Shifting the Basis of Perceived Similarity:

Implications for Inference, Judgment and Choice

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ABSTRACT

In six studies, we show that the basis of subjective similarity is malleable, with consequences for inferences and decision making. We show that perceived similarity changes as a function of both (i) whether people employ comparative or associative similarity relations and (ii) which attributes form the basis of similarity judgments. Since judgments and choices can be affected by the perceived similarity relations between items, shifts in perceived similarity can therefore play a key role in product price estimation, valuation and choice. Using both direct manipulations and an indirect contextual manipulation (temporal framing), we show that shifts in perceived similarity to other products affect price inferences, the impact of ideal products on willingness to pay, and the degree of option-cannibalization in choice sets. Our results suggest that contextual factors such as the temporal context can operate via a previously unidentified mechanism, impacting preferences indirectly via changes in similarity.

Consider a consumer who is trying to estimate a reasonable price to pay for a blender. A large literature on reference prices suggests that previously seen prices for the same blender will influence her price expectations (Winer 1986; Hardie, Johnson, and Fader 1993).However, she will likely encounter many alternative sources of information as well, such as the prices of other blenders which are similar on some product attributes but different on other attributes. Furthermore, as she shops or walks through the store, she will see the prices of many other products sold there, many of which will have some similarities with the blender. Some products may be made of similar materials or may operate similarly (such as a ceiling fan or a cement mixer), even though these products come from completely different categories. Other products may be physically very different but used together in the same tasks with the blender (such as other cooking appliances and supplies). Despite a voluminous literature on consumer decision making, fairly little is known about when and how products in the broader set of potential comparisons will impact consumers' price estimates, willingness to pay, and choices. In this paper, we explore the constructed nature of perceived similarity between items and the resulting influence on consumers' judgments.

Assessing the similarity of two things involves identifying commonalities in features or relations between the two that serve as the *basis* of the similarity judgment. We specifically argue that changes in the basis of similarity judgments play an under-recognized role in inference, valuation and choice. Building on research that examines similarity judgments, we suggest that (i) consumers' assessments of the similarity between products shifts systematically depending on the way that similarity is evaluated, which is influenced by contextual factors; (ii) judgments and choices can be affected by the perceived similarity relations between items in a set; and (iii) such shifts in similarity can therefore play a key role in product price estimation, valuation and choice. Six studies provide evidence both that direct manipulation of people's bases for similarity and indirect manipulation of similarity via other factors (such as temporal context) impact evaluation and choice. Our results show that perceived similarity changes as a function of both (i) which type of similarity relation is used (associative vs. comparative, discussed below) and (ii) which product attributes form the basis of similarity judgments. Furthermore, to illustrate the role of external factors, we show that manipulating temporal context (near future vs. distant future) impacts evaluations and choice via shifts in perceived similarity, beyond any direct influence of temporal context on preferences. The fact that

contextual cues exert this indirect influence (via changes in perceived similarity) allows for tests of new predictions concerning the role of context in consumer decision making.

The next section presents our theoretical framework. First, we discuss how similarity has been studied in the context of judgment and choice. We then review the evolution of research on similarity processes and propose that the malleability of similarity can play a critical role in how general contextual factors (such as temporal context) influence evaluation and choice. The first two studies demonstrate that changing the basis on which similarity is evaluated (comparative vs. associative relations) either directly via a salience manipulation (Study 1) or indirectly via temporal context (Study 2) impacts price estimates for a target product (blender), when paired with the prices of two other products (ceiling fan or set of mugs). In Study 3, we extend both findings to price estimation for a diverse set of products, when the price of a single referent product is available for each target product. Next, we extend these findings from cross-category price comparisons to inferences based on the prices of products within the same category. We show that people's valuation of a product is a function of the perceived similarity to an ideal product in the category (bicycles). This perceived similarity (and, hence, the willingness to pay) can be manipulated via either a direct range-frequency manipulation (Study 4) or an indirect manipulation using temporal context (Study 5). Lastly, we demonstrate a novel implication of our framework for how temporal context affects choice. Study 6 shows that the effect of temporal context differs for two-item choices versus three-item choices due to the effect that shifts in similarity exert on option cannibalization. We discuss the implications of our findings for the literature on similarity and decision making and propose a variety of ways in which our findings can be applied to better understand consumer assessments under the influence of contextual factors.

THEORETICAL DEVELOPMENT

Similarity is a foundational construct in understanding how we perceive, evaluate and choose. Similarity is often spontaneously assessed even without intentional deliberation (Tversky and Kahneman 1983) and is therefore highly accessible in the mind to serve as a basis for inference. Nearly every fundamental cognitive process (e.g., perception—Wertheimer 1923, recall—Hintzman 1984; categorization—Medin and Schaffer 1978; inductive inference—

Osherson et al. 1990; analogy—Gentner and Markman 1997) has been shown to depend crucially on similarity. Since similarity is a basic process that broadly underlies human reasoning, any factor that influences perceived similarity is likely to have a profound impact on cognition more generally.

Similarity in Evaluation and Choice.

