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The authors find that exposure to different types of categories or assortments in a task creates a mind-set that changes how consumers process information in subsequent tasks. That is, these mind-sets have a spillover effect that alters consumers' decision making 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 broad assortments or categorizations base their decisions on fewer pieces of information, typically those made salient by the environment. In contrast, consumers previously exposed to narrow assortments or categorizations employ multiple pieces of information, both salient and nonsalient, without exerting any extra effort. Consequently, prior exposure to broad versus narrow categorizations leads to greater susceptibility to some common context effects and to heuristic decision making.

Keywords: categorization, heuristics, new products, mind-set, decision making

Categories Create Mind-Sets: The Effect of Exposure to Broad Versus Narrow Categorizations on Subsequent, Unrelated Decisions

The world consumers encounter comprises a vast collection of objects that can be categorized in various ways. The characteristics of such categories or assortments can significantly influence how consumers perceive their environment and make decisions because of their general 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 feature levels (Simonson, Nowlis, and Lemon 1993), and on the basis of their complements or substitutes (Van Herpen, Diehl, and Poynor 2007). Furthermore, the organization and symmetry of an assortment (Kahn and Wansink 2004) and the congruence between consumer and retailer organization schemes (Morales et al. 2005) affect consumer decisions. These various aspects of externally imposed categories influence important decision outcomes, such as choice, decision difficulty and time, satisfaction with the assortment, and consumption quantity.

Thus, extensive research has demonstrated that how products are categorized influences consumers' reactions in the same decision context. We focus on how exposure to different types of external categorizations in one decision context affects consumers' information processing and evaluations

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in subsequent and unrelated contexts. Although several aspects of a decision context can be studied, we consider whether the context involves many, narrow, or a few broad categorizations. In other words, what is the consequence of being exposed to a decision context with broader categorizations (e.g., DVDs classified as comedy or drama movies) versus narrower categorizations (e.g., DVDs classified as dark comedy, romantic comedy, courtroom drama, or historical drama movies), not on the movie choice itself but rather on unrelated subsequent decisions, such as whether to purchase a new type of candy at the checkout counter? Thus, the main objective of this article is to investigate how exposure to broad versus narrow categorizations in one decision context affects judgments and decisions made in subsequent, unrelated decision contexts.

THEORETICAL FRAMEWORK

The theoretical framework rests on two main propositions. First, exposure to broad versus narrow categories in a decision task will instigate certain information-processing changes. Specifically, exposure to broad (narrow) categories primes decision makers to use relatively few (many) dimensions and/or attributes. Second, this change in information-processing style will spill over to subsequent tasks. Thus, exposure to broad (narrow) categories in one decision task will lead to consideration of relatively few (many) pieces of information even in subsequent and unrelated decisions. We expand further on these principal arguments in the sections that follow.

Exposure to Broad Versus Narrow Categorizations and Changes in Information-Processing Style

We propose that exposure to broad versus narrow categories in a decision task will change how consumers process information. This assertion is not altogether surprising, given that people use categories and concepts as tools to organize information and give meaning to an ever-changing world. Mental representations of concepts change dynamically to facilitate cognitive functions and allow people to adapt to task demands (Barsalou 1993). Indeed, most contextual manipulations capitalize on the notion that situations can strategically instigate compatible cognitive organizations. In particular, we propose that a person exposed to a detailed environment with narrow (versus broad) categories will be cued to the notion that objects differ from one another in many different ways and will fine-tune his or her cognitive apparatus accordingly, using a more multidimensional approach to perceive and evaluate these objects.

Where does the link between exposure to narrow categories and use of multidimensional processing originate? When consumers believe that objects differ on multiple dimensions, they will group them into many, narrow (versus a few, broad) categories because the combination of these dimensions leads to multiple groups. For example, if a consumer who is grouping fruits believes that only sweetness matters, only a few, broad categories will emerge (e.g., sweet versus tart), but if this consumer also considers color, he or she will form many, narrow categories (e.g., red and sweet, red and tart, yellow and sweet, yellow and tart). This association between the use of multiple versus few dimensions and the resultant narrow versus broad categories is strong. Therefore, we posit that a reverse causal relationship

might also hold (e.g., Bargh, Chen, and Burrows 1996; Dijksterhuis and Bargh 2001). Thus, being exposed to narrowly categorized fruits should automatically sensitize, or cue, consumers to the notion that objects differ from one another in many meaningful ways. Such consumers will then be cued to discern and use multiple dimensions in subsequent decisions. In contrast, consumers exposed to broad categorizations will be cued to use fewer dimensions that are made salient by the environment. Although they may be aware of all underlying dimensions, they may not feel the need to act on all of them.

Our specific claim that narrow (versus broad) categorizations cue more (versus less) multidimensional information processing has not, to the best of our knowledge, been demonstrated previously, though some research has suggested that narrow mental representations (i.e., fine-grained) are associated with complex information processing. The individual-level category-width literature shows that narrow equivalence ranges may be associated with a preference for greater dimensionality (Jackson and Messick 1963; Sloane, Gorlow, and Jackson 1963). Linville (1982) shows that targets who have a multidimensional representation (e.g., in-group members) are evaluated in a more complex way than other targets (e.g., out-group members). Park and Lessig (1981) find that low-familiarity (high-familiarity) consumers have a broad (narrow) perceptual category breadth and feel more (less) confident relying on few, nonfunctional attributes, such as price and brand name. The current research differs from this prior work in some important ways. First, we establish a causal connection between narrow mental representations and complexity of thought by situationally manipulating category width instead of using individual-level traits (Jackson and Messick 1963; Sloane, Gorlow, and Jackson 1963) or existing representations that differ in complexity (e.g., Linville 1982; Park and Lessig 1981). Second, we document effects that carry over to unrelated, subsequent decision contexts rather than occurring in the same decision context.

To summarize, we argue that simply being exposed to many, narrow categorizations, as opposed to a few, broad categorizations, should evoke a more complex worldview. Therefore, consumers exposed to narrow (versus broad) categorizations will employ multiple dimensions when processing stimuli because they are now cued to the notion that subtle details on these dimensions may matter. Such multidimensional thinking is often characterized by conceptual complexity (Suedfeld and Coren 1992), which has two major components: differentiation and integration. Differentiation refers to the ability to discern more than one dimension, and integration refers to the ability to combine these dimensions. We posit that exposure to narrow categories will cue consumers to discern multiple dimensions in their environment and will encourage them to use and combine these dimensions in their decision making.

