Category Width Mindset Moderates Sensitivity to Comparison Frames

Gülden Ülkümen

Selin A. Malkoc

AUTHOR NOTE

Gülden Ülkümen is an Assistant Professor of Marketing, Marshall School of Business, University of Southern California, 701 Exposition Blvd, Hoffman Hall 516, Los Angeles, CA 90089, 213.740.3852, ulkumen@marshall.usc.edu. Selin A. Malkoc is the Marcile and James Reid Associate Professor of Marketing, Olin Business School, Washington University in St. Louis, One Brookings Drive, Campus Box 1133, St. Louis, MO 63130, 314.935.6354, malkoc@wustl.edu. The authors thank Craig Fox and Joseph K. Goodman for their helpful comments on previous drafts of this paper.
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ABSTRACT

Explicit suggestions by retailers or implicit contextual factors can highlight either similarities or differences in product comparisons. In five laboratory studies, the authors demonstrate that these highlighted comparison frames do not single-handedly dictate consumer’s attention to similarities versus differences. The authors identify a key factor, category width mindset, which systematically influences consumers’ susceptibility to comparison framing effects. Consumers exposed to broad (i.e., coarse) categories become more sensitive to comparison frames, considering either similarities or differences, depending on which frame is highlighted. Instead, those exposed to narrow (i.e., fine) categories become less sensitive to comparison frames, such that they consider both similarities and dissimilarities, irrespective of the highlighted frame. Importantly, the adopted comparison frame subsequently influences consumption processes and outcomes such as: (1) experienced choice difficulty (2) difference between willingness to pay for the preferred and non-preferred options, and (3) reactions to stock-outs.

Keywords: framing effect, comparison framing, similarity difference perception, categorization, category width
An important consideration in every marketing strategy is product differentiation. Often, horizontally differentiating products by emphasizing the distinctive features is a desired strategy (Levitt 1980). For instance, a car manufacturer might advertise the unique styling of a sports car or a soup manufacturer might highlight superior health benefits of its products. The popularity of the strategy is rooted in the notion that better differentiated products lead to stronger product preferences and decreased price sensitivity (Mitra and Lynch 1995). An alternative approach is to adopt a “me-too” strategy, whereby positioning products closely with established brands (Carpenter and Nakamoto 1989). Employing this strategy, a generic drugs producer may highlight the commonalities between its medication and that of name brands or a detergent manufacturer can emphasize similarities between their brand and competitors in terms of cleaning power. Successful implementation of both horizontal and vertical differentiation strategies depend critically on consumers’ responsiveness to messages that highlight product similarity and dissimilarity.

Ability to influence consumers’ perception of similarities and differences has benefits that extend beyond being a strategic positioning tool and lends itself to tactical use in several marketing contexts. For instance, at the brand level, the literature on brand extensions has shown that brand extensions that are seen similar to the parent brand are evaluated more positively (Boush and Loken 1991). For a brand entering an emerging market, emphasizing similarities to the pioneer can reduce the brand’s competitive advantage, whereas emphasizing similarities to the late entrant can increase the brand’s competitive advantage (Carpenter and Nakamoto 1989).

At the retail level, sales associates often highlight similarities or differences
between products in an attempt to influence consumer decision process. For instance, a waitress might try to help an indecisive diner reach a decision by emphasizing differences between two dishes or a salesclerk might persuade a customer to purchase an alternative to a desired out-of-stock item by highlighting similarities between a substitute product and the out-of-stock item. Thus, whether it is at the level of brand positioning, portfolio management, or retail decision, comparison framing (i.e., highlighting similarities or differences between products) is an important tool used regularly by marketers.

The question arises under what conditions do consumers adopt the comparison frame that is suggested to them? It stands to reason that consumers tend to adopt the comparison frame highlighted in the decision context, focusing on shared features when similarity is highlighted and distinctive features when dissimilarity is highlighted (Tversky 1977; see also Gregan-Paxton and Moreau 2003; Mussweiler 2003). Thus, when a generic drug invites customers to compare identical ingredients or a waitress highlights distinctive preparations of different dishes, most consumers should focus their attention on similarities and differences between products, respectively.

In present investigation, we challenge this basic premise and suggest that consumers are not necessarily influenced by the comparison frame that is highlighted in the relevant decision context. Instead, consumers’ mindset, particularly regarding how broad or narrow they categorize their environment, systematically influences susceptibility to the comparison frames. An examination of seemingly diverse suppressors of framing effects (e.g., high expertise, high involvement, belonging to a collectivistic culture, trait-level narrow category width) supports our predictions by suggesting that the common thread connecting these factors is their association with
narrower conceptual categories. Accordingly, in the current paper, we investigate category width (e.g., Ülkümen, Chakravarti, and Morwitz 2010) as an important factor that might help elucidate when comparison frames are effective. We predict and demonstrate that consumers become more sensitive to comparison framing when they are in a broad mindset (i.e., focusing on the coarse distinctions) Alternatively, those who are in a narrow category mindset (i.e., seeing world in finer grained manner) become less sensitive to comparison framing.

We further suggest that consumers’ amenability to comparison frames is of substantive theoretical and practical importance, because it can influence how consumers distinguish between products (Dhar, Nowlis, and Sherman 1999) and because it affects a central facet of the decision making process (Tversky 1977). For instance, a consumer perceiving two products as similar to each other might have a harder time differentiating between them, leading to weaker preferences and an increased difficulty in making a decision (Botti and McGill 2006). Such lack of differentiation might also have implications for consumers’ willingness to pay, a critical yet malleable aspect of consumer behavior (Gneezy et al. 2010; Wertenbroch and Skiera 2002). In the section that follows, we motivate our central hypothesis by situating it within relevant prior literature. We then report results from five experiments that document the moderating role of category width mindset on comparison framing effects. Finally, we conclude by discussing the implications of our research for theory and marketing practice.

FRAMING EFFECTS
A variety of literatures across different domains of study have demonstrated that consumers’ judgments and evaluations can be influenced by the way the information is framed (Payne, Bettman and Johnson 1992; Tversky and Kahneman 1981). Framing effects can come in various forms, such as an attribute labeled using positive or negative terms (Malkoc, Hedgcock and Hoeffler 2013), a persuasive message that highlights potential gains or potential losses (White, MacDonnell and Dhal 2011), or a risky choice described in terms of probabilities of favorable or unfavorable outcomes (Levin, Schneider and Gaeth 1998). Moreover, in the domain of risky decisions, individuals’ understanding of risk information depends on whether risks are framed using natural frequencies or conditional probabilities (Gigerenzer and Hoffrage, 1995). In the political communication literature, it has been argued that framing arguments by highlighting different aspects of an issue can significantly alter persuasion (e.g., Lecheler, de Vreese and Slothuus 2009). Regardless of the type of framing effect, it affects information processing by selectively highlighting or increasing the accessibility of information and consequently, focusing decision makers’ attention on highlighted information (Tversky and Kahneman 1981). In the present paper we adopt a very general definition framing effects, as judgments or choices that vary systematically with normatively equivalent descriptions of options (or elicitation modes) that highlight distinct attributes.