Similarity has been understudied in research on evaluation and choice (see e.g., Loewenstein 2001), particularly in comparison with other factors, such as subjective preference, decision weights, affect, and non-conscious primes. This may represent a missed opportunity to better understand consumer decisions, given that choice and perceived similarity are both sensitive to many contextual factors, and similarity has a pervasive role in structuring informational inputs to decisions (Medin, Goldstone and Markman 1995; Markman and Loewenstein 2010). In early work, similarity was often treated as simply another fixed relationship between products, determined by concrete features of the products under consideration. Thus, for example, work on the substitutability of products often implicitly assumes that the similarity of two products' features determines choice cannibalization—products with similar features, and/or similar attribute values on common features swap out for each other (Rumelhart and Greeno 1971; Kamakura and Srivastava 1984, Elord 1988, Huber and Puto 1983). Similarly, research has suggested that the degree to which consideration of one item influences predictions and estimates about a second item depends on a fixed degree of similarity, judged by comparing the objective features of the items as either similar or dissimilar, regardless of the context (Gilovich 1981; Read 1983; Loken, Ross and Hinkle 1986).

Subsequent work has shown that differential attention, weighting and assessment can moderate which features, or relations between features, serve as the basis for perceived similarity, choice, and inference. Thus, different features of an object can influence choice and similarity (Lefkoff-Hagius and Mason 1993) and making one type of judgment first can affect the basis used for the other (Dhar, Nowlis and Sherman 1999). Informational factors such as expertise can moderate the degree to which similarity is based solely on features (attributes) or incorporates the relations among features (Gregan-Paxton and Roedder John 1997; Medin et al. 1997). Dhar and Glazer (1996) find that the attraction effect in choice can be understood in terms

of how the placement of choice options in multi-attribute space impacts the perceived similarity between choice options. They induced changes in the range of an attribute dimension (Parducci 1965) to alter perceived similarity, and demonstrated that changes in similarity were both necessary and sufficient to produce and eliminate the attraction effect. Thus, decision making research has often treated similarity as a fixed relation determined by the objective features of products.

The Construction of Similarity.

In contrast, our understanding of how similarity is assessed has been dramatically expanded over the past few decades by a large stream of research which has studied similarity directly. Earlier views represented similarity as a function of the number of shared versus distinctive features (Rosch and Mervis 1975; Tversky 1977), while subsequent views recognized the need to incorporate the conceptual structure that defines correspondence between features (e.g., the role that each feature plays relative to the others, Medin, Goldstone and Gentner 1993; Markman and Gentner 1993). These refinements in our understanding of the basis of perceived similarity arise from several important demonstrations that similarity is affected not only by shifts in the relative salience of the stimulus features, but also by shifts in the structural relations of the features compared across objects. Thus, similarity judgments are affected by factors such as the decision makers' expertise (experts weight some features and relations more heavily than do novices; Chi, Feltovich and Glaser 1981; Medin et al. 1997) as well as the composition of the stimuli set and the direction of comparison (Tversky and Gati 1982; Medin, Goldstone and Gentner 1993).

In addition to these essentially *comparative* approaches to similarity—accounts that rely on comparisons of features and relations within the stimuli—there has been a more recent debate about the role that relationships between the stimuli and *external* concepts play in perceptions of similarity. Some contemporary accounts of similarity now incorporate *associative* processes. The notion of goal-derived categories (Barsalou 1985, Ratneshwar et al. 2001) can be interpreted as relying on such associative judgments (specifically, the shared relevance of an active goal). Wisniewski and Bassok (1999) provide a direct demonstration that comparatively dissimilar items that share a thematic association (e.g., two things that often appear in the same

consumption episode, like apple pie and ice cream) are seen as more similar than those without such a relation (apple pie and jello). In particular, such thematic relations have long been noted in children's inferences (Inhelder and Piaget 1964), but have more recently been demonstrated in adults' reasoning when the underlying associations are meaningful and useful for the task at hand (Lin and Murphy 2001).

Thus, this literature suggests that there are two types of similarity judgments. The terms used to describe these two types vary widely, and we will not attempt to draw finer distinctions (see Jones and Love 2007 for one attempt to do so). This paper adopts the descriptive terms most broadly used in the literature, and contrasts *comparative* types of similarity, which are defined by comparing features and the relations among features internal to each stimulus (which includes taxonomic similarity), with what we will term *associative* similarity, defined by the degree of external relations and associations between different stimuli. By this definition, thematic relations, such as physical, temporal, causal and goal-defined co-occurrence can all be seen as forms of associative similarity.

In our initial example, the blender may be seen as *comparatively* similar to a ceiling fan, because it which shares several features and relations, such as having an electric motor and multiple blades, and it is the motor which turns the blades. On the other hand, the blender may be seen as *associatively* similar to a drinking mug, in that they are often co-located in the same physical place (the kitchen) and are used jointly in many consumption episodes towards a common goal. More broadly, this distinction also parallels research on the notion of "fit" in brand extensions, which incorporates not only similarity between concrete product features but also associative relations among brands on conceptual dimensions, such as the association among prestige brands across product categories (Park, Milberg and Lawson 1991).

