

### **STUDY 1a: GROUPING TASK**

The goal of Study 1 is to demonstrate that exposure to a context with narrow versus broad categories changes grouping behavior in a subsequent, unrelated task. We hypothesize that participants who have been exposed to narrow (broad) categorizations should classify objects into many, narrow (fewer, broad) classes even in a subsequent, unrelated sorting task.

As with many other variables related to cognitive organization, the width of conceptual

categories can also be co-determined by individual level tendencies as well as contextual demands (Rokeach 1956). Therefore in this study, we use the Pettigrew (1958) category width (CW) scale to capture individual level differences in the width of categorizing. Those who are determined by this scale to be narrow categorizers should also have a predisposition towards creating more groups in an object sorting task than those determined to be broad categorizers. We expect to observe the effects of our context manipulation (i.e., exposure to broad or narrow categorizations in a previous task) over and above the effects of these innate traits.

## Method

Sixty-eight undergraduates participated in the study in exchange for partial course credit. Participants were told that the experiment session comprised of two unrelated studies. The first study, which was used to administer our proposed contextual manipulation, exposed participants to either broad or narrow categorizations. Specifically, in the first study, participants responded to several questions that differed in terms of the available response categories. For some participants, the response options for each question constituted many, narrow categories (Narrow condition), while for others, the response options comprised a few, broad categories (Broad condition). Participants first completed Goldberg's (1990) Big Five personality inventory. In the narrow condition, they marked their responses on nine-point semantic differential scales, whereas in the broad condition, they responded using three-point scales. Next, participants in the narrow (broad) condition indicated their height, hair color, and eye color by placing a checkmark in *one* of many (few) boxes. They were then asked to make a series of hypothetical decisions such as choosing a film genre if they were to rent a DVD, choosing a cat breed for adoption, and indicating their choice of holiday type from amongst many (few) alternatives. Finally, they were

asked to classify the phase of the moon observed in a target picture as one of the previously described many (few) distinct phases of the moon.<sup>2</sup> Thus, the key manipulation was that of the categorizations encountered in a decision context: in the narrow (broad) categorization condition participants answered questions in a decision context that had more (less) fine-grained response taxonomies. Participants were then thanked and moved on to an ostensibly unrelated grouping study.

We used Mikulincer, Kedem, and Paz's (1990) object sorting task. Participants were given a set of 12 highly typical members of the semantic category fruits, and were instructed to sort these fruits into subgroups in any way that made sense to them. Last, participants completed a 10-item short version of the individual level CW scale (Pettigrew 1958).

## Results

A one-way ANOVA on the number of fruit groups formed revealed a significant effect of our context manipulation ( $F(1, 66) = 7.78, p = .01$ ).<sup>3</sup> Supporting H1a, participants who were previously exposed to the narrow categorization context created more groups than those exposed to the broad categorization context ( $M_{\text{NARROW}} = 4.50, M_{\text{BROAD}} = 3.42$ ).<sup>4</sup>

We divided participants into Narrow and Broad categorizers using Tajfel and Bruner's (1966) definitions with the CW scale ( $\alpha = .78$ ). A 2 (Prior Context: Narrow, Broad) x 2 (CW: Narrow Categorizers, Broad Categorizers) ANOVA on the number of fruit groups revealed a significant main effect of the context manipulation ( $F(1, 33) = 9.63, p = .01$ ) and a significant main effect of individual level CW ( $F(1, 33) = 5.77, p = .02$ ). In line with our predictions, the

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<sup>2</sup> Note that this task was not qualitatively different across the two conditions. Participants in both conditions responded to an identical set of questions (each item required a single choice, i.e., checking *one and only one box*).

<sup>3</sup> All test statistics reported are based on two tailed significance tests, unless indicated otherwise.

<sup>4</sup> In order to compare with baseline categorization tendencies, we had a group of 26 participants complete the sorting task alone. The mean for this control group fell in between the broad and the narrow conditions ( $M_{\text{CONTROL}} = 3.92$ ).

two-way interaction was not significant ( $F(1, 33) < 1$ ): The context manipulation successfully altered the number of groups created by both individual level narrow ( $F(1,33) = 4.62, p = .04$ ) and broad categorizers ( $F(1,33) = 5.04, p = .03$ ) (see figure 2, top panel).

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## Discussion

Study 1 shows that the effects of exposure to a context with narrow or broad categorizations carries over to a subsequent, unrelated grouping decision. This effect occurs over and above individual level tendencies, thus providing strong support for H1a.

One could argue that the more fine-grained response taxonomies were overwhelming the participants in the Narrow condition. However, the data are at odds with this depletion-based account, since we observe that these participants create more fruit groupings in the second task, not fewer. Instead, the data seem to support a careful processing account. A visual inspection of the fruit groupings hints at a qualitative difference in how participants in the two conditions approached this grouping task. Participants in the Broad condition created simple groupings based on either color (e.g., red vs. yellow) or taste (sweet vs. sour). In contrast, those in the Narrow condition seemed to use more than one grouping criterion, often combining them (e.g., red and sweet, red and sour, yellow and sour, etc.), resulting in a greater number of groups. It seems as if they organized fruits in a more careful and complex manner, acknowledging multiple dimensions on which the fruits differed from each other.

## **STUDY 1b: CATEGORY INCLUSION DECISION**

The main purpose of this study was to conceptually replicate the findings of study 1a

using a slightly different class of categorization decisions, category inclusion decisions, which require a decision maker to judge whether or not a stimulus object belongs to a target category. If previous exposure to narrow or broad categorizations affects how carefully consumers process information, it should also affect the strictness of category inclusion criteria, and the number of objects included in a target category.

## Method

Our stimuli for this study were 6 faces that constituted a race continuum of Chinese-Caucasian, created using a morphing program (Corneille, Huart, Becquart, and Brédart 2004). Participants were sequentially presented with faces lying at various locations on this mixed-race continuum such that the first face they saw was a typical Chinese face and the sixth face was a typical Caucasian face (See figure 2, second panel).

Participants were 29 undergraduates (13 Caucasian, 6 Chinese, 10 of other ethnic origin) who received partial course credit for their participation. Exposure to broad versus narrow categorizations was manipulated as in study 1a. Participants next were told to move on to a second, unrelated face classification study. In this study participants were exposed to the faces, one at a time. As each face appeared on the screen, participants were asked to mark one of the two possible response options, “This is a Chinese face” or “I am not sure.” If a participant selected the first option, she was presented with the next face on the continuum, which possessed slightly less Chinese and slightly more Caucasian characteristics. The task was terminated at the point when the participant selected the second response alternative.

The key dependent variable was the number of faces that the participant was willing to include in the category, prior to becoming uncertain. As the face on the screen changes

gradually, from a typical Chinese face to a typical Caucasian face, multiple factors account for this change (e.g., eyes, eyebrows, lips, forehead, etc.). We therefore expected participants who were exposed to narrow (broad) categorizations in the first task to be more strict (lenient) in their category inclusion decisions, employing multiple (minimal) criterion to determine whether or not a face should belong to the category “Chinese,” and consequently to include a fewer (greater) number of racially ambiguous faces into the category “Chinese.”

## Results

Since people are better at recognizing faces from their own, as opposed to other, ethnic groups (e.g., see Sporer 2001), we submitted the data to a 2 (Prior Context: Broad, Narrow) x 3 (ethnicity: Caucasian, Chinese and other) ANOVA. The analysis revealed neither a significant main effect of ethnicity ( $F(1, 23) = 1.37, p = .273$ ), nor a significant interaction ( $F(1, 23) = 1.61, p = .222$ ), so the data were collapsed across the levels of ethnicity.

A one-way ANOVA conducted on the number of faces included in the category “Chinese,” revealed a significant effect of the prior context manipulation. As predicted, participants in the Broad condition accepted a greater number of faces to be Chinese before expressing their uncertainty, in comparison to participants in the Narrow condition ( $M_{\text{NARROW}} = 2.53, M_{\text{BROAD}} = 3.33; F(1, 28) = 4.62, p = .040$ ).