Information-Processing Changes and Spillover to Subsequent Tasks

We further propose that as long as the subsequent context does not cue the need for a cognitive reorganization, consumers will likely use the recently tuned cognitive apparatus as is for the next task at hand. Prior research has documented numerous similar instances in which activated cog-

nitive procedures or “mind-sets” are transferred and applied as is to new situations (e.g., Bargh and Chartrand 2000; Smith and Branscombe 1987). Therefore, we suggest that the changes in information-processing styles triggered by prior exposure to narrow and broad categorizations will spill over to subsequent, unrelated tasks. Thus, in a subsequent, unrelated task, broad (narrow) participants will be likely to base their decisions on relatively fewer (many) dimensions.

In addition, we suggest that decision makers who use fewer dimensions (i.e., those exposed to broad categories) are more likely to use easily available, salient information in subsequent tasks, while those who use many dimensions (i.e., those exposed to narrow categories) are more likely to go beyond what is easily available and use both salient and nonsalient information. The second decision environment may selectively highlight relatively few dimensions (e.g., one dimension emphasized in an advertisement), and broad participants may feel comfortable basing their decision on these few pieces of information. In contrast, because narrow participants are primed to use many dimensions, they will be less satisfied when relying only on a few dimensions and are more likely to go beyond what has been made easily available and use both salient and nonsalient information. Thus, we predict that prior exposure to broad (narrow) categories will lead to consideration of relatively few, salient (many, salient and nonsalient) pieces of information in a subsequent, unrelated decision task.

Effect of Changes in Information-Processing Style on Subsequent Tasks

Table 1 depicts how exposure to narrow (versus broad) categorizations affects consumer behavior in a wide range of subsequent tasks. These effects should clearly manifest in subsequent grouping decisions. If decision makers previously exposed to narrow (broad) categorizations become more likely to use many different (fewer) pieces of information in their decisions, they should employ more (fewer) dimensions in the sorting task as well. They should then sort the objects into many, narrow (fewer, broad) groups.

H₁: When subsequently exposed to an unrelated grouping task, consumers previously exposed to a decision context with narrow (broad) categorizations will sort the given set of objects into more, relatively smaller (fewer, relatively larger) subcategories.

The broad/narrow nature of external categorizations that consumers encounter should also affect their subsequent product evaluations and choices. In particular, consumers previ-

ously exposed to broad categories should base their product evaluations on the few pieces of information that are the most salient. In contrast, those previously exposed to narrow categories should base their evaluations on more pieces of information, including less salient information.

The particular dimensions that are most salient and used by consumers will vary across buying situations. Because of consumers’ familiarity with the product category or marketing efforts that selectively highlight certain aspects of products, some dimensions may become more obvious, important, actionable, or top-of-mind than others. For example, for new products, some product attributes may pertain to an overall dimension of product innovativeness, while others may pertain to an overall dimension of product risk. The decision context may make one of these dimensions more salient. For high-tech electronics, consumers might focus more on innovativeness, perhaps because advertisements selectively highlight innovation. For other products, such as laser eye surgery, the risk of failure might be more dominant.

Nevertheless, for all new products, it is important to consider both information that is and information that is not made salient by the decision environment. For example, in the former case (i.e., electronics), it is important to consider risk, even though it is less salient, because 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 (i.e., laser eye surgery), it is important for a person to consider the potential benefit he or she might forgo by not adopting the product. Although most consumers consider the salient aspects, only those who use multiple dimensions ferret out the less salient aspects. Thus, in new product domains, in which innovativeness (risk) is more salient, we expect prior exposure to broad categorizations to lead to adoption judgments that are based primarily on the salient innovativeness (risk) dimension. Conversely, exposure to narrow categorizations should lead to more multidimensional decision making, in which adoption decisions are based on both the salient, innovativeness (risk) aspects and the less salient, risk-related (innovation) aspects. We should then observe that when innovativeness (risk) is salient, consumers exposed to broad (versus narrow) categorizations in a prior task will hold more (less) favorable attitudes toward these new products. Thus:

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.

Table 1
SUMMARY OF PROCESSES AND EFFECTS

Decision Context 1 (Manipulated)	Changes in Information- Processing Style	Effects on Subsequent and Unrelated Decision Context 2		
		Grouping and Categorization	New Product Evaluation	Susceptibility to Heuristics
Exposure to broad categories	Less Multidimensional Processing •Less conceptually complex •Few salient dimensions	Few, large groups; less sensitive to multidimensional changes	Few, salient contextual cues guide evaluation	Use of few, salient contextual cues influences reliance on heuristics
Exposure to narrow categories	More Multidimensional Processing •More conceptually complex •Both salient and nonsalient	Many, small groups; more sensitive to multidimensional changes	Both salient and nonsalient cues guide evaluation	Use of both salient and nonsalient cues influences reliance on heuristics

We offer the following process explanation for the effects described in H_1 and H_2 :

H_3 : Consumers previously exposed to broad (narrow) categorizations will base their subsequent decisions on a few, salient (many, salient and nonsalient) dimensions.

More generally, we expect these categorization-induced changes in information-processing style to affect consumers' decision quality by affecting their susceptibility to common biases and heuristics in subsequent, unrelated decisions. In many decision paradigms, considering a greater number of dimensions leads to normatively better decisions (e.g., Payne, Bettman, and Johnson 1988). However, in some other paradigms, such as those involving the dilution effect (Nisbett, Zukier, and Lemley 1981), blindly using more pieces of information can be detrimental to decision quality. If exposure to narrow categories simply leads to incorporating more dimensions, this would aid decision quality in some tasks but abate it in others. However, if exposure to narrow categories leads to consideration of more information, as well as the relative importance of these dimensions, in general it should lead to an improvement in decision quality across a variety of tasks. We explore these possibilities in our studies.

To explore the process by which these changes occur, we examine two plausible routes. Exposure to narrow categories might either (1) prompt a consumer to try harder and longer at discerning these multiple dimensions (a more motivational route) (Payne, Bettman, and Johnson 1988) or (2) change a consumer's cognitive orientation and allow him or her to come up with these multiple dimensions without any added effort (a more cognitive route) (Dijksterhuis et al. 2006; Wilson and Schooler 1991).

MANIPULATING EXPOSURE TO NARROW OR BROAD CATEGORIZATIONS

We use three manipulations to expose participants to either broad or narrow categories. We obtain a similar pattern of results across all three manipulations.