Furthermore, the evolving understanding of similarity suggests that similarity judgments can be highly malleable. In the same way that the context-sensitivity of choices can help to elucidate the psychological processes underlying the construction of preference (Fischhoff 1991; Payne, Bettman, and Johnson 1992), the literature suggests that "constructed similarity" will depend on the type of similarity evoked, as well as which features, relations and associations brought to mind to form the basis for such judgments. Thus, the comparative similarity judgments which inform evaluation and choice can be influenced by which of the features or relations form the basis of comparison. This has been demonstrated by manipulating either the

information presented (Pan and Lehmann 1993; Dhar and Glazer 1996) or the order of stimuli presentation in comparison (Dhar and Simonson 1992) and categorization (Moreau, Markman and Lehmann 2001) tasks. Furthermore, there is some evidence that the basis of associative judgments can likewise be malleable (e.g., due to relevance for active goals goals, Ratneshwar et al. 2001). There is also evidence that the relative influence of comparative versus associative similarity on subjective judgments varies across people (i.e., systematic individual differences in the tendency to rely on comparative vs. associative similarity have been found; Gentner and Brem 1999, Simmons and Estes 2008) and can be manipulated via changes in what is being compared and in accessible background information (e.g., Estes 2003; Jones and Love 2007).

Toward a Broader Framework for How Similarity Impacts Judgment and Choice.

This paper explores two related propositions, each of which implies a different approach to investigating the relationship between contextual factors and similarity. First, the idea that similarity is a constructed judgment, and therefore malleable, and that it influences downstream thought has important and testable implications for inference, judgment, and evaluation. Perceived similarity plays a central role when judgments and decisions involve relating and comparing other cues (either from memory or from the decision context) to the focal stimulus. Differences in the basis of similarity judgment will result in differences in perceived similarity, which can then affect the resulting judgments.

Proposition 1: Differences in the *basis* of similarity judgment (comparative vs. associative) impact which comparison products influence judgment and valuation.

In recent years, researchers have explored the impact of a wide range of contextual factors external to the decision at hand (not to be confused with context effects defined by the choice options themselves). These external factors include goals and motivations (Bargh and Chartrand 1999), affect (including ease, arousal and mood; Gardner 1985; Schwarz 2004), processing modes (e.g a fast/hot “system 1” vs. a slower/cooler “system 2”; Shiv and Fedorikhen 2002) and mindsets (including regulatory focus and fit, construal level, implemental vs. deliberative, individual vs. collective; Molden, Lee and Higgins 2008). While these burgeoning literatures

include extensive investigations of how contextual factors impact evaluation and choice, the interplay between these factors and similarity in decision processes has received little attention.

A consideration of contemporary research on similarity processes suggests that the basis of similarity judgment may change across contexts, and that these contextual influences on similarity play a key role in judgment and decision making. Given the centrality of similarity to the cognitive processes underlying evaluation and choice, we argue that differences in similarity processes in general, and the shift between comparative versus associative processes of similarity judgment in particular, represent a critical but neglected influence on decision outcomes. Our proposal is that in sufficiently complex decision contexts (those that afford multiple potential similarity comparisons between products), the type of similarity that people spontaneously use in inference and evaluation will impact evaluations.

Proposition 2: Beyond their direct effects, contextual factors can change the perceived similarity of a target product to other products in the decision environment and thereby impact judgment and choice indirectly.

A wide array of contextual factors can have systematic effects on mental representation, and thereby on how people evaluate similarity. Some effects of contextual factors on judgment and choice may in fact operate via this indirect route, rather than, or in addition to, any direct influence these contextual factors may have on preferences. In particular, these studies will investigate the relationship between the basis of similarity judgments and a widely studied factor, the time at which an event takes place (see Trope, Liberman and Wakslak 2007 for a recent review of construal level theory). We propose that contextual factors such as temporal context can change the nature of perceived similarity in two ways. People may either shift from employing comparative to associative processes, or the context might influence which attributes they use for assessing similarity. Such differences in similarity processes, in turn, exert their own effect on evaluation and preference.

The current studies explore how context can shift similarity, impacting estimates of unknown prices, willingness to pay, and choice. For example, we would argue that those people estimating the price of a blender who tend to rely on associative similarity (rather than on comparative) will be more influenced by the price of mugs than by the price of a ceiling fan. Furthermore, when a given person encounters a context which primarily facilitates associative

similarity (rather than comparative) such as a far-off decision, her price estimate of the blender will likewise be more influenced by the price of the mugs than the ceiling fan.

In following studies, we provide evidence for our conceptualization of how the nature of constructed similarity influences evaluation and choice. In accordance with the first proposition, we demonstrate that the propensity to use either comparative or associative similarity (manipulated in Study 1 and measured in Study 3) affects price estimates. For the second proposition, we investigate how temporal context affects similarity, and how these shifts in perceived similarity influence (i) price estimates in Studies 2 and 3, (ii) willingness to pay in Study 5, and (iii) choice in Study 6. The first three studies focus on shifts between comparative and associative relations as the basis of similarity judgments (particularly for cross-category evaluations). The last three studies focus on shifts in which attributes serve as the basis for comparative similarity judgments (particularly for within-category comparisons).