## Discussion

Lending support to H1b, study 1b demonstrates that prior exposure to broad versus narrow categorizations can significantly affect a subsequent and unrelated category inclusion decision. These results could also have implications in reducing stereotyping, since it appears

that our manipulation encouraged decision makers to individuate the presented faces.

## **STUDY 2: NEW PRODUCTS**

This study aims to demonstrate that previously encountered taxonomies not only affect categorization-related tasks, but more generally affect object evaluations, in this case consumers' new product evaluations. If participants in the Broad condition consider new products primarily in terms of their innovativeness, they should evaluate new products more favorably than the participants in the Narrow condition, who are more likely to also consider the risks associated with these products (H2). We also test whether participants in the Broad and Narrow conditions have dissimilar reactions to how new, or how different, they perceive a new product to be from existing products (H3).

### Method

Fifty-four undergraduate students participated in the study in exchange for partial course credit. Participants were randomly assigned to either the narrow or the broad context condition as in previous studies. They then moved on to an ostensibly unrelated new product study.

Participants were shown a print advertisement about the “Sony SRS-RF90RK Wireless Speaker System,” which provided the specifications of the product. Following the ad, the participants were presented with a summary expert evaluation stating that the product provided a 10% improvement over the existing industry standard with its innovative wireless technology and great design; however consumers were also warned that there was a 5% probability of failure in signal transmission, due to the immature technology.<sup>5</sup>

Next participants responded to several dependent and process measures on 100-point

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<sup>5</sup> We used a 2 to 1 ratio based on empirical studies of loss aversion (Tversky and Kahneman 1991).

slider scales. Participants first indicated how different they perceived the new product to be from existing products (similar to existing brands/different from existing brands). They then indicated their overall attitude towards the product (disliked it very much/liked it very much). Next, they rated their intentions to buy the product, if it were to be made available at a reasonable price (would definitely not consider buying it/would definitely consider buying it). We also recorded study completion time and gender.

## Results

There was no difference across conditions in the total time participants took to complete the study or in gender composition. The results of a series of one-way ANOVAs revealed a significant effect of the prior context manipulation on all variables of interest. Supporting H2, compared to those in the Narrow condition, participants in the Broad condition had more favorable attitudes toward the new product ( $M_{\text{BROAD}} = 73.40$ ,  $M_{\text{NARROW}} = 64.59$ ;  $F(1, 52) = 4.28$ ,  $p = .04$ ) and indicated a greater intention to buy the product ( $M_{\text{BROAD}} = 68.96$ ,  $M_{\text{NARROW}} = 54.52$ ;  $F(1, 52) = 6.24$ ,  $p = .02$ ). In aggregate, participants in the two conditions did not differ in terms of how different they perceived the wireless speakers to be from existing brands ( $F(1, 52) < 1$ ). To see whether difference perceptions moderate the relationship between prior context and attitudes (H3), we created a median split on the perceived difference variable. A 2 (Prior Context: Narrow, Broad) x 2 (Perceived Difference: Low, High) ANOVA on the attitude measure revealed a main effect of the prior context manipulation ( $F(1, 50) = 4.18$ ,  $p = .05$ ), and a main effect of difference perceptions ( $F(1, 50) = 7.13$ ,  $p = .01$ ), qualified by a two-way interaction ( $F(1, 50) = 4.41$ ,  $p = .04$ ), supporting H3. Participants in the Broad condition had more favorable attitudes towards the new product when they perceived it to be more different

from existing products ( $M_{\text{HIGH}} = 82.54$ ) than when they perceived it to be less different ( $M_{\text{LOW}} = 63.50$ ,  $F(1,50) = 10.89$ ,  $p = .00$ ). In contrast, in the Narrow condition, attitudes did not change with difference perceptions ( $M_{\text{HIGH}} = 66.00$ ,  $M_{\text{LOW}} = 63.72$ ;  $F(1,50) = .17$ ,  $p = .68$ ) (see figure 2, bottom panel). Difference perceptions moderated the relationship between prior context and purchase intentions in a similar way.

These results suggest that the broad or narrow context manipulation altered the way consumers interpret the differences they perceive. For a really new product that is perceived to be different from existing products, exposure to broad categorizations in a previous, unrelated context lead to greater purchase intentions for the product. In contrast, exposure to narrow categorizations rendered the participants less comfortable with the differences they perceived, and as a result, less willing to purchase the product.

## Discussion

Study 2 provides strong support for H2. Participants had more favorable evaluations for a new product after viewing a broadly (versus narrowly) categorized decision context. We also find support for the moderating role of difference perceptions (H3). Participants in the Broad condition evaluated the new product more favorably as they perceived it to be more different. However, evaluations of those in the Narrow condition did not covary with their difference perceptions. Studies 3-5 were designed to shed light on the processes driving these effects. In these studies, to provide converging evidence that the source of these effects is differential consideration of innovation and risk dimensions, we use a variety of measures (i.e., consideration, weights, allocation of weights, bipolar measures of self-reported focus).

### **STUDY 3: CONSIDERATION OF INNOVATION AND RISK**

We hypothesize that those in the Broad condition will construe a highly different new product to be highly innovative, whereas those in the Narrow condition will construe the same product to be high on both the innovation and risk dimensions. In order to test this, in this study we included measures assessing consumers' consideration of these dimensions. Moreover, to examine the effect of perceived difference more closely, we compared Broad and Narrow participants' reactions towards the new product at low, moderate, and high levels of perceived difference.

#### **Method**

Eighty-eight undergraduate students participated in the study in exchange for partial course credit. After participants completed the prior context manipulation, they indicated their attitudes towards the wireless speakers, their intentions to purchase it if it were to be made available at a reasonable price, and their intentions to purchase it if it were priced 10% higher than similar products on the market. We also included several process measures aimed to assess consideration of the innovation and risk dimensions. We had two items to measure the extent to which participants considered the innovativeness of the new product. Participants indicated how important it was to them that this product provided an improvement over the industry standard. They also indicated the regret they would feel if they decided not to purchase the product, and ended up not benefiting from the technological improvements it offers. We had two similar items to measure the extent to which participants considered the risk (i.e., chance of failure) associated with new product. Participants indicated how important it was to them that with this product, there was a chance of failure in signal transmission. They also indicated how much regret they

would feel if they decided to buy this product, and ended up having problems with signal transmission. Finally, participants responded to four items assessing their mood (bad mood/good mood, sad/happy, depressed/cheerful, annoyed/pleased), and indicated their gender.<sup>6</sup>

## Results

*Attitudes.* We created a three-way split on the perceived difference variable and submitted our dependent variables to 2 (Prior Context: Narrow, Broad) x 3 (Perceived Difference: Low, Moderate, High) ANOVAs. Overall, participants had more positive attitudes toward the product when they perceived it to be more different ( $F(2, 82) = 8.28, p = .00$ ). This effect was qualified by a two way interaction ( $F(2, 82) = 4.18, p = .02$ ). Supporting H3, the results of a linear interaction contrast show that the rate of linear change was different across the two groups ( $F(1, 82) = 7.78, p = .01$ ). In the Broad condition, participants' attitudes became more positive with increasing levels of perceived difference, while in the Narrow condition, attitudes did not vary with perceived difference (see figure 3, top panel). More specifically, in the Broad condition, attitudes became more favorable from low ( $M = 57.32$ ) to moderate ( $M = 76.13; F(1, 82) = 12.12, p = .00$ ), and increased slightly (but not significantly) from moderate to high ( $M = 84.92$ ) perceived difference ( $F(1, 82) = 2.10, p = .15$ ). In contrast, in the Narrow condition attitudes stayed constant across low ( $M = 66.40$ ) to moderate ( $M = 70.00; F(1, 82) = .38, p = .58$ ), and moderate to high ( $M = 70.92$ ) perceived difference ( $F(1, 82) = .02, p = .88$ ).