Prior Categorization Manipulation 1: Personality Task

In the "personality task" manipulation, participants responded to questions that differed in the number of response categories. For some participants, the response options for each question comprised many, narrow categories (narrow condition), and for others, the response options comprised a few, broad categories (broad condition). Specifically, participants first completed Goldberg's (1990) Big-Five personality inventory by marking their responses on nine-point (narrow) or three-point (broad) semantic differential scales. Next, participants in the narrow (broad) condition indicated their height, hair color, eye color, choice of film genre if they were to rent a DVD, preferred cat breed for adoption, and choice of holiday type from among many (few) alternatives. Finally, they classified a picture of the moon into one of many (few) distinct phases. Thus, in the narrow (broad) condition, participants answered questions in a decision context that had more (less) fine-grained response scales.

Prior Categorization Manipulation 2: Shopping Task

Although Prior Categorization Manipulation 1 has important implications for survey research, it covaries with the number of response options. Therefore, in the second manipulation, we held the number of response options constant across conditions. Specifically, participants undertook a "shopping task" in which they were told that they were shopping for a friend's party and needed to make choices in eight different categories (e.g., wine, cheese, beer, music). The key manipulation consisted of whether the sets of identical products were organized into a few, broad categories (broad) or into many, narrow categories (narrow). For example, a set of 24 wines was categorized either into 2 groups in the broad condition (red or white) or into 12 groups in the narrow condition (e.g., Italian-red, Italian-white, French-red, French-white). This both controls for the number of response options and reflects a realistic marketing scenario, with implications for the design of Internet shopping portals.

Prior Categorization Manipulation 3: Web Site Evaluation Task

The shopping task requires participants to actively make choices, and it is possible that for both this and the personality task, choice difficulty differs across the narrow and broad conditions, which in turn alters subsequent decisions. To control for this, we devised the "Web site evaluation task," in which participants were shown a series of 12 product Web pages from an online store, which varied in their color combinations, and were asked to rate how aesthetically pleasing they were. As participants evaluated the Web pages, the key manipulation consisted of exposing them incidentally to products on these pages that were grouped into broad or narrow categories. The product categories and the broad and narrow categorizations were identical to those used in the shopping task. Importantly, this manipulation of broad versus narrow categorizations did not require participants to make any product-related choices or evaluations.

Control Measures Used Across the Studies

Taken together, these manipulations are designed to rule out several potential alternative mechanisms for the effects. To rule these out with greater confidence and to gain insight into the underlying process, in most of the studies, we also include control measures related to task involvement, decision difficulty, preference matching, and product expertise (awareness, familiarity, knowledge, ownership). We also record task completion times as an unobtrusive proxy for some of these measures. Finally, we measure mood, because prior research (e.g., Estrada, Isen, and Young 1997; Isen and Daubman 1984; Murray et al. 1990) has shown that positive (negative) affect influences cognitive performance through the use of wider (narrower) categories.

STUDY 1: GROUPING TASK

The goal of Study 1 is to test H_1 —that participants exposed to narrow (broad) categorizations will classify objects into many, narrow (fewer, broad) classes in a subsequent, unrelated sorting task. Because the width of conceptual categories can also be codetermined by individual-level tendencies as well as contextual demands (Rokeach 1956), we used Pettigrew's (1958) category-width scale to capture individual-level differences in the width of categorizing. We

expect to observe the effects of the context manipulation (i.e., exposure to broad or narrow categories in a previous task) beyond the effects of this innate trait.

Method

Sixty-eight undergraduate students participated in the study in exchange for partial course credit. Participants were told that the experimental session comprised two unrelated studies. The first constituted the Prior Categorization Manipulation 1 (i.e., the personality task). After completing the manipulation, participants moved on to an ostensibly unrelated grouping study (Mikulincer, Kedem, and Paz's [1990] object sorting task). They were given 12 typical members of the fruit category and were asked to sort them into subgroups in any way that made sense to them. Finally, they completed a ten-item short version of the individual-level category-width scale (Pettigrew 1958).

Results

A one-way analysis of variance (ANOVA) on the number of fruit groups revealed a significant effect of the context manipulation ($F(1, 66) = 7.78, p < .02$).¹ In support of H_1 , participants exposed to narrow categorizations created more groups than those exposed to broad categorizations ($M_{\text{NARROW}} = 4.50, M_{\text{BROAD}} = 3.42$). To compare with baseline categorization tendencies, we also asked an independent group of 26 participants not involved in this study to complete the sorting task alone. The mean for this group fell in between the broad and the narrow conditions ($M_{\text{CONTROL}} = 3.92$).

We divided participants into narrow and broad categorizers using Tajfel and Bruner's (1966) definition with the category-width scale ($\alpha = .78$). A 2 (prior context: narrow, broad) \times 2 (category width: narrow categorizers, broad categorizers) ANOVA on the number of fruit groups revealed significant main effects of context ($F(1, 33) = 9.63, p < .02$) and individual-level category width ($F(1, 33) = 5.77, p < .03$).² As we expected, the two-way interaction was not significant ($F(1, 33) < 1$). The context manipulation successfully altered the number of fruit groups created by both individual-level narrow ($F(1, 33) = 4.62, p < .05$) and broad ($F(1, 33) = 5.04, p < .04$) categorizers. Table 2 provides a summary of these results, along with the results of the other studies in this article.

Discussion

Study 1 shows that the effects of exposure to a decision context with narrow or broad categorizations carries over to a subsequent, unrelated grouping decision. This effect occurs beyond individual-level tendencies, thus providing strong support for H_1 . The data also seem to support a multidimensional processing account. An inspection of the groupings showed that the broad participants created simple groupings based on either color (e.g., red versus yellow) or taste (e.g., sweet versus sour), whereas narrow participants used more than one grouping criterion, often combining them (e.g., red and sweet, yellow and sour), and generated more groups.

¹All test statistics reported are based on two-tailed significance tests, unless indicated otherwise.

²This main effect is also significant if we use the continuous measure and Tajfel and Bruner's (1966) definition.

STUDY 2A: NEW PRODUCTS

The main aim of Studies 2a–2c is to demonstrate that previously encountered taxonomies more generally affect object evaluations and, in this case, consumers' new product evaluations. Study 2a tests whether, in new product contexts primarily associated with innovation, consumers first exposed to broad categorizations will have more favorable product preferences than consumers first exposed to narrow categorizations (H_2). This study also tests whether participants in the broad condition primarily consider the innovativeness of the new products whereas participants in the narrow condition also consider the risks associated with these products (H_3).