STUDY 1: SIMILARITY TYPE AND PRICE INFERENCE

This first study tests how highlighting one type of similarity (comparative vs. associative) affects the use of external information in making price estimates. Prior research has shown that consumers' valuations can be affected by different comparisons, such as prices typical for the category (Crocker 1984), external reference prices (e.g., past prices and store or manufacturer suggested prices, Biswas and Blair 1991), reserve and minimum bids in auctions (Kamins, Dreze and Folkes 2004) and prices observed in similar transactions (Xia, Monroe and Cox 2004).If similarity between the product being estimated and the available comparison products (or referents) shifts, the degree to which the price of each referent impacts the estimate is likely to shift as well. Thus, we predict that making associative (as opposed to comparative) similarity more accessible will increase the degree to which price estimates for the target product incorporate the associatively similar referent product's price (as opposed to incorporating the comparatively similar referent's price).

Method.

We conducted an online survey with adult participants (aged 18 to 65) who received a nominal cash payment, yielding 65 complete and valid surveys. This study employed a two-condition, between-subjects design, in which we manipulated the basis of similarity (comparative vs. associative) that was accessible to participants. To develop a manipulation of the type of similarity people employed, we randomly selected 15 items from a set of 30 item triads developed by Simmons and Estes (2008) to distinguish between taxonomic similarity—which is an operationalization of what we call "comparative similarity—and thematic similarity—which is an operationalization of what we call "associative similarity".

These items were used to construct two batteries of 15 similarity judgment questions. Participants were shown the target word, and then asked to choose which of two options was more similar to that target word. In the comparative similarity condition, one of the options was the taxonomically similar word from the triad, and one was a dummy (low-similarity) word. Thus, for example, participants were asked whether "bee" was more similar to "butterfly" or more similar to "moose". In the associative similarity condition, the same target words were used, and participants were asked to choose between the thematically similar word and a low-similarity dummy word. In this condition, participants were asked to judge whether "bee" was more similar to "honey" or "maple syrup". The order of the responses (similar vs. dummy word) was varied across the questions, and the order of the questions was rotated. The questions used are listed in Appendix A. We anticipated that, in choosing the correct answers, participants would employ comparative similarity processes in the first condition, but associative similarity processes in the second condition, which would then carry over to their subsequent reasoning.

In the next section of the survey, participants were told to imagine they were considering three products, a blender (the target item), a ceiling fan (a comparative match, based on the common features, such as having an electric motor, rotating blades, etc.), and a 4-pack of hot/cold mugs (an associative match, in that they co-occur in many consumption episodes). The products were described in words, and no pictures were shown, in order to isolate differences in conceptual similarity (as opposed to visual similarity). They were then provided with prices for the ceiling fan ($80) and the mugs ($20), and asked to estimate how much the blender cost. After

making their choice, on a new page of the survey, they rated the similarity of the blender to both of the items on a one ("Not at all similar") to seven ("Very similar") scale.

Next, they were given the other 15 items from the Simmons and Estes (2008) battery, this time choosing between the taxonomically similar and the thematically similar option in each triad, to assess the degree to which comparative relations (useful for judging taxonomic similarity) or associative relations (useful for judging thematic similarity) were more accessible. Lastly, they completed the "Need for Cognition" scale, (Cacioppo, Petty and Kao, 1984) and answered several demographic questions.

Results and Discussion.

Manipulation Checks. As people choose the clearly more similar option in each of the questions in the initial task, their basis for doing so will be different in the two conditions, activating either comparative (specifically, taxonomic) or associative (thematic) relations as the basis for similarity. Across participants and items, the intended item was chosen as more similar 98% of the time in both conditions.

In the second similarity task, when asked to choose between thematically and taxonomically similar words, participants in the associative similarity condition had a higher proportion of thematically similar choices across the 15 tasks than did those in the comparative similarity condition (N = 28, M = .28 thematic vs. N=37, M = .18 thematic; t (63) = 2.09, p < .05). This confirms that the manipulation had the predicted effect on the tendency to view comparative or associative matches as similar to the target.

Similarity. We have argued that when people use associative (rather than comparative) relations as the basis for similarity judgments, they will evaluate the blender as relatively more similar to the mugs. A 2 (similarity type: comparative vs. associative) x 2 (match: comparative vs. associative) mixed-model ANOVA finds the predicted interaction (F(1,63) = 4.29, p < .05). The blender is seen as more similar to the mugs than to the ceiling fan in the associative condition (M = 3.07 vs. M = 2.32; t(27) = 2.63, p < .05) but not in the comparative condition (M = 2.51 vs. 2.65; t < 1). The ANOVA found no significant main effect of similarity type (F <1) or of match type (F(1,63) = 2.07, p > .1).