Framing effects have been shown to be quite robust (Levin, Schneider and Gaeth 1998). For example, framing effects do not vary with differences in effortful thought, as measured by Need For Cognition (LeBoeuf and Shafir 2003). Moreover, these effects have been observed across different resource domains such as money and time allocation decisions (Paese 1995), across individuals and groups (Paese, Bieser, and Tubbs 1993),
numerical and verbal descriptions (Reyna and Brainerd, 1991), hypothetical descriptions or real experiences (Levin and Gaeth 1988). These effects can be enduring, with some studies showing effects persisting as long as six months (Ganzach and Karsahi 1995). Thus, it is important to understand factors that do moderate framing effects.

**DIVERSE MODERATORS OF FRAMING EFFECTS**

A review of diverse framing literatures identifies three key factors that influence susceptibility to framing effects, notably: expertise, involvement, and culture. We first briefly review the literature on these moderators. Next, we turn to identifying the common thread that theoretically connects these seemingly unrelated moderators.

**Expertise**

In marketing literature, Bettman and Sujan (1987) show that unlike novice consumers whose evaluations and choices were strongly influenced by a framing manipulation in which a particular decision criterion (e.g., reliability or creativity) was highlighted through priming, expert consumers were not susceptible to such a framing/highlighting effect. In the risk taking literature, it has been shown that while framing information in frequentistic or probabilistic formats can influence individuals’ understanding (Gigerenzer and Hoffrage, 1995), experts tend not to exhibit such a framing effect. This moderating role of expertise has been demonstrated in both clinical psychology (Fagley and Kruger 1986), and medical decision making (Ferguson and Starmer, 2013) literatures. Similarly, studies of metaphorical reasoning suggest that
framing effects induced by use of differential metaphors to describe the same issue are attenuated when the receiver has high expertise in the issue domain (e.g., Robins and Mayer 2000).

**Involvement**

A large body of research has examined the impact of involvement-related variables such as issue importance or self-relevance on susceptibility to frames. For example, findings from literature on political communication suggest that the particular frame used to communicate an opinion can influence the public’s agreement with that opinion, by selectively emphasizing or obscuring particular aspects of an issue. Importantly, Lecheler, de Vreese and Slothuus (2009) find that people’s opinions are affected in a frame-consistent manner, but only for issues that are not very important to them—for issues that are considered important, framing effects were not observed. More generally, judgment and decision making literature has shown that evaluations of topics that are personally relevant are not influenced by attribute or valance frames (Janiszewski, Silk, and Cooke 2003; Levin et al 1988; Marteau 1989).

**Culture**

In the well-established attribute-framing paradigm, the adjective used in the body of a question (e.g., “how short” or “how tall”) can influence the responses to the question in a frame-consistent direction (Levin, Schneider and Gaeth 1998). One moderator for this effect seems to be related to culture-related cognitive differences. While individualistic tendencies are associated with a singular focus on the target adjective
suggested by the question, collectivistic tendencies are associated with focusing not only on the target, but also on contextual information (Markus and Kitayama 1991). Thus, people from individualistic cultures tend to be more receptive to framing than those from collectivist cultures (Jain, Desai and Mao, 2007), presumably because they focus their attention more asymmetrically on the information highlighted in the question body.

**CATEGORY WIDTH AS THE LATENT MODERATOR OF FRAMING EFFECTS**

We suggest that each of the seemingly unrelated moderators of framing effects mentioned above points to a potential common mechanism: how broadly or narrowly individuals categorize their world. The same set of objects can be categorized broadly, creating fewer, more inclusive groups, or they can be grouped narrowly, creating a greater number of less inclusive groups. Accordingly, category width refers to the coarse or fine-grained nature of the categories consumers prefer to utilize. Past research has demonstrated that category width can be influenced both by trait-level (Pettigrew 1958), and situational (Ülkümen, Chakravarti, and Morwitz 2010) factors. We argue that individuals who are experts in a domain, people who are highly involved with an issue, and people who belong to collectivistic cultures display similar dispositions in their conceptual categorizations.

First, experts, who can access a greater number of differentiating factors, have been shown to use a greater number of, narrower conceptual categories (Alba and Hutchinson 1987; Eguaras, Domezain and Grijalba 2012). Similarly, product familiarity has been shown to affect category width, such that consumers who are familiar with a
product make finer distinctions in levels of utility corresponding to different attribute levels (Park and Lessig 1981). The second aforementioned moderator of framing effects, namely involvement, is another factor that has been shown to influence the complexity of categorizations. When evaluating an issue they are highly involved with, consumers are motivated to process a greater number of factors (e.g., Andrews et al 1990; Celsi and Olson 1988), and consequently utilize narrower groups in a grouping task (Eguaras, Domezain and Grijalba 2012). Yet the third moderator identified above, individualistic vs. collectivistic cultural tendencies, has also been connected to categorization style. Specifically, categorization literature suggests that considering information within a context prompts collectivists to create more subcategories within a product class (Ratneshwar and Schocker 1991), and thus they exhibit more differentiated category structures than individualists do. As such, it appears that category width is the common thread to all of the aforementioned moderators of framing effects. That is, experts, highly involved individuals, and those belonging to collectivistic cultures, all of whom use narrower categorizations, also exhibit less susceptibility to framing effects.

**CATEGORY WIDTH AND CONSIDERATION OF SALIENT INFORMATION**

But, why and how would category width moderate framing effects? Our prediction is based on the notion that if framing works by selectively highlighting information, then we expect to observe stronger framing effects to the extent that an individual considers only the highlighted information, without giving active consideration to information that is less salient.
Furthermore, prior studies have established the link between consumers’ attention to non-salient cues and their category width mindset. This idea is based on the observation that a person considering objects in terms of their most salient aspect generally feels comfortable sorting these objects into fewer, broader categories (e.g., fruits, vegetables), whereas a person considering multiple aspects of objects, generally prefers to sort them into a greater number of, narrower categories (e.g., summer fruits, summer vegetables, winter fruits, winter vegetables). Reversing the causal direction, research on category width primes (Ülkümen, Chakravarti, and Morwitz 2010, Chakravarti et al 2013) has demonstrated that consumers previously exposed to broad categorizations subsequently base decisions on fewer, more salient dimensions; meanwhile, consumers previously exposed to narrow categorizations base their decisions on a greater number of dimensions--both salient and non-salient.