Method

Ninety-six undergraduate students participated in the study in exchange for partial course credit. We first exposed participants to the Prior Categorization Manipulation 2 (i.e., the shopping task). They next evaluated a new product, the "Sony SRS-RF90RK Wireless Speaker System," which was described as having several benefits (e.g., no unsightly wire clutter, easy portability) and few potential pitfalls (e.g., interference from other wireless devices). A note also stated that the wireless system 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.³

³We used a 2:1 ratio based on empirical studies of loss aversion (Tversky and Kahneman 1991). A pretest verified that this new product context was an innovation-salient one. Sixty-seven participants read the wireless speaker description, and on 100-point slider scales, they rated the relative salience of risk versus innovativeness (1) in general and (2) if they were in the market for a wireless speaker (risk more salient/innovativeness more salient). The combined measure ($r = .55, p < .01$) verified that these speakers were viewed as belonging to a relatively innovation-salient domain ($M = 58.05$ versus 50.00 ; $F(1, 66) = 3.27, p < .01$). A majority of respondents (69.7%) rated the wireless speakers above the midpoint of the risk-innovativeness continuum ($\chi^2(67) = 9.33, p < .01$).

Table 2
OVERVIEW OF RESULTS

		Broad	Narrow
Study 1	Number of fruit groups created	3.42	4.50
Study 2a	New product evaluation when innovation is naturally salient	71.40	62.83
	Number of innovation thoughts	.92	.77
	Number of risk thoughts	.29	.73
Study 2b	New product evaluation when innovation is primed	69.20	58.04
	New product evaluation when risk is primed	58.13	63.58
	Innovation importance weights (when innovation is primed)	79.05	67.04
Study 2c	Innovation importance weights (when risk is primed)	65.48	72.92
	New product evaluation when innovation is primed	74.93	67.50
Study 3	New product evaluation when both innovation and risk are primed	65.47	70.97
	Evaluation of control product	76.37	72.33
Study 4	Evaluation of diluted product	62.71	69.00
	Number of faces categorized as Caucasian from continuum	5.43	3.58
	Number of nonsense syllables recalled	3.55	4.13
	Number of multidimensional insect groups created	2.48	3.08

Next, participants responded to the dependent measure by indicating their overall attitude toward the product on a 100-point slider scale (“disliked it very much/liked it very much”). Then, they responded to several process measures. In two open-ended responses, they first briefly listed the key factors they had considered in their evaluation, and then they reported the number of factors they considered in their evaluation more generally. We also measured participants’ involvement and mood (across the entire experiment session); assessed their familiarity with, knowledge of, awareness of, and ownership of the product; and recorded study completion times.

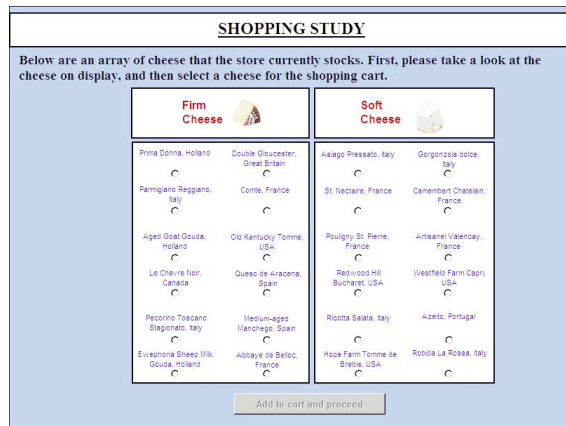
Results

Dependent measure. In support of H₂, compared with participants in the narrow condition, those in the broad condition had more favorable attitudes toward the new product ($M_{\text{BROAD}} = 71.40$, $M_{\text{NARROW}} = 62.83$; $F(1, 94) = 6.41$, $p < .02$) (for stimuli and results, see Figure 1).

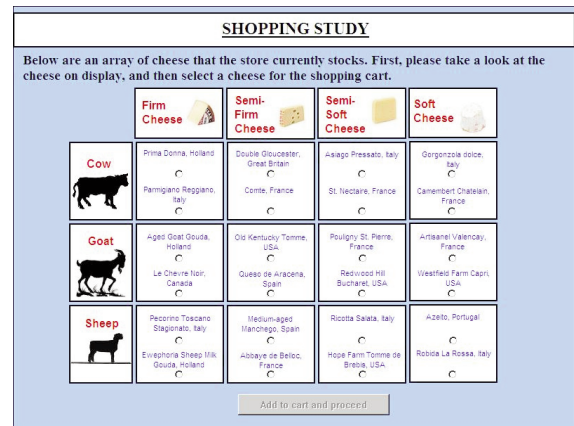
Process measures. Participants previously exposed to narrow categories reported considering a greater number of factors when evaluating the speakers ($M_{\text{BROAD}} = 2.96$, $M_{\text{NARROW}} = 3.57$; $F(1, 93) = 4.43$, $p < .04$). Wireless speakers have several attributes, such as no-clutter technology,

Figure 1
MANIPULATIONS, STIMULI, AND SUMMARY OF RESULTS FROM STUDY 2A

A: Decision Context 1: Shopping Study



“Broad” Shopping Web Site
Example of Screen Shot from Cheese Category
•24 cheese alternatives
•2 categories (firm and soft)



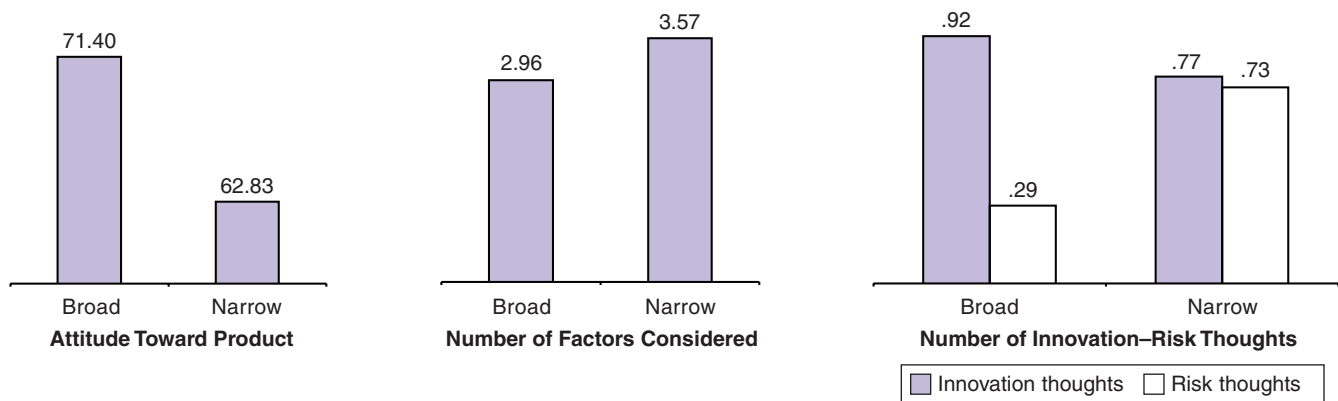
“Narrow” Shopping Web Site
Example of Screen Shot from Cheese Category
•24 cheese alternatives
•8 categories (firm–cow, firm–goat, ..., soft–sheep)