The differential rate of responsiveness lead to preference reversals across the two conditions at different levels of perceived difference. When the perceived difference was low, participants in the Broad condition had marginally less favorable attitudes than those of the

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<sup>6</sup> We included these measures as covariates in this and all subsequent studies. In all studies, conditions did not differ in terms of gender, mood, or total completion time; therefore these variables will not be discussed further.

participants in the Narrow condition ( $F(1, 82) = 2.83, p = .097$ ). At moderate levels of perceived difference, there was no significant difference between the two groups ( $F(1, 82) = 1.11, p = .30$ ). When the perceived difference was high, participants had more favorable attitudes in the Broad condition than the Narrow condition ( $F(1, 82) = 4.99, p = .03$ ). This pattern of results held for all of our dependent variables.

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*Consideration of innovation and risk.* The two items used to measure consideration of innovation ( $r = .22, p = .04$ ) and the two used to measure consideration of risk ( $r = .48, p = .00$ ) correlated significantly with each other, and were therefore combined to form two indices. An ANOVA on the innovation index revealed a two-way interaction. In the Narrow condition, consideration of innovation stayed constant across levels of perceived difference, while in the Broad condition consideration of innovation increased as participants perceived the new product to be more different (planned interaction contrast:  $F(1, 82) = 6.92, p = .01$ ). A similar analysis on the risk index revealed a two-way interaction ( $F(2, 82) = 6.11, p = .00$ ). In the Narrow condition, consideration of risk stayed constant across levels of perceived difference. However in the Broad condition, consideration of risk declined as participants perceived the product to be more different (planned interaction contrast:  $F(1, 82) = 9.06, p = .00$ ) (see figure 3, bottom panel). Together these results provide support for H4.

## Discussion

The results of this study replicate our findings from study 2 and provide further support for the process explanation that we put forward in H4. Participants in the Broad condition had

more favorable evaluations of the new product because of they considered the more salient innovation dimension more than the less salient risk dimension. Those in the Narrow condition on the other hand, appeared to consider both the more salient innovation dimension and the less salient risk dimension equally. Although the current study provides support for this process explanation, it tests our predictions only in domains where innovation is more salient than risk. If our process explanation is true then we should also be able to find parallel effects in a domain where risk is more salient than innovation. To test this prediction, in the next study we vary the relative salience of risk and innovation dimensions by manipulating the type of product.

#### **STUDY 4: MANIPULATING PRODUCT DOMAIN**

In the last two studies where innovation was more salient, preferences in the Broad condition were primarily driven by assessments of the innovativeness of the new product, while participants in the Narrow condition considered both innovation and risk. We predict that in domains where product risk is more salient such as new medical treatments, preferences of participants in the Broad condition will be driven primarily by assessments of risk. Thus we expect their preferences to become negative as they perceive the new product to be more different, and therefore, riskier. On the other hand, we expect participants in the Narrow condition to factor both innovation and risk dimensions into their evaluation regardless of the product context, and their preferences for the new product to be relatively invariant across different levels of perceived difference (H3). In order to test our predictions, in study 4, we use two different product domains; one where the salient dimension of the decision is innovation, the other where the salient dimension is risk. We also use a different, more direct measure to assess participants' consideration of innovation and risk: we ask them to allocate weights across factors

according to the importance they play in their evaluations. Moreover in this study, rather than measuring difference perceptions, we manipulate them.

## Method

Seventy-one undergraduate students participated in the study in exchange for partial course credit. We had a 2 (Prior Context: Narrow, Broad) x 2 (Level of Difference: Low, High) x 2 (Product Domain: Innovation, Risk) mixed design, where we manipulated product domain within subject. As in previous studies, after completing the context manipulation, participants moved on to an ostensibly unrelated study about new products. Based on the results of a pretest, we operationalized product domain by using two different product categories, and we used two real products within each category to manipulate levels of difference. Participants who were assigned to the low level of difference condition evaluated a low innovation product and a low risk product, whereas participants assigned to the high level of difference condition evaluated a high innovation product and a high risk product.

Stimuli selection was based on the results of a pretest conducted on a separate group of participants ( $N = 30$ ). We chose laptop computers as the product category in the innovation domain. Borrowing from Hoeffler, Moreau, and Kubowicz Malhotra (2006), and verified by our pretest results, we used the IBM ThinkPad as the low difference product and the IBM TransNote as the high difference product in the innovation domain. The IBM ThinkPad was described as an innovatively designed laptop featuring a flip touch screen, which could be used in a raised or in a flat position. The IBM TransNote was described on the same flip touch screen features, but also as a tablet PC that could capture and store handwritten information.

We chose tooth whiteners as the product category in the risk domain. Although

consumers would naturally consider the innovativeness of tooth whiteners, we expect their evaluations to be strongly affected by safety concerns (as indicated in the pretest). Participants saw a picture of the product, followed by a brief description. In the risk domain, we used the Dr. Fresh Absolute White as the low difference product, which was described as a paint-on whitening gel, which should stay on teeth overnight. We used the WhiteLight Tooth Whitening System as the high difference product, which was described as a whitening gel applied in dental trays with a light transmitter embedded in the dental trays to speed up the bleaching process.

Each participant responded to the same set of items twice: first for the innovation product, and next for the risk product. Participants indicated how similar or different they thought each product was from other products on the market. Next, they indicated their attitudes toward the product, relative to other products on the market, on a bipolar scale anchored by “inferior” and “superior.” As a second check on the effectiveness of the chosen domains, we measured perceptions of innovativeness with two items assessing how innovative and how unique they thought the product was. We measured perceptions of risk with two items assessing how risky the product was, and how serious the consequences would be if the product failed to perform well. Finally, to assess consideration of innovation and risk in participants’ evaluations, we asked participants to allocate 100 points across three factors according to their relative weight in their evaluation of the product. These factors were “How innovative the product is,” “How risky it is to try or use the product,” and “Other factors.” Next, participants were shown the risk domain product, and they responded to the same set of items about this product.

## Results

*Manipulation checks.* The two items measuring innovation perceptions were highly correlated in the innovation context ( $r = .77$ ,  $p = .00$ ) and in the risk context ( $r = .84$ ,  $p = .00$ ),

and therefore they were combined into a perceived innovation scale. Similarly, the two items measuring risk perceptions were highly correlated in the innovation context ( $r = .54, p = .00$ ) and in the risk context ( $r = .70, p = .00$ ), therefore we combined them in a perceived risk scale. The perceived innovation scales in the two contexts were submitted to a 2 (Prior Context: Narrow, Broad) x 2 (Level of Difference: Low, High) x 2 (Product Domain: Innovation, Risk) mixed ANOVA. As expected, the results revealed a main effect of product domain, indicating that participants perceived the products in the innovation domain (i.e., laptops) to be more innovative than the products in the risk domain (i.e., tooth whiteners) ( $M_{\text{INNOVATION}} = 65.70, M_{\text{RISK}} = 48.55; F(1, 67) = 24.15, p = .00$ ). There was also a main effect of Level of Difference, suggesting that participants perceived high-difference products to be more innovative than low-difference products in both innovation and risk domains ( $M_{\text{LOW}} = 46.76, M_{\text{HIGH}} = 67.49; F(1, 67) = 38.41, p = .00$ ). No other effects reached significance. When we conducted a similar analysis on the perceived risk scale, the main effect of product domain was significant, suggesting that participants perceived the products in the risk domain (i.e., tooth whiteners) to be more risky than those in the innovation context (i.e., laptops) ( $M_{\text{INNOVATION}} = 49.55, M_{\text{RISK}} = 57.26; F(1, 67) = 3.72, p = .05$ ). There was also a main effect of Level of Difference, suggesting that participants perceived high-difference products to be more risky than low-difference products in both innovation and risk domains ( $M_{\text{LOW}} = 43.63, M_{\text{HIGH}} = 63.19; F(1, 67) = 25.10, p = .00$ ). No other effects reached significance. These measures serve as stimulus checks and confirm the results of the pretest.