Price Estimation. Recall that participants saw two potentially relevant products' prices: the associative match, the mugs, (which cost much less) and the comparative match, the ceiling fan. In the associative condition, when the low-priced mugs are seen as more similar to the blender than is the higher-priced ceiling fan, we expect that the low price referent provided by the mugs will draw down the price estimates for the blender. As expected, participants in the associative condition gave lower price estimates for the blender than did those in the comparative condition (M = \$39.46 vs. \$44.59, $t(63) = 2.07$, $p < .05$).

This study demonstrates that when different types of similarity are activated, both judgments of similarity and price inferences are affected, such that people differentially incorporate price comparisons to associatively versus comparatively similar items with known prices. It is important to note that this shift in the basis of perceived similarity is a difference in how people think about similarity, rather than a qualitative difference in their depth of processing. The manipulation of similarity type has no effect on the response times for the price estimation task or the similarity judgments, or on self-reported need for cognition. Furthermore, there is no effect of time spent on the task or need for cognition on either the estimated price or on relative similarity. This suggests that the difference in similarity and in inferred price observed across the two conditions is not explained by deep versus superficial thinking; the price shifts occur because of changes in how similarity is perceived.

STUDY 2: TEMPORAL CONTEXT AND PRICE INFERENCE

As noted in the introduction, the context-sensitivities of preference suggest that it is constructed, and the same is true of similarity. The previous study directly manipulated the basis of similarity. In this study, we demonstrate that contextual factors can induce a similar shift in the basis of similarity used, with the same consequences for price inferences. We manipulated temporal context by describing a scenario in which a consumer will purchase three goods, either in three days (near future condition) or in six months (distant future condition). Participants were then asked to judge the similarity of the same two referent goods as in Study 1 to the target good (blender), and they then estimated the price of the target good.

According to construal level theory, contextual factors that induce a sense of psychological distance (including but not limited to time) prompt a higher level of abstraction in subsequent judgments. Therefore, when people are thinking about concepts at great psychological distance (e.g., in a distant future context), they tend to think of them in abstract, holistic, and gist-like terms. In contrast, when thinking of concepts at greater psychological proximity (e.g., in a near future context), people think in more concrete, more detailed terms. We propose that people in an abstract state of construal are more likely to recognize more distant, abstract relationships as a basis of similarity, and are also likely to put more emphasis on attributes with abstract or intangible benefits in evaluating similarity. In contrast, people in a more concrete state of construal are more likely to emphasize relationships between concrete features as a basis of similarity and will put more emphasis on attributes with concrete tangible benefits in evaluating similarity.

There is some initial evidence that construal level can affect how people think about similarity. Day and Bartels (2008) asked participants to judge the similarity of pairs of events, such as visiting the dentist and joining a health club (which are both health-promotion behaviors) or visiting the dentist and getting a tattoo (which share the concrete features of a reclining chair, needles and pain). The authors found that pairs of events sharing abstract commonalities (e.g., dentist and health club) were judged more similar with greater temporal distance while the opposite trend held for pairs sharing low-level concrete features (e.g., dentist and tattoo). These similarity findings suggest an unstudied impact of construal level on representation, distinct from the widely studied impact of construal on how abstract and concrete benefits are valued.

The prediction is that temporal context will affect price inference indirectly, via changes in perceived similarity. Thinking about a near future purchase will engender a detail-focused assessment, highlighting comparative similarity. In contrast, thinking about a distant future purchase will engender a more thematic, gist-focused assessment, highlighting associative similarity. When thinking about the near future, the comparative relationships among concrete features will be represented, while the more distant associative relations are more likely to be recognized when thinking about the more distant future. Thus, we expect that manipulating temporal context will lead to similar effects on price estimates as those observed in Study 1, due to the shift in perceived similarity. In contrast, we do not expect temporal context to generally have a direct effect on price estimation, in the absence of a specific match between concreteness

or abstractness of the strongest product attributes and the construal level (Agrawal, Trope and Liberman 2006).

In particular, we assume that the blender is seen as having similar levels of concrete (feasibility) and abstract (desirability) benefits. Thus, we expect the blender to be valued the same, in the absence of comparison prices, regardless of temporal framing. To test this assumption, we also conducted a pretest, in which participants were asked to estimate the price of the blender without any referent goods. We expect that when participants read about a future (vs. present) decision, there will be no direct effect on their valuation in the absence of prices for comparison products (i.e. in the pre-test), but thinking more abstractly will facilitate associative similarity assessments, and they will be more influenced by prices of the associatively (vs. comparatively) similar referents in the main study.

Method.

Fifty native-English speaking online participants completed the main study in return for a nominal cash payment. This study employed a two-condition (temporal context: near vs. distant future), between-subjects design. They read a scenario about a consumer who will purchase a ceiling fan (a comparative match), a set of hot/cold thermal mugs (an associative match), and a blender either in three days (near future) or six months (distant future), between subjects. As in Study 1, similarity ratings and price estimates were collected, and the stimuli were described in words and no pictures were shown.