Bringing these two ideas together, we surmise that this tendency for broad categorizers to consider only the most salient perspective renders them more susceptible to framing effects. In contrast, narrow categorizers’ tendency to routinely consider the less salient perspective, may serve them well by making them less susceptible to framing effects. In sum, we posit that category width mindset is a critical factor that helps refine our understanding of how consumers make comparisons, as well as when they are more persuaded by highlighted comparison frames.

CATEGORY WIDTH MINDSET AND COMPARISON FRAMES

In this paper we restrict our attention comparison frames that highlight either
product similarity or dissimilarity. We do so for two reasons. First, as mentioned, comparison frames serve a central role in both marketing strategy and consumer services. Second and more importantly, similarity/dissimilarity frames are an ideal test for the role of categorization in consumer frame susceptibility since these frames are simple and highlight complementary information, allowing us to make clear predictions across comparison frame conditions. We predict that consumers primed with broad categories will display greater susceptibility to contextual influences in their product comparisons and thus more likely to adopt the comparison frame highlighted by the decision environment (focusing on either similarities or dissimilarities). Instead, those primed with narrow categories will become less context-dependent and adopt multiple frames (focusing on both similarities and dissimilarities), regardless of the highlighted frame. Formally, we hypothesize that:

**H1:** Consumers previously exposed to broad categories will be more susceptible to comparison framing than consumers previously exposed to narrow categories, such that they will afford greater weight to similarities (differences), when similarities (differences) among options are highlighted.

As mentioned before, categorization-driven similarity judgments can have important consequences. For example, the perceived similarity of options can influence the strength with which consumers prefer their first choice over their second choice (Lamberton and Diehl 2013). Along the same lines, we argue that the extent to which consumers consider similarities and/or differences can influence their strength of preference among options under evaluation. As options appear more similar (different), it
becomes harder (easier) to differentiate them. Consumers who cannot fully differentiate between options would not have strong preferences for one of the options. This will be reflected in: (1) greater time taken to make a choice, and (2) smaller difference between prices they are willing to pay for the selected product and a less preferred alternative.

**H2:** Consumers previously exposed to broad categories will be more affected by the highlighted comparison frame than consumers previously exposed to narrow categories, such that they will have a weaker (stronger) preference among options, when similarities (differences) among products are highlighted.

Hypothesis 2 pertains to preference strength, where perceptions of similarity (vs. difference) lead to undesirable outcomes like higher choice difficulty and conflict. However, greater similarity perceptions can also lead to more desirable outcomes. Imagine a consumer who decided to purchase a product (i.e., original selection), but has been informed that the product is unavailable and been offered an alternative product (i.e., new alternative). In this case, the consumer should be more favorable towards the new alternative if she perceives it to be similar to her original selection, revealing another instance where sensitivity to the highlighted comparison frame is crucial, affecting not only the consumer choice process, but also ultimate product evaluations. Therefore, we hypothesize that:

**H3:** Consumers previously exposed to broad categories will evaluate a new alternative more (less) favorably than consumers previously exposed to
narrow categories when similarities (differences) between this new alternative and their original selection are highlighted.

We test these hypotheses in five laboratory studies. First two studies establish our basic premise: Study 1A shows that the highlighted comparison frame dictates consumers’ consideration of similarities and differences, and rendering them more susceptible to framing effects, but only for those who have previously been exposed to broad categories (hypothesis 1). Study 1B shows that this moderation extends to similarity perceptions between multi attribute products. The remaining studies examine the consequences of this effect on a variety of consumer decision-making domains. We show that this interactive effect influences consumers’ preference strength (hypothesis 2), as reflected in longer decision times (Study 2A) and smaller differences in willingness to pay (Study 2B). Finally, Study 3 demonstrates the effect on consumers’ evaluation of an available product, when their favored product is out of stock (hypothesis 3).

**STUDY 1A**

The aim of study 1A is to provide an initial demonstration that category width can influence consumers’ susceptibility to comparison framing effect. We expect that exposure to broad categories will make it more likely for consumers to adopt the highlighted comparison frame, and therefore consider *either* similarities or differences across options. In contrast, exposure to narrow categories should diminish consumers’ susceptibility to comparison framing, and lead to the consideration of *both* similarities
and differences, regardless of the highlighted frame (hypothesis 1). To explore this premise, in Study 1A we first use an established category width manipulation (Ülkümen, Chakravarti, and Morwitz 2010) and then manipulate the highlighted frame by using a scenario where a salesperson frames a comparison between two products in terms of their similarities or differences. Finally, we measure participants’ consideration of similarities and differences when making decisions.

**Method**

*Participants and design.* One hundred seventy seven MTurk participants (see Goodman, Cryder and Cheema 2013 for a detailed discussion of this participant pool) took part in this study in exchange for a token payment. The study had a 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) between subjects design.

*Procedure.* Participants first completed the “Personality Study,” aimed to manipulate category width (Ülkümen, Chakravarti, and Morwitz 2010). Participants responded to questions about themselves that differed in the number of response categories. While the participants in the narrow condition answered the questions with many, narrow response categories, those in the broad condition answered the same questions with a few, broad response categories (see appendix A, panel A for sample stimuli). Specifically, participants first completed Goldberg's (1990) Big Five personality inventory by marking their responses on 9-point (narrow) or 3-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 movie, preferred
cat breed for adoption, and choice of holiday type from amongst many (few) alternatives. Finally, they were asked to classify a picture of the moon into one of many (few) phases.

Participants then moved on to an ostensibly unrelated study, where they shopped for a backpack. The salesperson offered them two backpacks, saying that they were either similar to (similarity frame), or different from (difference frame) each other. Participants made a choice and reported their relative consideration of the similarities and differences during their decision, on a 100-point scale (0 = considered mostly similarities, 100 = considered mostly differences).