B: Decision Context 2: New Product Evaluation

Stimuli:
Sony SRS-RF90RK Wireless Speakers



Results:



that are related to the innovation dimension and others, such as the probability of signal interference, that are related to the risk dimension. We coded the key factors participants listed in their open-ended responses as either risk or innovation related. Participants did not differ across conditions in their consideration of the salient innovation dimension ($M_{\text{BROAD}} = .92$, $M_{\text{NARROW}} = .77$; $F(1, 94) < 1$). However, in support of H_3 , narrow-condition participants considered the less salient risk factor more than broad-condition participants ($M_{\text{BROAD}} = .29$, $M_{\text{NARROW}} = .73$; $F(1, 94) = 12.20$, $p < .01$). The difference in attitudes across conditions was partially mediated by this number of risk-related thoughts (Sobel test statistic = -1.66 , $p < .09$).

The control measures showed that there was no difference across conditions in participant involvement and the time spent on the shopping task manipulation or the wireless speaker evaluation task. The two conditions also did not differ in terms of participants' mood or their familiarity with, knowledge of, awareness of, and ownership of the wireless speakers.

STUDY 2B: MANIPULATING FOCUS

Study 2a tested H_2 in a domain in which innovation is more salient than risk. Study 2b provides a more complete test of the proposition that if innovation (risk) is made more salient, exposure to broad categories should lead to a greater consideration of innovation (risk) and, thus, more (less) favorable new product evaluations. In contrast, new product evaluations in the narrow condition should not vary with the manipulation.

Method

Ninety-five undergraduate students participated in this study in exchange for partial course credit. Participants were randomly assigned to one of the cells in a 2 (prior context: narrow, broad) \times 2 (focus: innovation, risk) between-subjects design. Participants first completed the Prior Categorization Manipulation 1 (i.e., the personality task). Next, they moved on to the new product study. Those in the [innovation/risk] focus condition were told the following:

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 Study 2a and were asked to indicate their relative attitude ("inferior to existing brands/superior to existing brands") toward the product. Then, using a bipolar scale ("the degree of risk it posed/the degree of improvement it offered"), they responded to a question that assessed their relative consideration of the risk and innovation dimensions as they evaluated the product.

Results

Attitudes. We submitted all dependent measures to a 2 (prior context: narrow, broad) \times 2 (focus: innovation, risk)

ANOVA. For the attitude measure, only the predicted two-way interaction ($F(1, 91) = 5.41$, $p < .03$) was significant, in support of H_2 . Participants in the broad condition had more favorable attitudes when they were directed to focus on innovation ($M = 69.20$) than on risk ($M = 58.13$; $F(1, 91) = 4.38$, $p < .01$), while the attitude of those in the narrow condition did not differ ($M_{\text{INNOVATION}} = 58.04$, $M_{\text{RISK}} = 63.58$; $F(1, 91) = 1.33$, $p > .29$).⁴

Consideration of innovation and risk: relative weights. In support of H_2 , the interaction on the weight measure was significant ($F(1, 91) = 5.85$, $p < .03$). Broad-condition participants placed more weight on innovation when they were asked to focus on innovation ($M = 79.05$) than on risk ($M = 65.48$; $F(1, 91) = 5.19$, $p < .04$), while in the narrow condition, weights did not differ across conditions ($M_{\text{INNOVATION}} = 67.04$, $M_{\text{RISK}} = 72.92$; $F(1, 91) = 1.19$, $p > .27$).

STUDY 2C: MANIPULATING MULTIDIMENSIONAL THINKING

The results from Studies 2a and 2b seem to be driven by the differential consideration of less salient information across conditions. Therefore, a manipulation that reminds participants to consider both the less salient and the more salient dimensions should eliminate this effect. Such a reminder should encourage multidimensional thinking and reduce product evaluations in the broad condition, but it should not alter processing (or evaluations) in the narrow condition.

Method

One hundred twenty 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) \times 2 (focus: control, multidimensional) between-subjects design. Participants first completed the Prior Categorization Manipulation 2 (i.e., the shopping task) and then were directed to the "new product study." In the control condition, participants directly evaluated the new product (i.e., wireless speakers). Before evaluating the new product, participants in the multidimensional focus condition were told the following:

As you evaluate the product, please keep in mind that *new products differ in their degree of innovativeness and the 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. Some are 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 2a and 2b and were asked

⁴Note that though our theory predicts that when risk is made salient, broad-condition participants should have lower attitudes than narrow-condition participants, the difference we observed, though in the hypothesized direction, was not statistically significant ($M_{\text{BROAD}} = 58.13$, $M_{\text{NARROW}} = 63.58$; $F(1, 91) = 1.21$, $p > .1$). This may have occurred because even though we increased the salience of risk through the instructions, electronic products may be inherently associated with innovation and thus might always have relatively high salience.

to indicate their overall attitude (“disliked it very much/liked it very much”) toward the product. As control measures, participants also indicated their involvement and mood (across the entire experiment session); their involvement in the shopping task separately; their familiarity with, knowledge of, awareness of, and ownership of the wireless speakers; their decision difficulty; and their ability to find options that matched their preferences during the shopping task. We also recorded study completion times associated with the two studies.