In an additional pretest, 57 undergraduates estimated the price of a blender, either in 3 days or in six months, as part of an unrelated study. They read a scenario equivalent to the one in the main study, except that all references to the ceiling fan and mugs were removed and no similarity questions were asked. There were no significant differences between the six months (M = \$51) and three days conditions in the pre-test (M = \$45, $t(55) = .71$, $p > .4$).

Results.

Similarity. A 2 (time: near vs. distant future) x 2 (match: comparative vs. associative) mixed-model ANOVA finds the predicted interaction ($F(1,48) = 10.82$, $p < .01$): in the near

future, the comparative match (i.e., the ceiling fan) is judged as being more similar to the blender (M = 2.59) than the associative match (i.e., the mugs) are (M = 2.23), whereas the reverse holds for the distant future purchase ($M_{\text{comparative}}$ = 1.96 vs. $M_{\text{associative}}$ = 3.29). The ANOVA also revealed a marginal main effect of match (comparative vs. associative, $F(1,48) = 3.50$, $p < .10$) and no main effect of temporal context ($F < 1$).

Price Inference. As in Study 1, if perceived similarity influences the prices that people expect to pay, then participants will estimate a lower price for the blender when it's purchased in six months—and perceived as more similar to the less expensive mugs—than when it's purchased in three days—and perceived as more similar to the more expensive ceiling fan.

Consistent with predictions, people inferred that the blender would be less expensive (M = \$39.46) when purchased in the distant future than when purchased in the near future (M = \$61.41, $t(48) = 3.29$, $p < .01$). Importantly, the difference in estimated price induced by the timing manipulation cannot be attributed to a direct effect of temporal context (e.g., due to beliefs in future price changes or straightforward effects of construal level). In the pretest, we found a non-significant effect of temporal context on estimated prices in the opposite direction. Thus, this study provides evidence that temporal context affects perceived similarity and thereby impacts estimated prices when referents with known prices are available.

STUDIES 3A AND 3B: PRICE INFERENCE FROM A SINGLE COMPARISON PRODUCT

The next two studies replicate and extend the results of the previous study in several important ways. First, in both studies presented thus far, participants were asked to estimate the price and to rate similarity in the same experimental context (prices were asked first in Study 1 and similarity first in Study 2). This raises the question of whether the findings might be influenced by self-generated validity (Feldman and Lynch 1988). Accordingly, in this experiment we confirm the effect of temporal context on similarity judgments among one group of participants (Study 3a), and then demonstrate the effect of both an individual difference measure of predominant similarity type and manipulated temporal context on price estimates among a second group of participants (Study 3b).

In Study 3a, participants rated the similarity between pairs of goods in two blocks of tasks. Participants rated the similarity of each of 14 target goods to a corresponding referent good, which either represented an associative match or a comparative match (see Table 1 for a list of the target items and the referent items).

Then, in Study 3b, price estimates for the same products are collected in a series of repeated tasks. Unlike Studies 1 and 2, we provide participants with a series of target goods which are paired with only one referent each (either associatively or comparatively related, between subjects). This extends the test of a similarity-based inferential process to a between-subjects design. In the previous study, participants could have been reasoning based on which of the two referents presented to them seemed more similar. In Study 3b, participants will see one referent in each of the tasks and estimate the price of a target item. We predict that the degree to which they incorporate the referent's price in their estimates will depend on the degree of perceived similarity for the pair of items.

In both Study 3a (similarity judgment) and 3b (price estimation), we measured the tendency to spontaneously use associative similarity and manipulated temporal context as a between-subjects factor. Participants read about a consumer who will win a small prize in the state lottery and will consider purchasing two goods in three days (near future condition) or in a year (distant future condition). Thus, both studies use a 2 (temporal context, between-subjects) x 2 (match: comparative vs. associative, within-subjects) mixed design.

Our prediction is that perceived similarity and price inferences will be jointly determined by both temporal context and the participants' propensity to consider associative similarity. Across all items used in Study 3a, we expect that the target will be judged as more similar to its comparative match when the goods are described as being purchased in the near future, rather than the distant future. Conversely, we expect the target will be judged as more similar to the associative match in the distant future conditions than in the near future conditions. Furthermore, we expect that participants who have more of a tendency to spontaneously consider associative similarity (vs. comparative) will judge associative matches as more similar and comparative matches as less similar, controlling for temporal context.

We expect these shifts in perceived similarity to correspond to shifts in estimated prices in Study 3b. In particular, when the target good is paired with a comparative match (whether cheaper or more expensive than the target), the increased similarity to the comparative match in

the near future (relative to the distant future) should translate to price estimates for the target good that are more similar to the referent's price. We expect the opposite pattern when the target is paired with its associative match. In that case, because we expect the associative match to be perceived as more similar in the distant future than in the near future, we expect participants to estimate prices for the target good that are more similar to the referent's price in the distant future than in the near future.