**Results and Discussion**

A 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) ANOVA on relative consideration of similarities and differences revealed a main effect of the highlighted comparison frame manipulation $F(1, 173) = 3.67, p = .05$), confirming that our manipulation was successful in shifting participants’ consideration between similarities and differences ($M_{\text{similarity}} = 45.13, M_{\text{difference}} = 52.77$). This effect was qualified by the expected interaction between highlighted frame and category width ($F(1, 173) = 5.96, p = .016$). As can be seen in Figure 1, the highlighted frame influenced similarity/difference consideration only for participants who have been exposed to broad categories. That is, these participants considered relatively more differences when the context highlighted differences ($M = 57.89$), and relatively more similarities when the context highlighted similarities ($M = 40.76, F(1, 173) = 9.57, p = .002$). In contrast and as expected, those exposed to narrow categories were insensitive to the highlighted frame ($M_{\text{difference}} = 47.15$ vs. $M_{\text{similarity}} = 49.23, F(1, 173) < 1, p = .710$).
Results of Study 1A provide initial support for our account by demonstrating that when comparing products, consumers’ consideration of similarities or differences depends not only on the highlighted comparison frame, but also on the category width mindset they adopt. These findings suggest that consumers exposed to broad categories start to exhibit strong comparison framing effects and focus on the highlighted frame. In contrast, those exposed to narrow categories become less susceptible to comparison framing, showing insensitivity to the highlighted frame (hypothesis 1).

Decision environments can highlight a similarity or difference frame in various ways. In Study 1A, we manipulated comparison frame by a salesperson’s characterization of the two options as similar or dissimilar. In Study 1B, we utilize a different, subtler manipulation that varies the composition of the choice set. In addition, we test whether the effects we observed in consideration of similarities and differences extend to ensuing similarity and difference judgments.

**STUDY 1B**

Study 1B has two main goals. First, we highlight comparison frames using subtle and organic cues in the environment. To that end, we utilize a multi attribute decision task. A second goal of the study is to extend our findings to similarity judgments.
Method

Participants and design. Sixty-six native English speakers completed the study in exchange for partial course credit. The study had a 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) between subjects design.

Procedure. Participants first completed the category width manipulation as in study 1A. Next, they moved on to an ostensibly unrelated study where they made a choice between two cars, described using two attributes: gas mileage and ride quality. These two target cars were presented together with two additional cars. In the similarity frame condition, the additional cars had more extreme values than the target cars on both attributes (see appendix B, panel A). Thus, we expected this context to highlight how similar the target cars were to each other. In the difference frame condition, the additional cars had values that fell between the two target cars on both attributes (see appendix B, panel B). We expected this context to make the differences between target cars more salient. Participants were asked to indicate the overall similarity of the two cars, as well as their similarity in terms of each attribute, on 100-point scales (1=Very different, 100=Very similar).

Results

Overall similarity judgments. A 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) ANOVA revealed a main effect of the comparison frame (F(1, 62) = 4.20, p = .045). Participants perceived the two target products as more similar in the similarity frame condition (M = 48.25) than in the difference frame condition (M = 36.41), suggesting that our manipulation was successful
in highlighting similarities or differences during comparison. More importantly, we found the expected two-way interaction between category width and comparison frame \( (F(1, 62) = 6.79, p = .011) \). As can be seen in figure 2 (panel A), when participants were exposed to broad categorizations, they perceived the cars more similar when the similarity frame was highlighted \((M = 57.24)\), and more different when the difference frame was highlighted \((M = 31.71, F(62) = 11.22, p = .001)\). In contrast, the highlighted comparison frame did not influence participants’ perception of similarity when the exposed categories were narrow \((M_{\text{similarity}} = 38.07 \text{ vs. } M_{\text{difference}} = 41.02, F(62) < 1)\).

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**Similarity in terms of ride quality and gas mileage.** We ran two separate 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) ANOVA’s on participants’ similarity perceptions of the cars in terms of each attribute (see figure 2, panel B for a summary). We found the expected two-way interaction for similarity in terms of both ride quality \((F(1, 62) = 3.76, p = .05)\) and gas mileage \((F(1, 62) = 3.80, p = .05)\). As expected, planned contrasts revealed that participants previously exposed to broad categories perceived the cars as more similar in terms of ride quality when the similarity frame was highlighted \((M = 51.00)\) than when the difference frame was highlighted \((M = 35.00, F(62) = -4.97, p = .029)\). This, however, was not the case for those previously exposed to narrow categories \((M_{\text{similarity}} = 38.27 \text{ vs. } M_{\text{difference}} = 42.24, F(62) < 1)\). Along the same lines, gas mileage similarity judgments were sensitive to comparison framing when the previously exposed categories were broad \((M_{\text{similarity}} = 61.53 \text{ vs. } M_{\text{difference}} = 46.06, F(62) = 4.75, p = .033)\), but not when they were
narrow (M\text{similarity} = 40.00, M\text{difference} = 44.41, F(62) < 1).

Discussion

Study 1B examined whether the moderating effect of category width on the comparison framing effect would extend to judgments of similarity. The results show that consumers exposed to broad categories perceived two products as more similar (different), when similarities (differences) among products were highlighted. Similarity judgments of those exposed to narrow categories, however, were not sensitive to the highlighted comparison frames, suggesting that these participants became immune to comparison framing effects.

Perceptions of similarity are particularly consequential for consumption decisions. Greater perceived similarity between products would make it more difficult for consumers to differentiate between them. This reduced strength of preference should manifest itself in consumers taking a longer time to decide between products, and displaying a lower willingness to pay a premium for their selected option over the non-selected option. Studies 2A and 2B test this premise (hypothesis 2).

**STUDY 2A**

The main goal of Study 2 is to extend our results to choice difficulty and preference strength, as measured by the amount of time consumers take to make a decision. To the extent that consumers find options to be similar to each other, they should have a harder time differentiating between them and have weaker preferences,
which should be reflected in longer choice times.

**Method**

*Participants and design.* One hundred twenty-one MTurk participants who were fluent in English participated in this study in exchange for a token payment. The study had a 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) between subjects design.

*Procedure.* After completing the category width manipulation used in previous studies, participants moved on to an ostensibly unrelated second study, where a salesperson framed two backpacks as either similar to, or different from each other. Participants made a choice between backpacks, and response time was recorded unobtrusively.