*Attitudes.* We submitted participants' attitudes to a similar analysis. There was a significant main effect of product domain, suggesting that overall, participants had more favorable attitudes towards the innovation domain products than the risk domain products

( $M_{\text{INNOVATION}} = 64.24$ ,  $M_{\text{RISK}} = 50.67$ ;  $F(1, 67) = 21.05$ ,  $p = .00$ ). The two-way interaction between domain and perceived difference was also significant ( $F(1, 67) = 6.85$ ,  $p = .01$ ). As we would expect, participants' attitudes were more favorable for the high innovation product than for the low innovation product, but they were less favorable for the high risk product than for the low risk product, indicative of a general preference for innovative products and risk aversion. Most importantly, these effects were qualified by a three-way interaction ( $F(1, 67) = 8.88$ ,  $p = .00$ ). For the innovation domain (laptops), participants' attitudes became more *positive* with higher levels of difference in the Broad condition ( $F(1, 67) = 11.48$ ,  $p = .00$ ), whereas the attitudes did not change across levels of difference in the Narrow condition ( $F(1, 67) = .03$ ,  $p = .87$ ) (see figure 4, top panel). However, for the risk domain (tooth whiteners), attitudes became more *negative* with higher levels of difference in the Broad condition ( $F(1, 67) = 4.90$ ,  $p = .03$ ), and once again, attitudes did not change across levels of difference in the Narrow condition ( $F(1, 67) = .37$ ,  $p = .54$ ). These results strongly support H3.

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 Insert figure 4 about here  
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*Consideration of innovation and risk.* To test H4, we conducted ANOVAs on the weights participants assigned to the innovation and risk dimensions. The results for the innovation weight revealed an expected main effect of domain, where participants assigned greater weights to the innovation dimension when evaluating products in an innovation domain than in a risk domain ( $F(1, 67) = 39.16$ ,  $p = .00$ ). This main effect was qualified by a two-way interaction between domain and level of difference ( $F(1, 67) = 6.21$ ,  $p = .02$ ), and a three-way interaction  $F(1, 67) = 6.79$ ,  $p = .01$ ). For the innovation domain (i.e., laptops), participants in the Broad condition assigned higher weights to the innovation dimension with increasing levels of difference ( $F(1,$

67) = 6.50,  $p = .01$ ) (see figure 4, bottom panel). On the contrary, participants in the Narrow condition assigned marginally lower weights to innovation with increasing levels of difference ( $F(1, 67) = 3.92, p = .05$ ). For the risk domain (i.e., teeth whiteners), participants in the Broad condition assigned marginally lower weights to innovation with increasing levels of difference ( $F(1, 67) = 3.33, p = .07$ ). However, for the participants in the Narrow condition, innovation weights did not change across levels of difference ( $F(1, 67) = 2.36, p = .13$ ).

The comparable analysis for the risk weight revealed a predicted main effect of product domain, where participants assigned greater weights to the risk dimension when evaluating products in a risk (i.e., teeth whiteners) than in an innovation (i.e., laptops) domain ( $F(1, 67) = 34.46, p = .00$ ). This main effect was qualified by a two-way interaction between domain and level of difference ( $F(1, 67) = 15.97, p = .00$ ), and a three-way interaction  $F(1, 67) = 5.24, p = .03$ ). In the risk domain, participants in the Broad condition assigned higher weights to risk with increasing levels of difference ( $F(1, 67) = 13.24, p = .00$ ). However, in the Narrow condition risk weights did not change across levels of difference ( $F(1, 67) = 1.92, p = .17$ ). In the innovation domain, risk weights were constant across levels of difference in both Broad ( $F(1, 67) = 1.86, p = .18$ ) and Narrow conditions ( $F(1, 67) = .00, p = .97$ ).<sup>7</sup> Together these results support H4.

## Discussion

The analyses of the attitude measure and evaluation weights support our hypothesized process explanation (H4). The difference across conditions in consumers' evaluations of a new product appears to be driven by their differential consideration of information. The current study

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<sup>7</sup> We ran the same model on the weight assigned to "other factors." The interaction between prior context and level of difference ( $F(1, 67) = 6.165, p = .016$ ) revealed that in both contexts, at higher levels of difference, those in the Broad condition assigned lower weights to other factors ( $F(1, 67) = 5.508, p = .022$ ) than they did at lower levels of difference. However, the weights of those in the Narrow condition did not change across levels of difference ( $F(1, 67) = 1.241, p = .269$ ).

demonstrates the effect in both innovation-dominant and risk-dominant contexts. One limitation of this study, however, is that we used different product categories to manipulate the relative salience of innovation and risk and of course other factors may vary with product category. The next study addresses this limitation.

### **STUDY 5: MANIPULATING FOCUS**

In this study, we held the product category constant, and used task instructions to manipulate the relative salience of risk versus innovativeness. Specifically, we provided participants task instructions that emphasized the importance of considering either the innovativeness or the risk associated with new products. In the Broad condition, we expect evaluations to be more positive when the focus is manipulated to be on innovation versus risk. In contrast, in the Narrow condition evaluations should not vary with this manipulation.

#### Method

Ninety-five undergraduate students participated in the study in exchange for partial course credit. Participants were randomly assigned to one of the cells in a 2 (Prior Context: Narrow, Broad) x 2 (Focus: Innovation, Risk) between subjects design. After completing the context manipulation, participants moved on to the new product study. In the beginning of the study, those in the [innovation / risk] focus condition were told: “As you evaluate the product, please keep in mind that *new products differ in their degree of [innovativeness / risk they pose to consumers]*. Some new products are [really novel and they offer substantial improvements over the existing products in the market, whereas other new products may be less novel and offer a limited amount of improvement over existing products / more risky than existing products in the

market and run a high risk of product failure, whereas other new products may pose considerably less risk].”

Next, participants were shown the advertisement for the wireless speakers used in studies 2 and 3, and indicated their relative attitude (inferior to existing brands/superior to existing brands) toward the product. They next responded to a question assessing their relative consideration of risk and innovation dimensions as they were evaluating the product, on a bipolar scale (the degree of risk it posed / the degree of improvement it offered).

## Results

*Attitudes.* All dependent measures were submitted to a 2 (Prior Context: Narrow, Broad) x 2 (Focus: Innovation, Risk) ANOVA. For the attitude measure, only the predicted two-way interaction ( $F(1, 91) = 5.41, p = .02$ ) between context and focus was significant (see figure 5, top panel). Participants in the Broad condition had more favorable attitudes when they were directed to focus on innovation ( $M_{\text{INNOVATION}} = 69.20$ ) than on risk ( $M_{\text{RISK}} = 58.13; F(1, 91) = 4.38, p = .00$ ), while in the Narrow condition attitudes stayed constant ( $M_{\text{INNOVATION}} = 58.04, M_{\text{RISK}} = 63.58; F(1, 91) = 1.33, p = .30$ ).

*Consideration of innovation and risk.* There was a significant two-way interaction between context and focus ( $F(1, 91) = 5.85, p = .02$ ; see figure 5, bottom panel) on the bipolar weight measure. Participants in the Broad condition placed more weight on innovation when they were asked to focus on innovation ( $M_{\text{INNOVATION}} = 79.05$ ) versus risk ( $M_{\text{RISK}} = 65.48; F(1, 91) = 5.19, p = .03$ ), while in the Narrow condition weights stayed constant regardless of the focus manipulation ( $M_{\text{INNOVATION}} = 67.04, M_{\text{RISK}} = 72.92; F(1, 91) = 1.19, p = .28$ ). This provides strong support for the process we hypothesized in H4.

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## Discussion

Data from the last four studies provide consistent evidence that participants who have previously been exposed to a broadly categorized context are more easily influenced by salient cues in the product environment, whereas participants who have previously been exposed to a narrowly categorized context process new product information more carefully. The different measures we used in studies 3-5 to assess participants' consideration of different dimensions provide converging evidence that following exposure to narrow categorizations, participants more carefully process information while considering new products. In study 6, we broaden our investigation to examine whether this vigilance extends to a more general tendency to process any product-related information in a careful manner.