Results

Attitudes. A 2 (prior context: narrow, broad) \times 2 (focus: control, multidimensional) ANOVA revealed only a significant two-way interaction ($F(1, 116) = 4.604, p < .04$). As we predicted, in the control focus conditions, the speakers were evaluated marginally more positively in the broad than in the narrow condition ($M_{\text{BROAD}} = 74.93, M_{\text{NARROW}} = 67.50; F(1, 116) = 3.04, p < .09$). However, in the multidimensional focus conditions, evaluations did not differ across the broad and narrow conditions ($M_{\text{BROAD}} = 65.47, M_{\text{NARROW}} = 70.97; F(1, 116) = 1.66, p > .20$). Note that participants in the broad condition had less favorable attitudes in the multidimensional condition than in the control condition ($F(1, 116) = 4.93, p < .05$). Attitudes in the narrow condition did not differ with the focus manipulation ($F(1, 116) < 1$).

Control measures. None of the controls (overall involvement, involvement in the shopping study, familiarity, knowledge, awareness, ownership, decision difficulty, preference matching, mood, completion time for the shopping study, and completion time for the new product study) showed any significant main effects or higher-order interactions.

Discussion

When participants in the broad condition were reminded of the less salient risk factor, their product attitudes became less favorable. Participants in the narrow condition did not change their attitudes when they were reminded of the less salient factor. Although the manipulation of multidimensionality used in this study enables us to test the process explanation in a straightforward manner, a limitation is its explicit nature. However, we believe that, taken together, the results from this set of studies support the assertion that prior exposure to broad (narrow) categories primes people to consider a few, salient (multiple, salient and nonsalient) dimensions.

STUDY 3: SUSCEPTIBILITY TO HEURISTICS

Although new product decisions are well suited to examining whether decision makers use a few, salient (versus many, salient and nonsalient) criteria in their decisions, the aim of Study 3 is to broaden the investigation in three ways. First, we move beyond the domain of new products to examine whether the observed effects indicate a more general tendency to process any product-related information in a similar way. Second, we use a decision paradigm that enables us to derive some normative implications. To that end, in Study 3, we use a robust, well-established paradigm that has been shown to lead to biased decisions, thus enabling us to more easily infer whether prior exposure to narrow (or broad) categorizations aids or abates this bias. Third, we relax the previous assumption that considering a

greater number of dimensions leads to better decisions because prior research (e.g., Dijksterhuis 2004) has shown that in many domains, blindly using more pieces of information can be detrimental to decision quality. In such tasks, normative outcomes occur when decision makers not only consider all available pieces of information but also weigh them appropriately. This can be difficult because knowledge on the relative importance of information is not readily available. If exposure to narrow categories only leads to consideration of more pieces of information, this should lead to poorer decisions. However, if participants exposed to narrow categories not only take more information into account but also consider their relative importance, this should improve decision quality.

In Study 3, we use a well-documented consumer heuristic: the dilution effect (Nisbett, Zukier, and Lemley 1981). In a typical dilution effect experiment, participants in a control and a dilution group are given some diagnostic information regarding a target object or person. Those in a dilution group are also given some nondiagnostic (or irrelevant) information. Participants in both groups then render a judgment about the target. Typically, people find it difficult to ignore the irrelevant information, and as a result, judgments in the experimental condition tend to get “diluted” (i.e., less strong) relative to those in the control condition. If participants previously exposed to narrow categorizations simply use more pieces of information, without considering their relative importance, this should exacerbate the dilution effect. However, if they appropriately weigh the irrelevant pieces of information, the dilution effect should be mitigated.

Method

One hundred three undergraduate students participated in the experiment in exchange for partial course credit. The experiment involved a 2 (prior context: broad, narrow) \times 2 (information: control, dilution) \times 3 (replicate: computer, apartment, car) mixed design, with replicate as a within-subject factor. Participants were randomly assigned to one of the four between-subject conditions. Participants were first administered the Prior Categorization Manipulation 2 (i.e., the shopping task). Next, they completed the “product evaluation study.”

For the product evaluation study, we adapted the stimuli and experimental procedures from Meyvis and Janiszewski (2002). Participants were presented with three different product categories in a random order. For each category, participants first were given a specific desirable benefit (e.g., “You are looking for a fast computer”) and then received a product description. In the control condition, this description consisted of only one piece of diagnostic information (e.g., “very powerful processor”), while in the dilution condition, the description also contained three pieces of irrelevant information (e.g., “Assembled in USA”). Next, participants indicated, on 100-point slider scales, the extent to which they believed that the target product delivered the specific desirable benefit. After answering this key dependent measure for all three replicates, participants rated their overall involvement and extant mood across the entire experiment session, the decision difficulty they experienced, and the extent to which they engaged in systematic processing in the shopping task. We also recorded study completion times.

Results

Dependent measure. We submitted the key dependent measure to a 2 (prior context: broad, narrow) \times 2 (information: control, dilution) \times 3 (replicate: computer, apartment, car) mixed ANOVA. Because none of the higher-order effects involving replicate were significant, we collapsed the data across this factor. The results revealed a significant main effect of information ($M_{\text{Control}} = 74.35$, $M_{\text{Dilution}} = 65.86$; $F(1, 99) = 20.36$, $p < .01$), which was qualified by a significant interaction between prior context and information ($F(1, 99) = 7.55$, $p < .01$). Participants in the broad condition show significant dilution effects ($M_{\text{Control}} = 76.37$, $M_{\text{Dilution}} = 62.71$; $F(1, 99) = 26.11$, $p < .01$), while participants in the narrow condition do not ($M_{\text{Control}} = 72.33$, $M_{\text{Dilution}} = 69.00$; $F(1, 99) = 1.56$, $p > .20$).

Control measures. Analysis of the control measures indicates that there were no significant interaction or main effects for the self-reports of involvement, mood, systematic processing, and decision difficulty. The study completion times also did not differ significantly.

Discussion

The results show that decision makers exposed to narrow categorizations do not mindlessly use the information that is made salient to them. Instead, they are better able to consider a less salient aspect of this information, that is, the relative importance of the attributes. Thus, it appears that exposure to narrow categorizations enables decision makers to behave in a more normative manner in situations in which taking both too little (Studies 2a–2c) or too much (Study 3) information into account may result in nonnormative outcomes. However, note that though, in the paradigm we examined, exposure to narrow (versus broad) categorizations instigated normatively better decisions, we are hesitant to claim that this will always be the case. Plausibly, in other decision paradigms we have not examined, such as creative problem solving, narrow participants could perform comparatively worse.