**Results and Discussion**

We log transformed the amount of time participants took to choose between the two backpacks. The logged response times for three participants were more than three standard deviations away from the mean, and therefore we conducted the analysis on the remaining 118 participants. A 2 (category width: broad vs. narrow) x 2 (comparison frame: similarity vs. difference) ANOVA revealed a two-way interaction ($F(1, 114) = 3.85, p = .05$). As expected, participants exposed to broad categories took longer to make a choice between the two backpacks when they were encouraged to focus on their similarities ($M = 1.80$), than their differences ($M = 1.51$, $F(1, 114) = 4.64, p = .033$). However, when participants were exposed to narrow categories, choice time was not
influenced by the highlighted frame ($M_{\text{similarity}} = 1.43$ vs. $M_{\text{difference}} = 1.51$, $F(1, 114) < 1$).

**STUDY 2B**

To further explore how highlighted frames and category width interactively influence preference strength, we next examine another manifestation of preference strength. As perceived similarity between products increases, we expect consumers to be more indifferent between the options and thus be willing to pay a lower premium for their selected option over the non-selected option. In addition, in this study we highlight the comparison frame in a more perceptual way. We use pictures of the target and background products to vary the perceived similarity between the target products. Finally, this study aimed to test our proposed process account, whereby comparison frames and category width mindsets interactively influence preference strength, via consideration of similarities and differences.

**Method**

*Participants and design.* One hundred and twenty-six undergraduate students participated in this study for partial course credit. The study had 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) between subjects design.

*Procedure.* Participants first completed the same category width manipulation used in previous studies. In a second, ostensibly unrelated study, participants were asked to imagine that they are shopping for new chairs, and they were presented with a catalog
that shows pictures of twelve different chairs. Participants were told to further imagine that after looking through the catalog, they picked two chairs for further consideration: marked A and B on the catalog. These two target chairs were constant across conditions. To highlight the comparison frame we varied the extent to which the remaining ten chairs in the catalog resembled these target chairs. In the similarity frame condition, the two target chairs were surrounded by ten chairs that differed in their color, shape and style (see appendix C, panel A). We expected that viewing the two target chairs in the context of different chairs would direct participants’ attention to the similarities between the two target chairs. In contrast, in the difference frame condition, the catalog presented the two target chairs surrounded by ten other chairs that were very similar in color and style (see appendix C, panel B). We expected this context to direct participants’ attention to the differences between the two target chairs. Participants made a choice between the two chairs and indicated how much they would be willing to pay for each chair, separately. Finally, they reported their relative consideration of the similarities and differences between these chairs while making their choice (0 = considered only the similarities, 100 = considered only the differences).

Results

We log-transformed the dollar amounts participants entered, and created a difference score by subtracting \( \text{WTP}_{\text{chosen}} \) from \( \text{WTP}_{\text{not chosen}} \). If the participants focus on the similarities between the two chairs, this should reduce the strength with which they prefer one option to the other, and thus result in similar willingness to pay for the two chairs and a smaller score on this measure. One participant’s response was more than
three standard deviations away from the mean on this measure, and therefore we conducted the analyses on the remaining 126 participants. A 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) ANOVA on this measure revealed the predicted interaction between category width and highlighted frame (F(1, 121) = 7.49, p = .007. Participants who were exposed to broad categories were willing to pay a greater (smaller) premium for their preferred chair over the other chair, when the differences (similarities) between the two chairs were highlighted (M_{difference} = .48 vs. M_{similarity} = .31, F(1, 121) = 5.89, p = .017). In contrast, the difference in WTP was not sensitive to the highlighted frame if the participants were previously exposed to narrow categories (M_{difference} = 34 vs. M_{similarity} = .44, F(1, 121) = 2.10, p = .150). Conducting the analyses on raw differences scores did not change the results (F(1, 121) = 6.55, p = .012; see Figure 3, panel A) or the ensuing conclusions.

Relative consideration of similarities and differences. A (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) ANOVA on this measure revealed a main effect of highlighted frame, suggesting a successful manipulation: participants focused more on differences when the difference frame was highlighted (M = 76.59) than when the similarity frame was highlighted (M = 69.58, F(1, 121) = 4.69, p = .032). Replicating studies 1A and 1B, the two-way interaction was also significant (F(1, 121) = 5.22, p = .024; see Figure 3, panel B). As expected, while the participants exposed to broad categories were sensitive to the highlighted frames (M_{difference} = 81.84 vs. M_{similarity} = 67.44, F(1, 121) = 9.99, p = .002), those exposed to narrow categories were not (M_{difference} = 71.33 vs. M_{similarity} = 71.72, F(1, 121) < 1).
**Moderated mediation analysis.** To test whether the shift relative consideration of similarities/differences was responsible for the changes in WTP, we carried out a moderated mediation analysis where category width moderates the effect of highlighted frames on the mediator, relative consideration of similarities and differences, which in turn influences difference in WTP (Preacher, Rucker, and Hayes 2007, model 2). We ran two multiple regression models to test this framework. The first mediator model examined the effects of category width, framing and their interaction on relative consideration of similarities and differences. The effect of the two-way interaction between category width and framing on relative consideration was significant (b = -14.79, p = .028), indicating that the indirect effect of framing, through consideration, varies as a function of category width. The second dependent variable model examined the effects of category width, framing, the interaction between category width and framing, as well as relative consideration of similarities and differences on difference in WTP. This analysis revealed a significant and positive effect of relative consideration (b = .003, p = .015), and a significant interaction between category width and framing (b = -.213, p = .028). A bootstrap analysis confirmed that the conditional indirect effect of framing on difference in WTP, through relative consideration of similarities and differences was significant for broad category exposure (b = .047; 95% confidence interval = .008, .113), but not significant for narrow category exposure (b = -.001; 95% confidence interval = -.035, .036).
Discussion

Studies 2A and 2B examined whether sensitivity to highlighted frames, as moderated by category width, influences preference strength. Our results show that framing a comparison as a search for similarities (differences) can decrease (increase) the strength of preference between two options. This reduced preference strength, in turn, leads consumers to take a longer time to make a decision and differentiate products less in terms of their willingness to pay for them. However, we predicted, and found these effects only for consumers primed with broad (versus narrow) categories. These results not only provide support for our predictions (hypothesis 2), but also establish the mediating role of consideration of similarities and differences.

STUDY 3

Studies 2A and 2B examined preference strength, where perceptions of similarity (vs. difference) lead to undesirable outcomes like increased choice difficulty. In Study 3, we investigate an instance where perceptions of similarity has a desirable outcome: the case of a stock out. Consider the ubiquitous situation where a consumer is told that her selection is no longer available, and is offered an alternative product. Here, the evaluation of the alternative product should be more favorable to the extent that it is perceived to be similar to the original selection.