## **STUDY 6: SUSCEPTIBILITY TO HEURISTICS**

If, in fact, previous exposure to a narrowly (versus broadly) categorized context renders consumers generally more careful processors, and they consider a greater number of factors in all their judgments, then they should also be less susceptible to certain types of biases in their decision making. We test this prediction using a very well-documented consumer heuristic: the *frequency heuristic* (Alba and Marmorstein 1987). When consumers do not have the opportunity to engage in careful, stimulus-based processing, they are often influenced by the mere number of dimensions on which one option outperforms another, which may lead to erroneous product evaluations and choices, since this rule ignores attribute importance. We predict that in such memory-based conditions encouraging the use of the frequency heuristic, consumers'

evaluations should be more likely to reflect the use of this heuristic if they have previously been exposed to a broadly categorized context. In contrast, previous exposure to a narrowly categorized context should lead to comparatively less biased evaluations, based on a more careful consideration of not only the number of attributes on which a brand outperforms the other brand, but also the importance of these attributes.

## Method

Forty-seven undergraduate students participated in the experiment in exchange for partial course credit. Participants were randomly assigned to one of the four cells of a 2 (Previous Context: Narrow, Broad) x 2 (Order: Quality Brand First, Frequency Brand First) design. After completing the context manipulation, participants moved on to a seemingly unrelated product evaluation task.

We used a methodology similar to Alba and Marmorstein (1987), experiment 2. The stimuli consisted of two cars, described on the same set of 12 attributes. These attributes were selected based on a pretest; three of them were important attributes (engine power, fuel economy, safety features), and nine were relatively unimportant attributes (seat comfort, trunk capacity, chrome trim, cabin space, towing ability, fit and finish, sun roof, rear spoiler, controls and displays). One brand (frequency brand) was described as “good” on the unimportant and “average” on the important attributes, and the other brand (quality brand) was described as “average” on the unimportant and “good” on the important attributes. Thus, the frequency brand was superior to the quality brand on nine less unimportant attributes, while the quality brand was superior to the frequency brand on three less important attributes.

We expect that consumers susceptible to the frequency heuristic would merely “count”

the number of attributes on which one brand is better than the other one, ignore the relative importance of these attributes, and invariably prefer the frequency brand. Past research demonstrates the strength of this effect (for a review see Alba 2002), with the relative preference for the frequency brand going up to as high as 83 percent in memory-based decisions (study 2, Alba and Marmorstein 1987).

We counterbalanced the order of brand presentation, but in both orders, the first brand presented was called Brand *A*, and the second was called Brand *B*. In the beginning of the task, participants were informed of the presentation format, and were asked to prepare to answer questions regarding the brands. Participants were first shown the name “Brand *A*,” which was followed by the sequential presentation of the 12 attributes, at a rate of 1 second per attribute. The name of each attribute appeared on the screen, along with the description; “good,” or “average.” After they were shown all information on the first brand, a screen informed them that they would now be presented with information on Brand *B*. The same procedure was repeated for the second brand. After both brands were presented, participants completed a brief distractor task. Immediately after this, participants evaluated the two brands on several measures. First, they responded to questions about the first brand they saw (Brand *A*). They rated the brand in terms of overall quality (very low quality/very high quality) and indicated their attitude (disliked it very much/liked it very much). The same set of questions was repeated for the second brand. Participants were then asked to indicate their choice between the two brands. Participants next indicated the number of attributes on which their preferred brand rated better than the other brand, in an open-ended measure. They then stated the extent to which they considered the number of attributes on which one brand fared better than the other one (not at all/very much). Next, participants rated their agreement with the following two statements: “The rate of

presentation was too fast,” and “I had difficulty following all information that was presented to me.” Lastly, participants rated how familiar and how knowledgeable they were about cars.

## Results

All dependent variables were initially submitted to a 2 (Prior Context: Broad, Narrow) x 2 (brand: frequency brand, quality brand) x 2 (order: frequency brand first, quality brand first) mixed design ANOVA, where brand was a within subjects factor. Since none of the main effects or higher order interactions involving the order variable was significant, the data were collapsed across the two levels of this variable. The conditions also did not differ on familiarity or knowledge about cars, difficulty of comprehension, or assessments of presentation speed.

*Attitudes.* The results of a 2 (Previous Context: Narrow, Broad) x 2 (Brand: Frequency, Quality) mixed ANOVA on the attitude measure show the expected main effect of the Brand variable. Overall, participants stated a higher liking for the frequency brand than for the quality brand ( $M_{\text{FREQUENCY}} = 68.32$ ,  $M_{\text{QUALITY}} = 55.06$ ;  $F(1, 45) = 24.34$ ,  $p = .00$ ). This main effect was qualified by a two-way interaction between Context and Brand ( $F(1, 45) = 13.38$ ,  $p = .00$ ), indicating that in the Broad condition, participants liked the frequency brand significantly more than the quality brand ( $M_{\text{FREQUENCY}} = 71.92$ ,  $M_{\text{QUALITY}} = 49.88$ ;  $F(1, 45) = 39.42$ ,  $p = .00$ ), while in the Narrow condition, there was no significant difference in attitudes for the two brands ( $M_{\text{FREQUENCY}} = 64.23$ ,  $M_{\text{QUALITY}} = 60.95$ ;  $F(1, 45) = .76$ ,  $p = .39$ ). The results on the quality measures followed a similar pattern.<sup>8</sup>

*Brand choice.* When they were asked to make a choice between the two brands, a majority of the participants in the Broad condition chose the frequency brand ( $\hat{\pi}_{\text{FREQUENCY}} =$

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<sup>8</sup> Main effect: ( $M_{\text{FREQ}} = 69.81$ ,  $M_{\text{QUAL}} = 55.49$ ;  $F(1, 45) = 28.04$ ,  $p = .000$ ); two-way interaction: ( $F(1, 45) = 5.24$ ,  $p = .027$ ). Difference between ratings was much smaller for Narrows ( $M_{\text{FREQ}} = 67.41$ ,  $M_{\text{QUAL}} = 59.50$ ;  $F(1, 45) = 4.25$ ,  $p = .045$ ), than for Broads ( $M_{\text{FREQ}} = 71.92$ ,  $M_{\text{QUAL}} = 51.96$ ;  $F(1, 45) = 30.73$ ,  $p = .000$ ).

.88), but those in the Narrow condition were equally likely to choose the two brands ( $\hat{\pi}_{\text{FREQUENCY}} = .55$ ; Pearson Chi-Square = 6.55,  $p = .01$ ).

*Process measures.* We asked participants to recall the number of attributes on which their preferred brand rated better than the other brand. A 2 (Previous Context: Narrow, Broad) ANOVA on this measure yielded a marginally significant effect of Context ( $M_{\text{BROAD}} = 5.64$ ,  $M_{\text{NARROW}} = 4.59$ ;  $F(1, 45) = 2.77$ ,  $p = .10$ ). When asked about the extent to which they considered the number of attributes on which one brand fared better than the other, participants in the Broad condition indicated considering this frequency factor to a greater extent than those in the Narrow condition ( $M_{\text{BROAD}} = 74.24$ ,  $M_{\text{NARROW}} = 54.68$ ;  $F(1, 45) = 13.30$ ,  $p = .00$ ). Thus the data provide strong support for H5.

## GENERAL DISCUSSION

Across six studies, we demonstrate that incidental exposure to broad versus narrow categorizations significantly alters decision makers' information processing styles. Participants who were exposed to narrow categories adopt a more careful processing orientation and those who were exposed to broad categories adopt a more lenient processing orientation in a subsequent, unrelated decision context. These differences shape several aspects of consumer decision making, such as the preferred level of conceptual complexity and the number of dimensions used in subsequent tasks. We show that prior exposure to broad or narrow categorizations affects basic cognitive behaviors (e.g., grouping), substantive consumer decisions (e.g., new product adoptions), and general consumer decision making (e.g., susceptibility to heuristics). The results show that decision makers exposed to broad (narrow) categorizations created fewer (more) categories in a grouping task, had more (less) favorable attitudes for new

products primarily associated with innovation (risk), and became more (less) susceptible to context effects and decision heuristics.

It is important to note that across seven studies, Broad and Narrow context conditions were not associated with any differences in measures of mood, completion time, and product familiarity and knowledge. This helps us rule out many other potential explanations for our findings, such as a depletion-based account or an expertise-based account. Another possibility is that our context manipulation may be encouraging consumers in the Broad condition to generally commit an acquiescence bias. However, our results show that in the Broad condition, attitudes can become more negative with increasing difference perceptions (study 4). Therefore, product adoption decisions depend on whether the salient cue in the environment is positive (innovation) or negative (risk).