We expect analogous effects based on differences in participants' tendency to consider associative similarity, such that estimates among those who consider associative similarity will be more affected by the price of associative matches and less affected by the price of comparative matches. We also note that in the manipulation checks in Study 1, participants chose more of the comparative than associative pairings in both conditions. This suggests that comparative similarity may be generally accessible, and differences in perceived similarity may therefore hinge on whether associative similarity is prompted, either spontaneously or by the temporal context. We will test this by looking at the interaction of the spontaneous measure and manipulated context.

Method.

We pretested whether individual price estimates were affected by the temporal context (in one week or in one year) among 58 native-English speaking online participants. For the main study, we collected data among native-English speaking students at a large Midwestern university, who were randomly assigned to one of six conditions across the two studies (i.e. one of two similarity conditions in Study 3a or one of four price inference conditions in Study 3b). Ninety-nine participants performed the similarity task in Study 3a, and 108 participants performed the price inference task in Study 3b. Both studies used a 2 (temporal context: near vs. distant future, between subjects) x 2 (pairing: comparative match vs. associative match, repeated-measures) design.

In Study 3a, participants rated the similarity between pairs of goods in two blocks of tasks. In the first block, participants rated the similarity of each of 14 target goods to a corresponding referent good, which either represented an associative match or a comparative match. On every other trial, they received an associative pair or a comparative pair. In the second

block of trials, they rated the similarity of each target good again, this time matched with the other referent good. Thus, the pairing of the target to associative and comparative matches varies as a within-subjects repeated-measures factor (see Table 1 for the target and referent items).

In Study 3b, participants were given the price of one referent good (either the comparative or associative match) and asked to estimate the price of the target good for each of 14 trials. For seven of the trials, we paired a target good with its comparative match; for the other seven trials, we paired a target good with its associative match. As in Study 3a, on every other trial, participants saw an associative pair or a comparative pair, but in this version participants saw only one pair for each target good (counterbalanced across subjects). For each of the fourteen items, the referent goods were identically priced, such that half were more expensive than the target good and half were less expensive. For example, a rice cooker was paired with either a more expensive, $800 gas water heater (comparative match, which has features in common, such as having a cylindrical metal body and operating by heating water) or with a $800 dining table (associative match, in that they co-occur in consumption episodes).

The 14 target products, along with the two referent products and the price point of the referent products, are listed in Table 1. In addition, four control target-referent product pairs were included, two designed to be extremely dissimilar (e.g., barbecue grill and headphones) and two designed to be extremely similar (e.g., tennis racquet and raquetball racquet), regardless of the basis of similarity employed. In both Study 3a and 3b, we rotated which of the two referents each target product was paired with, so that all combinations were tested in the studies. In the analyses, we collapsed across the rotation conditions.

To measure individual differences in the tendency to evaluate associative similarity, participants in the main study also completed the full Simmons and Estes (2008) battery of thematic (i.e., associative) versus taxonomic (i.e., comparative) similarity choices at the end of the study (after all of the price inference tasks), and we coded the proportion of thematic matches chosen (referred to here as the thematic similarity, or TS, index). A high TS index is interpreted as a high propensity to recognize associative similarity and a low TS index is interpreted as a propensity for comparative relations to dominate similarity judgment.

Results and Discussion.

Pretest. We conducted a pretest for the possibility of a direct effect of temporal framing (in one week vs. in one year) on price estimates of the target products. Such an effect could occur either if the difference in temporal context were to induce a main effect of construal level on valuation or if participants held a belief that prices will change over time (e.g., inflation). Averaging the estimates of the 14 products for each person, we find no significant differences between estimates in a year or in a week, between subjects (M_{Week} = \$165, M_{Year} = \$175, $t(56) < 1$). In a separate question, participants also rated their belief about prices for these products changing over the next year on a one to five scale. Participants were split on whether prices would increase (46%), stay the same (33%) or decrease (21%). Given the weak differences observed, we conclude that people's price estimates for these products are not directly influenced by temporal context.

Study 3a: Similarity Ratings. For each person, we calculate an index of associative similarity as the average of all 14 evaluations of the similarity of the target product to the associatively related referent. Likewise, we calculate an index of comparative similarity, as the average of the 14 similarity evaluations of the similarity of the target to the comparatively related referent. Relative assessment of associative similarity (over comparative) was calculated as the difference between the associative and comparative indices for each person. We assess the impact of both the individual difference measure of the tendency to use associative similarity (TS index) and the manipulation of temporal context on the assessments of product similarity.

First, we confirm that the TS index (proportion of choices of the thematically—or, associatively—similar option rather than the taxonomically—or, comparatively—similar option in the battery of Simmons and Estes items) did not differ based on the temporal context (M_{week} = .17 vs. M_{year}=.22, $t(97) = 1.2$, $p = .24$) that had been presented earlier in the survey. Therefore, we will use this measure as a stable individual difference, largely independent of the temporal context manipulation.

The TS index does predict the participants' similarity assessments in a simple regression ($\beta = 1.8$, $t = 4.2$, $p < .01$), such that participants who are more likely to spontaneously use thematic similarity (per the TS index) tend to rate associatively matched products as more similar

than comparatively matched products, on average. In particular, this effect is driven by the impact of TS index on the similarity of associative matches, (e.g, rice maker and dining room table) ($\beta = 1.7$, $t = 2.4$, $p < .05$), whereas judgments of the similarity for comparative matches (e.g., rice maker and water heater), are less affected by the individual difference ($\beta = -0.14$, $t < 1$, *n.s.*).