Furthermore, in previous studies, while manipulating the highlighted frame, participants in all conditions evaluated the same two products, but were primed with either their similarities or differences. In Study 3, we want to see whether the interactive
effect of frame and category width remains robust even in a situation where the options are objectively similar (or different). We also aim to show converging evidence by using a different manipulation of category width.

Method

Participants and design. Ninety participants participated in the study in exchange for partial course credit. The study had a 2 (highlighted comparison frame: similarity vs. difference) x 2 (category width: broad vs. narrow) between subjects design.

Procedure. Participants first completed the “Shopping Task,” which served as an alternative manipulation of category width (Ülkümen, Chakravarti, and Morwitz 2010). In this task (see appendix A, panel B for an example screen shot), participants were told that they were shopping for a friend’s party and needed to make choices in eight different product domains (wine, cheese, beer, movies, books, music). The key manipulation was whether the products were organized in a few, broad categories or many, narrow categories. For example, the same set of 24 wines was either categorized into two groups in the broad condition (red or white), or twelve in the narrow condition (e.g., Italian-Red, Italian-White, French-Red, French-White, etc.).

Participants were then told to imagine that after completing shopping for their friend, they want to check out a backpack for themselves. They were presented with 12 backpacks, in a random order, and indicated the backpack they like most. Instead of bringing their selection, the sales clerk returned with a new backpack, pretested to be either objectively similar to [different from] the selected backpack, and said:

“Unfortunately the backpack you like is not in stock right now. I am really sorry.
However, I have another backpack for you. I think you will like this one. It is quite similar to [different from] the one you like and I hope you will appreciate the similarity [find that the difference is for the better].”

Participants rated how much they liked the new backpack offered on a 100-point slider scale anchored by (do not like it at all / like it very much). Participants also rated how convincing they thought the salesperson was on a 100-point slider scale. Twenty-one indicated they did not find the salesperson’s speech very credible (a rating of less than 10 on the 100 point scale), and therefore were excluded from further analysis. Number of excluded participants did not differ across conditions (Chi-Squared = .656). The pattern of results stays the same when these participants are included in the analysis.

Stimulus development. To develop the stimuli for the second part of the study, we identified an initial set of 12 backpacks. For each backpack, we identified a similar and a different alternative (see appendix D), resulting in a total of 36 backpacks. To verify the objective similarity/difference of these backpacks, we separately paired the original 12 backpacks with their similar and different alternatives. This resulted in a total of 24 pairs. 192 different participants indicated how similar/different each pair of backpacks was. For each of the 12 original backpacks, we compared the similarity ratings when it was paired with its similar versus a different alternative. The original option was viewed as more similar to its similar than its different alternative for all 12 backpacks (all t’s > 6.0; all p’s < .001).

Results

Attitude toward new alternative. A (highlighted comparison frame: similarity vs.
difference) x 2 (category width: broad vs. narrow) ANOVA revealed a main effect of frame (F(1, 65) = 4.03, p = .05), suggesting that overall, participants viewed a backpack that is more similar to their original selection more positively. This effect was qualified by the expected two-way interaction (F(1, 65) = 4.03, p = .05; see Figure 4). Participants exposed to broad categories liked the new alternative more when they focused on its similarity to the original backpack (M = 62.76), than its difference from the original backpack (M = 36.64, F(1, 65) = 6.45, p = .014). In contrast, respondents’ attitudes were not sensitive to the comparison frame if they were exposed to narrow categories (M_{similarity} = 57.29 vs. M_{difference} = 59.00, F(1, 65) < 1).

Discussion

Study 3 provided further support for our theory by replicating our findings in a different domain, and when framing is accompanied by objectively similar/different options. We showed that category width moderates the effect of highlighted frames on consumers’ reaction to stock-outs. While consumers exposed to broad categories evaluate products that are similar to their original selection more positively than products that are different from it, consumers exposed to narrow categories do not show this difference. We find that exposure to narrow categories can dampen the negative effects of stock-outs, especially when retailers cannot offer consumers alternatives that are reasonably similar to their original selection.
GENERAL DISCUSSION

Decision contexts can highlight either similarities or differences, and thereby frame the way consumers compare alternatives, ultimately influencing preferences. In contrast to previous literature that shows the robustness of framing effects, we demonstrate that under certain conditions, consumers can, in fact, deviate from the highlighted frames. Specifically, we show that the width of categories consumers have been exposed to in previous, unrelated decisions (Ülkümen, Chakravarti, and Morwitz 2010) can determine whether they exhibit comparison framing effect (i.e., they simply adopt the comparison frame highlighted by the decision context), or become immune to comparison frames (i.e., they go beyond contextual cues and consider both the highlighted and the non-highlighted frames). In five studies we demonstrate that category width moderates the comparison framing effect on consumers’ relative consideration of similarities and differences, which in turn has downstream consequences on (1) simple perceptual processes (the extent to which consumers perceive products as similar), (2) decision making processes (the extent to which consumers experience difficulty when choosing), and (3) decision outcomes (the extent to which consumers are willing to pay for products, and their attitudes towards alternative offerings).

While our main contribution is identifying when comparison framing effects manifest, we also contribute to the literature by presenting two novel, yet theoretically motivated, methods for contextually highlighting a comparison frame. Despite the importance of similarity perceptions on consumer behavior, little is known about contextual factors that would highlight a comparison frame, short of direct instructions to
consider similarities/differences (Mussweiler 2001) or directly providing commonalities or differences (e.g., Gentner and Markman 1994). In the current paper, we show that judgments of similarity between two target options can be manipulated by varying the resemblance of background options to these targets, either in terms of attribute levels (study 1B), or visual characteristics (study 2B).

Implications and Relationships to Previous Literature

Framing effects. In an attempt to better understand what factors might influence consumers susceptibility to comparison frames, we conducted a thorough examination of the literature on framing effects. As we have previously discussed in detail, this literature has identified several moderators that diminish the effect of framing. In particular, consumers who are more experienced, who are more involved, as well as those from collectivist cultures tend to show less sensitivity to framing effects. Extending these literatures, we have identified a possible common mechanism, namely category width mindset, which might underlie these findings. Furthermore, we provided evidence that such changes in category width mindset alters susceptibility to at least one framing effect: comparison framing. Our results extend this vast literature by not only identifying a moderator, but also proposing a unifying account that synthesizes existing moderators.