STUDY 4: COGNITIVE VERSUS MOTIVATIONAL NATURE OF THE EFFECT

The main aim of Study 4 is to examine whether the effect of exposure to narrow versus broad categorizations is primarily cognitive or motivational in nature. Is a consumer who has been exposed to narrowly categorized objects simply motivated to work harder on subsequent tasks, or is the process more cognitive when the consumer is primed with the existence of multiple dimensions in the environment and therefore uses multiple dimensions in the next task, without necessarily working harder? The results from the previous studies seem to show that exposure to narrow categories leads to the use of more and better weighting of information but involves no more time or effort. Although this finding may seem counterintuitive, it is consistent with research on unconscious thought that has documented a “deliberation without attention” effect (Dijksterhuis 2004), which shows that people can engage in more complex thinking without more effort. Conscious thought has low processing capacity and therefore can hurt the quality of decisions by making people focus on a few attributes at the expense of other relevant attributes (Wilson and Schooler 1991). In contrast, unconscious thought can lead to better decisions, especially

under complex circumstances, by enabling decision makers to integrate large amounts of information in their judgments (Dijksterhuis et al. 2006; Dijksterhuis and Nordgren 2006). Compared with conscious thought, unconscious thought leads to consideration of more information but requires much less time and effort.

To investigate this, we examine whether differences across conditions manifest only to the extent that the subsequent task involves processing on a few versus multiple dimensions or whether they manifest in any task in which working harder leads to different results. Therefore, Study 4 includes a series of tasks, two that are more cognitive in nature (e.g., grouping and categorization tasks) and one that is more motivational in nature (e.g., recall task). If the effect of exposure to narrow versus broad categories is cognitive, it should have an effect on the grouping and categorization tasks but not on the recall task. If the effect is more motivational, it should have an impact on all three tasks. The recall task always comes between the two cognitive tasks. Therefore, if we observe an impact on the cognitive tasks (sequenced first and third) but not the recall task (sequenced second), we know that the null effect for the recall task was not due to the diminishing impact of the manipulation over time.

Method

Forty-seven undergraduate students participated in the study in exchange for partial course credit. Participants were first exposed to either narrow or broad categorizations through the Prior Categorization Manipulation 3 (i.e., the Web evaluation task). Next, they completed three studies in a fixed order: the “face classification,” “recall,” and “grouping” tasks.

In the face classification task, participants judged whether an object belonged to a target category. Participants were sequentially presented with six faces, created using a morphing program (Corneille et al. 2004) to constitute a race continuum of Caucasian–Chinese. The first face they saw was a typical Caucasian face, and the sixth was a typical Chinese face (see Web Appendix A at <http://www.marketingpower.com/jmraug10>). As each face appeared on the screen, participants marked either “This is a Caucasian face” or “I am not sure.” If a participant selected the first option, he or she was presented with the next face on the continuum, which had slightly less Caucasian and more Chinese characteristics. The task ended when the participant selected the second response alternative. The key dependent variable was the number of faces the participant included before becoming uncertain. As the face on the screen changes gradually from a typical Caucasian to a typical Chinese face, multiple factors account for this change (e.g., eyes, eyebrows, lips, forehead). Thus, we expected that participants first exposed to narrow (broad) categorizations would be more (less) sensitive to these multidimensional changes, would react to these changes earlier (later) in the face continuum, and consequently would include a fewer (greater) number of these racially ambiguous faces into the category “Caucasian.”

In the second recall task, participants were given one minute to read and memorize a list of 15 meaningless, three-letter combinations (e.g., “vaw,” “rox”) adopted from the work of Peixotto (1948). After a 90-second filler task, participants were given a free-recall task for 70 seconds to

assess their memory for the nonsense syllables. Note that though recall accuracy could be affected by participants' motivation to perform well, it does not involve multidimensional processing.

In the third grouping study, participants were provided with pictures of ten multidimensional bugs taken from the work of Minda and Smith (2001) and were asked to sort them into as many or as few groups as they deemed fit. These bugs (see Web Appendix B at <http://www.marketingpower.com/jmraug10>) were designed to vary on eight binary dimensions (e.g., eyes: open versus closed; tail: long versus short; antenna: bent forward versus bent backward). Participants could potentially create as few as one or as many as ten insect groupings, depending on the number of dimensions they used. We expected participants in the narrow (broad) condition to create more (fewer) insect groupings.

Finally, participants reported their involvement and extant mood throughout the experiment session and the involvement, systematic processing, and decision difficulty associated with the Web evaluation task. We also recorded task completion times.

Results

Dependent measures. The broad/narrow manipulation affected the face classification and grouping tasks (which came first and third) but not the intervening recall task. In the face classification task, participants in the narrow condition included fewer faces in the Caucasian category than those in the broad condition ($M_{\text{Narrow}} = 3.58$, $M_{\text{Broad}} = 5.43$; $F(1, 45) = 5.74$, $p < .03$; Mann-Whitney $U = 181.50$, $p < .04$). However, in the recall task, participants in the narrow and broad conditions did not differ in the number of syllables correctly recalled ($M_{\text{Narrow}} = 4.13$, $M_{\text{Broad}} = 3.55$; $F(1, 44) < 1$). Finally, in the grouping task, narrow-condition participants created more bug groupings than broad-condition participants ($M_{\text{Narrow}} = 3.08$, $M_{\text{Broad}} = 2.48$; $F(1, 45) = 5.76$, $p < .03$). Note that because the recall task always came second and the results for the third grouping task were significant, the null result for the recall study does not appear to be due to the impact of the manipulation diminishing over time.⁵

Control measures. None of the control measures, either self-reported (overall mood, overall involvement, involvement in the Web evaluation task, systematic processing, and decision difficulty) or unobtrusively measured (completion times for Web evaluation task, face classification task, and grouping study), showed any significant differences.

Discussion

Study 4 shows that the broad/narrow manipulation influences only tasks that require the use of multiple dimensions. If narrow participants were generating additional dimensions simply because they were trying longer and harder at these tasks, this would be reflected in longer task completion times and greater self-reported effort. The lack of significant differences on measures of completion time and effort in this study, as well as the previous studies, favors a more cognitive account of the observed effects.

GENERAL DISCUSSION

This research demonstrates that incidental exposure to broad versus narrow categorizations significantly alters decision makers' information-processing styles. Compared with participants exposed to broad categories, those exposed to narrow categories adopted a more multidimensional processing orientation in subsequent, unrelated decision contexts. This difference influenced the number of dimensions used in subsequent tasks, reliance on both salient and non-salient pieces of information, and how the information is weighed. We show that prior exposure to broad or narrow categorizations affects basic cognitive behaviors (e.g., grouping, categorization), substantive consumer decisions (e.g., new product adoptions), and general consumer decision making (e.g., susceptibility to heuristics).