### **Theoretical Contribution**

There has been extensive research demonstrating that the way in which products are categorized in a decision context can influence consumers' reactions in the same decision context. In contrast, in this paper we show how exposure to different types of external categorizations in one decision environment can affect consumers' information processing and evaluations in a subsequent and unrelated decision environment. Our findings show how merely exposing consumers to broad or narrow external categorizations can lead to a wide array of downstream consequences in a subsequent context ranging from unconscious, basic cognitive operations such as categorization and category inclusion decisions to conscious, higher level decisions and information processing styles. In this sense, we show that categorization can be conceptualized as a mindset, spilling over from one context to another.

One possible reason why the prior categorization task might be having effects on such a broad set of downstream consumer-related decisions is that it might be altering the width of conceptual categories that consumers prefer to use. In the previous literature, category width has been conceptualized as an individual difference variable (Pettigrew 1958). Our findings hint at the possibility that it might also be possible to situationally manipulate category width, and that doing so might at least in the short run affect a wide range of decisions.

A large body of research has examined the effect of the number of scale points in survey measures on reliability, validity, ease of responding, and the likelihood of responding with an uncertain option (e.g., Cox 1980; Churchill and Peter 1984). Merely responding to a market research survey has been shown to increase subsequent, survey related behavior (Morwitz, Johnson, and Schmittlein 1992). Our research suggests that when a survey scale corresponds to objects or attributes that can be grouped broadly or narrowly, then the number of scale points can affect responses to subsequent survey questions and unrelated evaluations following survey participation. Therefore, the decision of how many scale points to use is may be even more complex than previously thought.

Our results concerning new product evaluations also extend the previous, somewhat conflicting, findings on the effect of congruity on new product evaluations. While some researchers suggest an inverted-U shaped relationship between schema congruity and evaluations (e.g., Meyers-Levy and Tybout 1989), others identify a U-shaped relationship between degree of product novelty and trial probability (e.g., Steenkamp and Gielens 2003). Our findings suggest that exposure to broad-narrow categorizations can moderate the relationship between the degree of new product incongruity, and the attitudes towards the new product, by determining the weight consumers place on benefit and risk dimensions while evaluating new products.

## **Managerial Implications**

In this paper, we focused on two major dimensions that influence new product adoptions: innovation and risk. However, our findings should generalize to other dimensions made salient by marketing actions, which can purposely or inadvertently create broad or narrow groupings. The way products are grouped in stores, in ads, or on web pages can influence how consumers process the information in their immediate environment (e.g., Fox, Ratner, and Lieb 2005; Poynor and Diehl 2007), but our work shows they also affect how consumers process information they come across later. by making certain product dimensions more salient. For example, if yogurts are arranged on a store shelf by flavor, this would make flavor a salient dimension, while grouping by brands would make the brand name more salient. The broad or fine-grained nature of the product arrangements will influence the extent to which consumer focus on the salient and other less salient dimensions while making their purchase decisions.

## **Opportunities for Future Research**

On the surface, our findings seem to suggest that exposure to narrow (versus broad) categorizations lead to normatively better decisions. It is important to note that in our experiments, where the two evaluation dimensions (innovation and risk) were negatively correlated, taking both into consideration was critical for a normatively good decision outcome. In many other situations, however, considering all factors can be detrimental to decision quality. For example, judgments can often be unduly influenced by nondiagnostic information, leading to “dilution-like” effects. Similarly, decision makers may exhibit the conjunction fallacy if they are unable to ignore the vivid description associated with the conjunction event. Selective processing

can also benefit performance in tasks like insight problems, whose solution often requires stepping back and selectively identifying the key piece of information that “breaks the deadlock.” Moreover, under conditions of high task complexity or time pressure, it may be adaptive for a decision maker to use noncompensatory strategies. Future research should examine whether exposure to narrow categorizations, and the resulting tendency to consider and integrate all available information may be detrimental to decision quality in such contexts.

Finally, future research should also explore the implications of our context manipulation in different decision domains, such as evaluations of brand extensions, and mental accounting.

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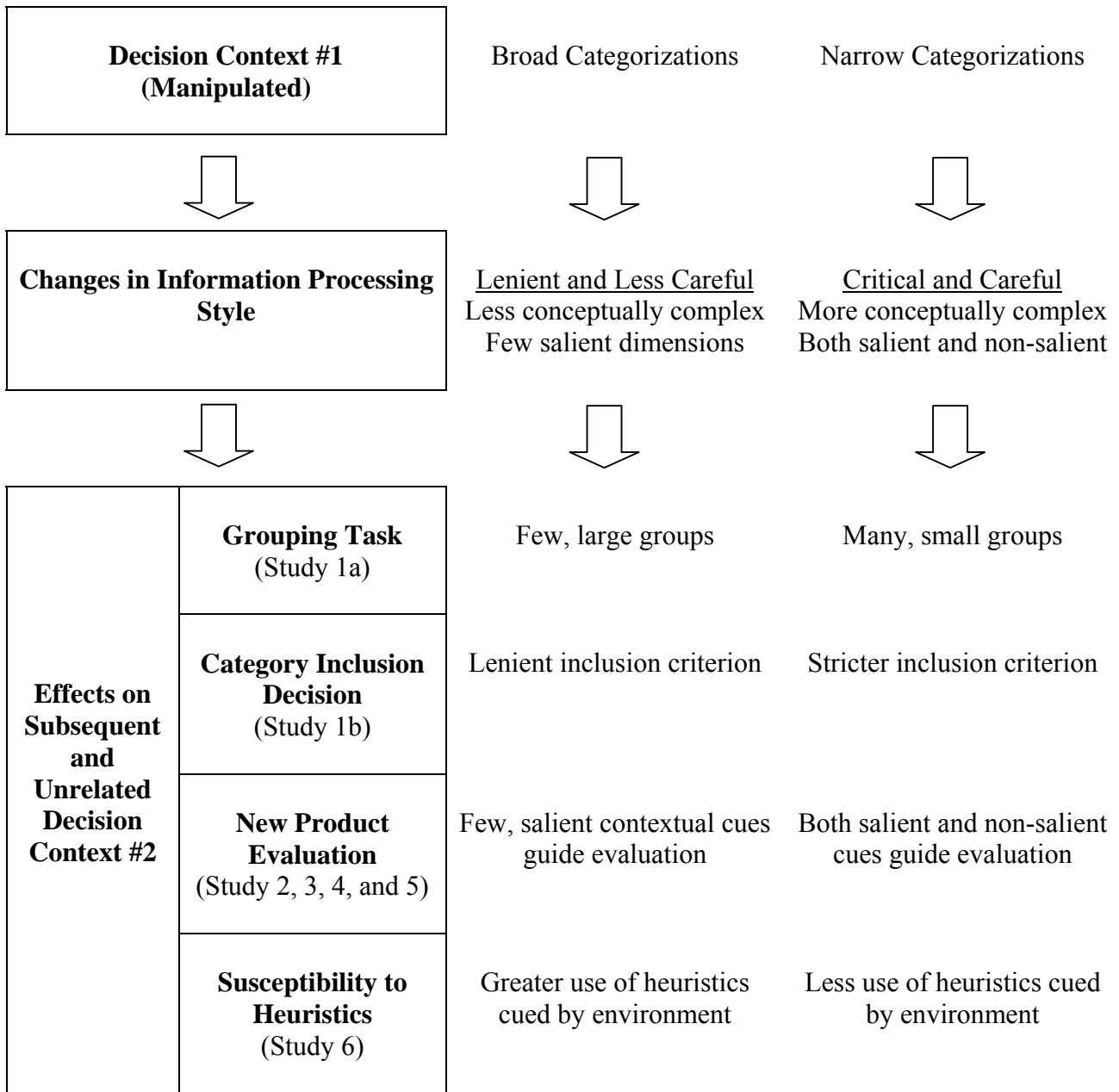
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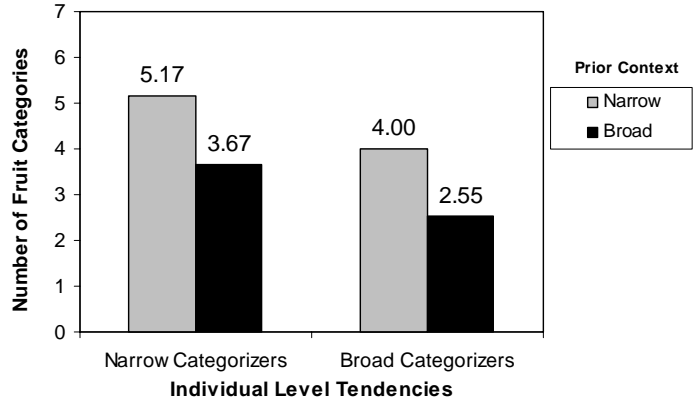
**FIGURE 1**