Assimilation and contrast effects. The literature on priming finds that priming individuals with a trait (e.g., smart) leads to assimilation effects (e.g., smarter behavioral outcomes). Presumably, priming causes individuals to automatically consider the similarities between themselves and the prime. Further studies show that, when there is a factor that prompts individuals to also consider the differences between themselves and
the prime, contrast effects can also occur. For example, exemplar (versus category) priming, and single (versus multiple) exemplar priming have been shown to encourage a comparison between the self and the prime, consequently leading to contrast effects.

One might think that narrow categorizations can make people focus on the differences between the prime and the target, and thus lead to contrast effects. However, our findings suggest that narrow categories do not lead to contrast effects, instead they diminish assimilation effects. This happens because exposure to narrow categories leads to the consideration of both primed and non-primed perspectives (in our case, both differences and similarities). Thus, our findings present a more nuanced account of when and why assimilation effects occur. Our findings contribute to this literature by (1) extending priming effects from lower level priming of concepts to higher level priming of comparison frames, (2) establishing prior exposure to narrow categorizations as an important factor that dampens assimilation effects, and (3) exploring the downstream consequences of such effects in a consumer choice context.

*Category width.* There is some precedence in the literature on dispositional categorization tendencies for the notion that such tendencies may predict consideration of less salient information. Just like susceptibility to framing, proclivity to accept new products or ideas is also a function of one’s tendency to consider less salient aspects in a decision task. For instance, imagine a consumer who is listening to a salesperson’s pitch of a new product. This consumer would be more likely to accept the product if s/he solely focuses on the positive product attributes that the salesperson is highlighting, without considering the negative attributes that are not being mentioned. In fact, individual differences in category width have been shown to correlate with the proclivity to accept
or reject different opinions or products that are offered to them. That is, a tendency toward broad categorization is associated with greater readiness to accept new ideas (Walker and Gibbins 1989). In contrast, narrow categorizers resist attitude change (Miller 1965). Along the same lines, chronic narrow categorizers have been found to be less willing to adopt new products than broad categorizers (Donnelly, Etzel and Roeth 1973). While it has never been explicitly tested, we suspect that consideration of less salient information may drive these findings, just as it drives our findings.

In previous work, Chakravarti, Fang and Shapira (2011) show that narrow categories make people more accurate at detecting whether or not there is a change from one scene to another in a change detection paradigm. In view of these results, one may expect narrow (versus broad) categories to lead to greater difference perceptions. Despite the seemingly contradictory predictions, a careful examination of procedures indicates that this is not the case. First, unlike Chakravarti and colleagues, we explore similarity perceptions in a context where either similarities or differences are purposefully highlighted. Second, it is not clear whether the ability to detect whether there has been a change translates into greater perceived difference, as the extent of perceived difference was not measured in that paper. Finally, while we measure participants’ relative focus on similarities versus differences, Chakravarti, Fang and Shapira (2011) only measure ability to detect change, and they do not explore similarities at all.

** Construal level, abstraction and context-dependence. ** Past research on construal level demonstrate that concrete mindsets lead people to process information in a context-dependent way, whereas abstract mindsets decontextualize information processing (Malkoc, Zauberman and Bettman 2010). Our results suggest that narrow (vs. broad)
category priming leads to less sensitivity to suggested comparison frames, and thus, result in less context-dependent processing of similarity/difference information. Accordingly, it may be tempting to find parallels between narrow (broad) category priming and abstract (concrete) mindsets. However, category width and construal mindsets are different from each other. While narrow categorizations encourage taking a greater number of aspects into consideration, abstract mindsets lead to consideration of more important, goal-relevant aspects into consideration. Thus, the two mindsets may lead to different outcomes in situations where considering more information can lead to dilution-like effects, or undermine goal-directed behavior.

**Practical Implications**

Categorization-driven similarity frames can have important downstream consequences in marketing contexts (e.g., Gregan-Paxton and Moreau 2003, Chakravarti, Janiszewski, and Ülkümen 2006). For instance, Chakravarti and his colleagues (2006) find that creating a consideration set based on one screening attribute makes consumers focus on the similarities between products on that attribute, and consequently, causes them to ignore that attribute all together during final choice. Besides the simple act of categorization, the type of categorizations also can impact the comparison frames. Specifically, Poynor and Diehl (2010) show that benefit (vs. feature) based assortment structures increase the perceived similarity of options, and reduce the strength with which consumers prefer their first choice over their second choice. We add to this literature by showing that categorization does not always drive attention to similarities, but can sometimes moderate it. That is, when the context highlights either similarities or
differences between options, consumers closely follow these salient frames, but only if they have been primed with broad categories. Narrow category prime can reduce the focus on highlighted frames, and thus attenuate comparison-framing effects.

Taken together, these findings further our understanding of comparison processes by identifying conditions under which consumers adopt highlighted comparison frames. Substantively, the implication is that retailers’ ability to influence consumers’ decisions is not only a function of the current shopping environment in which the decision is being made, but also of the environment that the consumer visited prior to it.
REFERENCES


Celsi, Richard L. and Jerry Olson (1988), "The Role of Involvement in Attention and


APPENDIX A

Panel A: CATEGORY WIDTH MANIPULATION – 1

<table>
<thead>
<tr>
<th>Sample Item (Broad Condition)</th>
<th>Sample Item (Narrow Condition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your hair color?</td>
<td>What is your hair color?</td>
</tr>
<tr>
<td>❑ Blond</td>
<td>❑ Ash Blond</td>
</tr>
<tr>
<td>❑ Brown</td>
<td>❑ Ash Brown</td>
</tr>
<tr>
<td>❑ Black</td>
<td>❑ Medium Brown</td>
</tr>
<tr>
<td>❑ Red</td>
<td>❑ Dark Brown</td>
</tr>
<tr>
<td>❑ Ultra Light Blond</td>
<td>❑ Light Auburn</td>
</tr>
<tr>
<td>❑ Champagne Blond</td>
<td>❑ Medium Auburn</td>
</tr>
<tr>
<td>❑ Beige Blond</td>
<td>❑ Dark Auburn</td>
</tr>
<tr>
<td>❑ Golden Blond</td>
<td>❑ Copper Brown</td>
</tr>
<tr>
<td>❑ Golden Brown</td>
<td>❑ Burgundy</td>
</tr>
<tr>
<td>❑ Extra Dark Brown</td>
<td>❑ Natural Black</td>
</tr>
<tr>
<td>❑ Blue Black</td>
<td>❑ Burgundy</td>
</tr>
<tr>
<td>❑ Natural Black</td>
<td>❑ Henna Black</td>
</tr>
<tr>
<td>❑ Burgundy</td>
<td>❑ Jet Black</td>
</tr>
</tbody>
</table>

Panel B: CATEGORY WIDTH MANIPULATION – 2

Below are an array of cheese that the store currently stocks. First, please take a look at the cheese on display, and then select a cheese for the shopping cart.