The Nature of the Effect

We questioned whether exposure to narrow categories activates a multidimensional processing tendency or simply prompts consumers to try harder on tasks. The results show that consumers exposed to narrow (versus broad) categories use more dimensions in their decisions, even though they do not spend more time or effort. These results are consistent with research on unconscious thought (Dijksterhuis 2004) and with findings from several different streams of literature. For example, the literature on individual-level differences in category width (e.g., Pettigrew 1958) finds no differences in decision time between people who differ in their chronic tendencies to categorize narrowly versus broadly (Tajfel and Bruner 1966). Gardner (1953) argues that a chronic broad categorizer may place seemingly different objects in the same group even though he or she is aware of the multiple dimensions on which objects differ from each other, simply because he or she chooses to act on differences on certain dimensions and not on others. Similarly, in the current research, broad and narrow participants may be equally aware of both salient and nonsalient dimensions and therefore take the same amount of time to make their decisions, but they may simply choose to weigh these dimensions differently.

The literature on the dilution effect is also relevant. As we discuss in Study 3, this literature uses an experiment paradigm that addresses the trade-off between processing different pieces of information and being able to discriminate among them and appropriately weigh them. The moderators that turn off the dilution effect (e.g., Meyvis and Janiszewski 2002; Tetlock and Boettger 1989) often do so without the participants spending additional time on their decisions.

Finally, the creativity and the problem-solving literature can also shed light on this issue. Moreau and Dahl (2005) show that participants under slight constraints are better at solving creativity problems. Having more time does not improve performance. In a similar vein, and more closely related to categorization, Chrysikou (2006) shows that a certain kind of categorization training makes people better at problem solving, but without them having to spend more time in generating the solutions to those problems. Taken together, these diverse areas of research lend credence to the finding that more complex, multidimensional thinking can

⁵However, because there can be many reasons for null findings, conclusions about this must remain tentative.

occur in a decision without a significant increase in the time required to make that decision.

Ruling out Alternative Mechanisms

Note that the manipulations and control measures we use rule out several alternative mechanisms that could masquerade as the proposed categorization-based effect, including option availability, match with preferences, choice difficulty, careful/systematic processing, task involvement, task effort, decision difficulty, preference matching, product expertise (awareness, familiarity, knowledge, ownership), and mood. Two other possible mechanisms deserve discussion. One is whether the narrow categorization manipulation overwhelmed participants, depleting their cognitive resources, and consequently led to average responses or responses near the midpoints of the scale. However, note that a depletion-based account is inconsistent with the finding that the narrow-condition participants, compared with the broad-conditions participants, reported similar levels of decision difficulty in the first manipulation task, created a greater number of groups in the subsequent grouping task, and spent the same amount of time in subsequent tasks. A depletion-based account would argue for exactly an opposite pattern. The second concern is whether the context manipulation induced an acquiescence bias in the broad condition, leading to relatively more positive scale responses in subsequent tasks. However, the results in the new product studies show that in the broad condition, attitudes also became more negative with increasing salience of risk perceptions (Studies 2b and 2c). Thus, participants in the broad condition were not simply acquiescing.

Theoretical Implications

Extensive research has demonstrated that the way products are categorized in a decision context can influence consumers' reactions in the same decision context. In contrast, 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.

Considerable prior research has shown that different kinds of mind-sets lead to different kinds of categorization strategies. For example, both an affectively positive (negative) mind-set (Isen and Daubman 1984) and a distant (near) construal mind-set (Trope and Liberman 2003) have been associated with the use of broader, more coarse-grained (narrower, more fine-grained) categories. Our results provide evidence for the opposite causal path: Exposure to broad or narrow categories tends to trigger a less or more thorough information-processing style.

Finally, given that these categorization-induced changes in information processing (1) spill over to a wide variety of unrelated tasks and (2) are unaccompanied by differential mood, involvement, feelings of task difficulty, systematic processing, or completion times, it is likely that this effect operates through automatic, "System 1 processes" outside of conscious awareness (Evans 2008; Sloman 1996).

The current research might also help bring together and complement findings from several diverse streams of literature. By establishing a causal relationship between category width and multidimensionality of evaluations, the results

might help explain why narrow chronic category width and in-group members involve more complex evaluations (Jackson and Messick 1963; Linville 1982; Sloane, Gorlow, and Jackson 1963) and why broad-category-width consumers tend to rely only on salient dimensions (e.g., price and brand name) in their decisions (Park and Lessig 1981). In addition, we complement the studies on individual-level category width by showing that changes in category width are malleable and easily susceptible to situational factors.

Managerial Implications and Opportunities for Further Research

Extant research has shown that the way products are grouped in stores, in advertisements, or on Web pages can influence how consumers process the information in that immediate environment (e.g., Mogilner, Rudnick, and Iyengar 2008; Poynor and Diehl 2007). We show that these groupings may also affect how consumers process information they come across later in an unrelated Web site or retail setting. Furthermore, these broad/narrow groupings appear to affect how consumers process product dimensions that have been made salient.

In this article, we focused on two major dimensions that influence new product adoptions: innovation and risk. However, theoretically, the findings should generalize to other dimensions made salient by marketing actions, such as the price versus quality dimension or the brand name versus functional attributes (e.g., flavor, style) dimension. For example, a brand can emphasize quality over price through advertisements. In this case, we would predict that broad categorizers would mainly consider quality information, but narrow categorizers would consider both quality and price information before making a purchase.

The first manipulation involved survey scales that varied in the number of scale points available. 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 to an item (e.g., Cox 1980). This research suggests that whether a survey scale comprises few, broadly grouped response options or many, narrowly grouped response options can affect responses to subsequent and unrelated survey questions. In some preliminary results, we find that exposure to items with broadly versus narrowly grouped response categories before a conjoint task can affect price sensitivities and part-worths obtained for the attributes in the conjoint task. Similarly, the broad versus narrow groupings could also affect a multidimensional scaling task.

On the surface, the findings seem to suggest that exposure to narrow (versus broad) categorizations leads to normatively better decisions. Further research should examine contexts in which exposure to narrow categorizations, and the resultant tendency to consider and integrate all available information, is detrimental to decision quality. Another question pertains to the persistence of the effects: Do these effects last for a short time, with consumers reverting to their innate tendencies, or does regular exposure to such categorizations have a permanent effect? Finally, further research should also explore the effects of exposure to such categorizations in other domains, such as brand extension evaluations, risk tolerance, and mental accounting.

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