OVERVIEW OF STUDIES AND SUMMARY OF PROCESSES AND EFFECTS

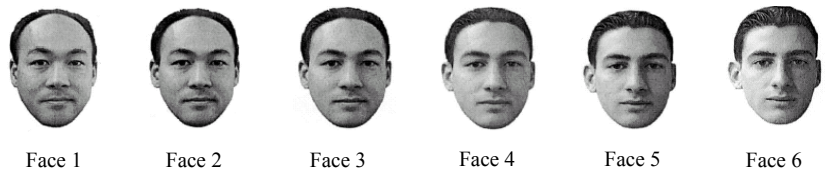


**FIGURE 2**

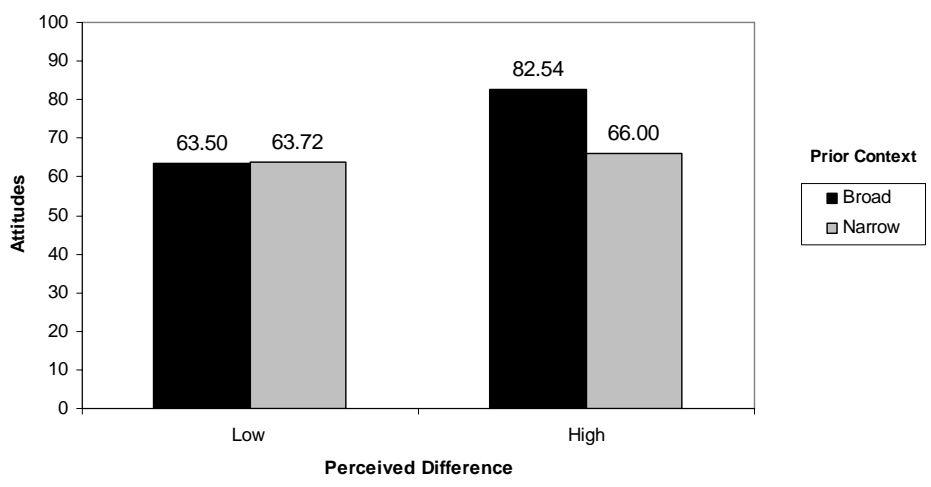
(A) STUDY 1a: NUMBER OF CATEGORIES AS A FUNCTION OF THE PRIOR CONTEXT MANIPULATION AND INDIVIDUAL LEVEL CATEGORY WIDTH



(B) STUDY 1b: FACES IN THE ORDER THEY WERE PRESENTED

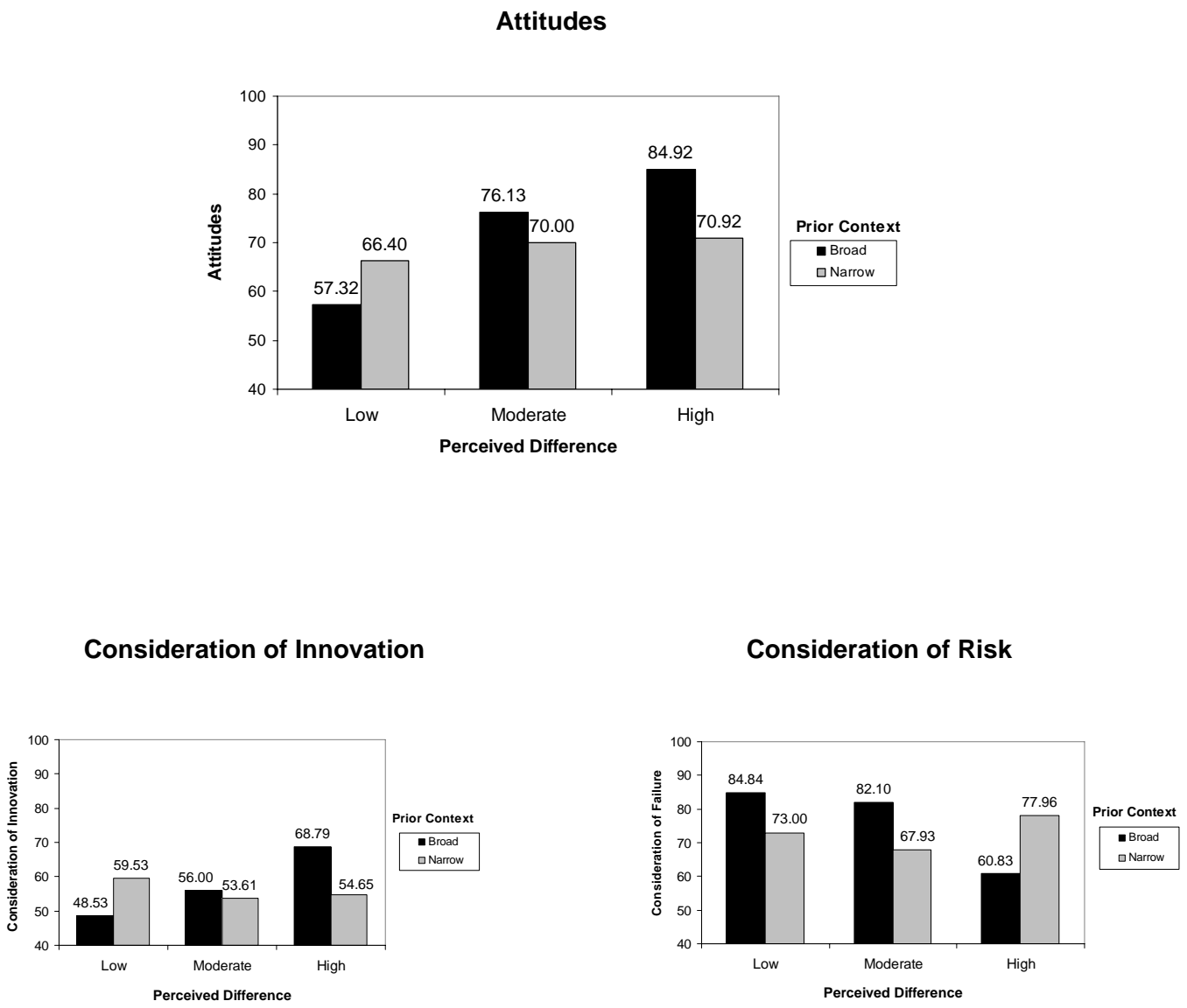


(C) STUDY 2: ATTITUDES TOWARDS WIRELESS SPEAKERS AS A FUNCTION OF THE PRIOR CONTEXT MANIPULATION AND PERCEIVED DIFFERENCE