Below are an array of cheese that the store currently stocks. First, please take a look at the cheese on display, and then select a cheese for the shopping cart.
APPENDIX B

SAMPLE STIMULI FOR STUDY 1B

Panel A – Similarity Frame

<table>
<thead>
<tr>
<th>Car Brand</th>
<th>Ride Quality (100 = \text{like a Rolls}; 0 = \text{like a Jeep})</th>
<th>Gas Mileage (mpg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>66</td>
<td>42</td>
</tr>
<tr>
<td>B</td>
<td>75</td>
<td>36</td>
</tr>
<tr>
<td>C</td>
<td>84</td>
<td>30</td>
</tr>
<tr>
<td>D</td>
<td>93</td>
<td>24</td>
</tr>
</tbody>
</table>

Panel B – Difference Frame

<table>
<thead>
<tr>
<th>Car Brand</th>
<th>Ride Quality (100 = \text{like a Rolls}; 0 = \text{like a Jeep})</th>
<th>Gas Mileage (mpg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>75</td>
<td>36</td>
</tr>
<tr>
<td>B</td>
<td>78</td>
<td>34</td>
</tr>
<tr>
<td>C</td>
<td>81</td>
<td>32</td>
</tr>
<tr>
<td>D</td>
<td>84</td>
<td>30</td>
</tr>
</tbody>
</table>
APPENDIX C

STIMULI FOR STUDY 2B

<table>
<thead>
<tr>
<th>Panel A – Similarity Frame</th>
</tr>
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<tbody>
<tr>
<td><img src="image1" alt="Similarity Frame Examples" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B – Difference Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2" alt="Difference Frame Examples" /></td>
</tr>
</tbody>
</table>
### APPENDIX D

### STIMULI FOR STUDY 3

<table>
<thead>
<tr>
<th>Original Backpack</th>
<th>Similar Backpack</th>
<th>Different Backpack</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Image" /></td>
<td><img src="image2.jpg" alt="Image" /></td>
<td><img src="image3.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image4.jpg" alt="Image" /></td>
<td><img src="image5.jpg" alt="Image" /></td>
<td><img src="image6.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image7.jpg" alt="Image" /></td>
<td><img src="image8.jpg" alt="Image" /></td>
<td><img src="image9.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image10.jpg" alt="Image" /></td>
<td><img src="image11.jpg" alt="Image" /></td>
<td><img src="image12.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image13.jpg" alt="Image" /></td>
<td><img src="image14.jpg" alt="Image" /></td>
<td><img src="image15.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Original Backpack</th>
<th>Similar Backpack</th>
<th>Different Backpack</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image16.jpg" alt="Image" /></td>
<td><img src="image17.jpg" alt="Image" /></td>
<td><img src="image18.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image19.jpg" alt="Image" /></td>
<td><img src="image20.jpg" alt="Image" /></td>
<td><img src="image21.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image22.jpg" alt="Image" /></td>
<td><img src="image23.jpg" alt="Image" /></td>
<td><img src="image24.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image25.jpg" alt="Image" /></td>
<td><img src="image26.jpg" alt="Image" /></td>
<td><img src="image27.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image28.jpg" alt="Image" /></td>
<td><img src="image29.jpg" alt="Image" /></td>
<td><img src="image30.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>
FIGURE 1

STUDY 1A RESULTS: CATEGORY WIDTH MODERATES THE EFFECT OF SALIENT COMPARISON FRAMES ON CONSIDERATION OF SIMILARITIES AND DIFFERENCES

![Relative Consideration of Similarities and Differences](chart)

- **Relative Consideration of Similarities and Differences**
  - Difference Frame
  - Similarity Frame

**Category Width**
- **Broad**
  - Relative Consideration: 57.89, 40.76
- **Narrow**
  - Relative Consideration: 49.23, 47.15

(0=considered mostly similarities, 100=considered mostly differences)
FIGURE 2

STUDY 1B RESULTS: EFFECTS ON PERCEIVED SIMILARITY OF TARGET PRODUCTS AND ATTRIBUTES

Panel A: Overall Similarity

Overall Judged Similarity of Cars

<table>
<thead>
<tr>
<th>Category Width</th>
<th>Difference Frame</th>
<th>Similarity Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>31.71</td>
<td>57.24</td>
</tr>
<tr>
<td>Narrow</td>
<td>41.02</td>
<td>38.07</td>
</tr>
</tbody>
</table>

Panel B: Perceived Similarity In Terms of Specific Attributes

Similarity In Terms of Ride Quality

<table>
<thead>
<tr>
<th>Category Width</th>
<th>Difference Frame</th>
<th>Similarity Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>35.00</td>
<td>51.00</td>
</tr>
<tr>
<td>Narrow</td>
<td>42.24</td>
<td>38.27</td>
</tr>
</tbody>
</table>

Similarity in Terms of Gas Mileage

<table>
<thead>
<tr>
<th>Category Width</th>
<th>Difference Frame</th>
<th>Similarity Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>46.06</td>
<td>61.53</td>
</tr>
<tr>
<td>Narrow</td>
<td>44.41</td>
<td>40.00</td>
</tr>
</tbody>
</table>
FIGURE 3

STUDY 2B RESULTS: EFFECTS ON PREFERENCE STRENGTH AS MEASURED BY WILLINGNESS TO PAY

Panel A

\[ WTP_{\text{chosen}} - WTP_{\text{non-chosen}} \]

<table>
<thead>
<tr>
<th>Category Width</th>
<th>Difference Frame</th>
<th>Similarity Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>50.1</td>
<td>25.94</td>
</tr>
<tr>
<td>Narrow</td>
<td>32.1</td>
<td>43.72</td>
</tr>
</tbody>
</table>

Panel B

Relative Consideration of Similarities and Differences

<table>
<thead>
<tr>
<th>Category Width</th>
<th>Difference Frame</th>
<th>Similarity Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>81.84</td>
<td>67.44</td>
</tr>
<tr>
<td>Narrow</td>
<td>71.33</td>
<td>71.72</td>
</tr>
</tbody>
</table>
FIGURE 4

STUDY 3 RESULTS: EFFECTS ON EVALUATION OF A NEW PRODUCT WHEN
PREFERRED PRODUCT IS OUT OF STOCK

![Bar chart showing attitude toward new alternative for different category widths and framing effects.](chart.png)