**FIGURE 3**

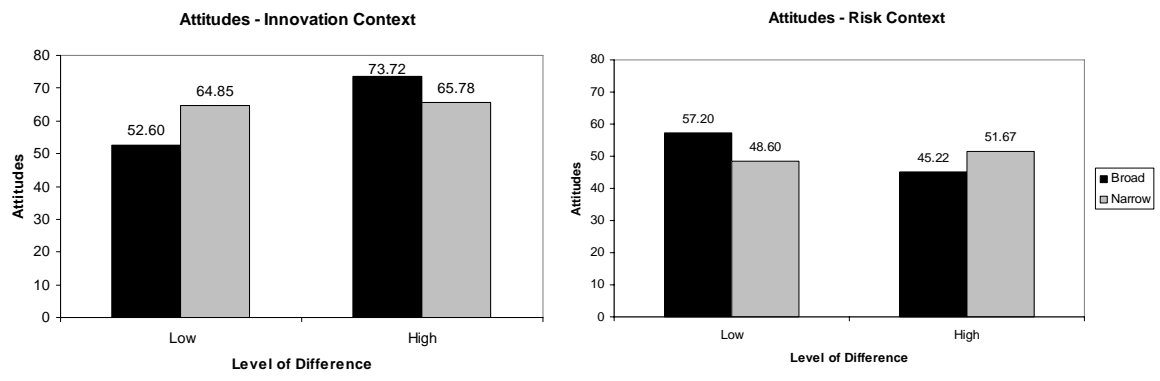
**STUDY 3: THE EFFECTS OF THE PRIOR CONTEXT MANIPULATION AND PERCEIVED DIFFERENCE ON ATTITUDES AND CONSIDERATION OF INNOVATION AND RISK**



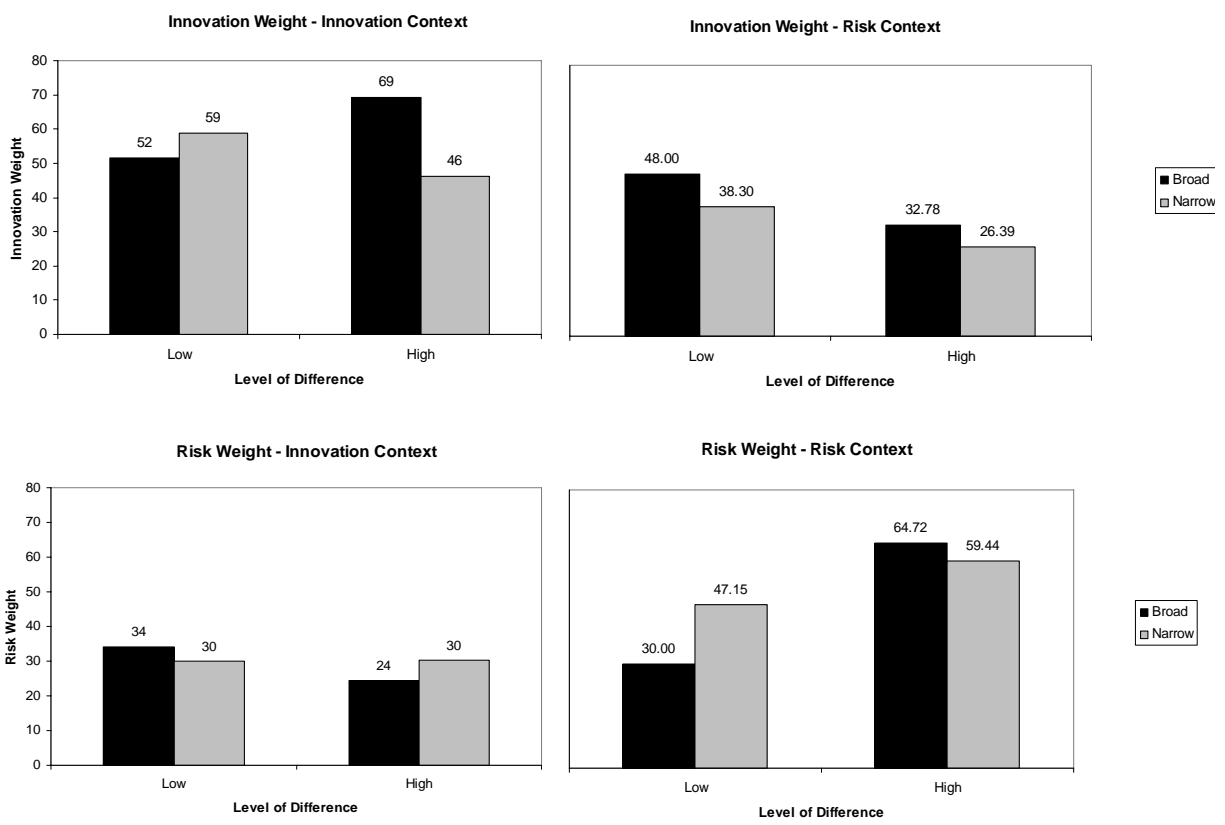
**FIGURE 4**

**STUDY 4: THE EFFECTS OF THE PRIOR CONTEXT MANIPULATION AND PERCEIVED DIFFERENCE ACROSS INNOVATION AND RISK CONTEXTS**

**ATTITUDES**

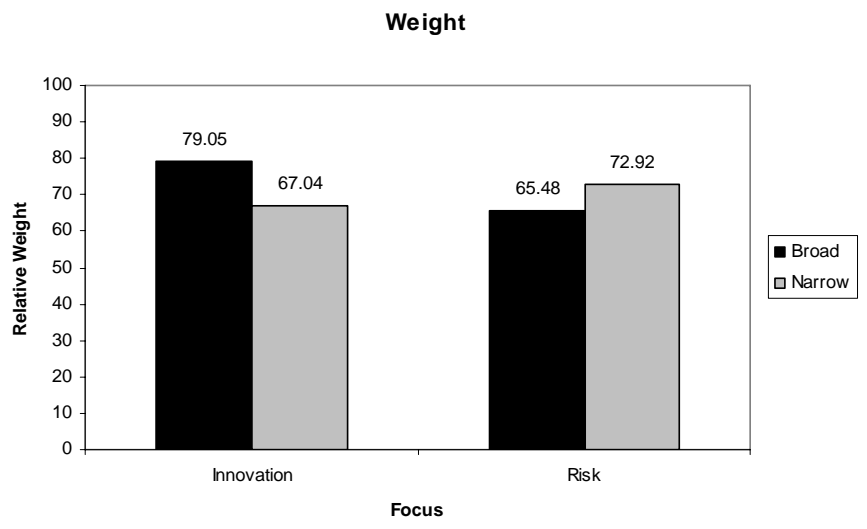
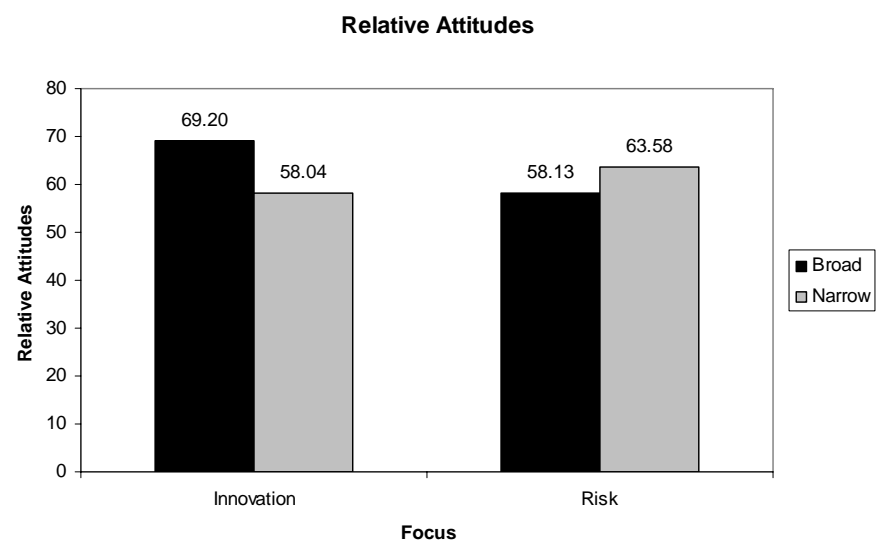


**EVALUATION WEIGHTS**



**FIGURE 5**

**STUDY 5: THE EFFECTS OF PRIOR CONTEXT AND FOCUS MANIPULATIONS ON ATTITUDES AND RELATIVE WEIGHTS**



\* Higher numbers on this scale indicate relatively more weight placed on innovation; lower numbers indicate relatively more weight placed on risk.