Next, we find that the manipulation of temporal context (week vs. year) likewise affects which kinds of product pairs are seen as more similar. As predicted, associative matches were viewed as significantly more similar in the distant future ($M = 4.2$,) than in the near future ($M = 3.5$, $t(97) = 2.2$, $p < .05$), whereas comparative matches were judged to be slightly more similar in the near future ($M = 4.4$) than in the distant future ($M = 4.3$, $t < 1$, *n.s.*). The impact of the manipulation on these differences in similarity ($\Delta M_{\text{associative}} = -.17$ vs $\Delta M_{\text{comparative}} = -.98$, $t(97) = -3.9$, $p < .01$), represents a significant interaction between temporal context and similarity type.

Study 3b: Price Inference. In the price inference tasks, we predict that differences in the predominant type of similarity will affect the degree to which estimates are influenced by the price given for the referent product, for example, the degree to which the price estimate is similar to the price of the referent product. To perform this analysis, for each participant *i* and trial *j*, we first calculated the degree of difference between each participant's estimate and the referent price for the trial (shown in Table 1) as:

$$\text{Deviation}_{ij} = |\text{estimate}_{ij} - \text{price}_j|/\text{price}_j$$

First, we calculate the absolute difference between each price estimate and the referent price, and then standardize the absolute differences by dividing by the referent price. For example, an estimated cost of $200 for the rice cooker (which was paired with an $800 item) would yield a deviation score of |200 – 800|/800, or .75. We will report results using these relative deviations, so that the generally larger deviations from higher price reference products do not over-weight some products over others in the analysis. However, our results replicate using non-standardized (absolute) deviations as well.

Next, we calculated for each participant the average relative deviation given for the 7 comparative matches that participant assessed, and compared it to the average relative deviation given for the 7 associative matches that the person viewed. It should be noted that we rotated, between subjects, which products were presented with comparative matches and which were

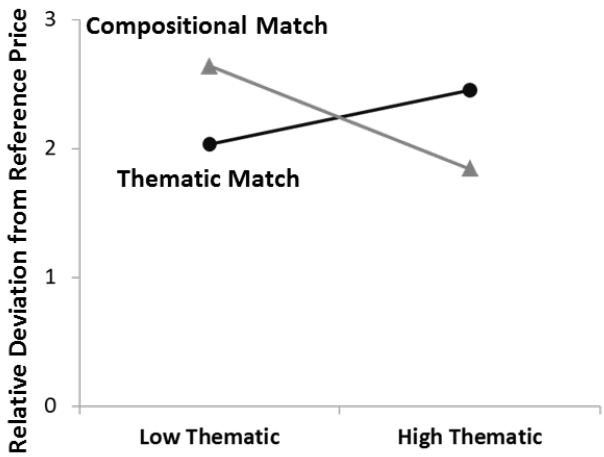
presented with associative matches. Thus, for each product, the index includes a roughly equal number of pairings with an associative or a comparative referent.

This study simultaneously tested for two different factors that can impact the basis of similarity: differences in the propensity to use associative similarity in judgment (as in Study 1) and a direct manipulation of temporal context (as in Study 2). First, we analyze the effect of the individual difference propensity for associative similarity (TS index) and then the interaction of the individual difference and the manipulation of temporal context in predicting deviation scores.

As in the similarity sample, the TS index did not differ based on the temporal context (M_{week} = .36 vs. M_{year}=.37, $t < 1$) used in the price estimation tasks, suggesting that it captures an individual difference, independent of the manipulation. Consistent with what was observed in the manipulation check in Study 1, the majority of matches on the TS index were to the comparatively similar options rather than the associatively similar options. We find a significant effect of the TS index measure of propensity for associative similarity when regressed on the difference between the average price deviations for associative matches and for comparative matches (β = -8.5, t = 2.3, $p < .05$). As shown in Figure 1, participants with a lower tendency to choose thematic similarity have lower deviance scores for comparative matches than for associative matches. In other words, those participants with a low tendency to identify thematic similarity give price estimates that are closer in value to those of *comparatively* similar referent products' prices (rather than to the prices of associatively similar products). As the tendency to choose thematic similarity in the word tasks increases, however, the pattern reverses and participants tend to give estimates that are closer to the prices of associatively similar referents (rather than to the prices of comparatively similar referents). To put the results into context, note that one point on the relative deviation scale corresponds to approximately a $45 difference from the referent price, averaging across the products.

Summarizing across a wide range of products, we find that individual differences in the tendency to use thematic similarity determine which reference prices affect estimates of the target product's price: For people who tend to use thematic similarity, the prices of associatively similar referent products influence estimates; for those who do not, prices of comparatively matched products influence price estimates.

FIGURE 1: TENDENCY TO USE THEMATIC SIMILARITY

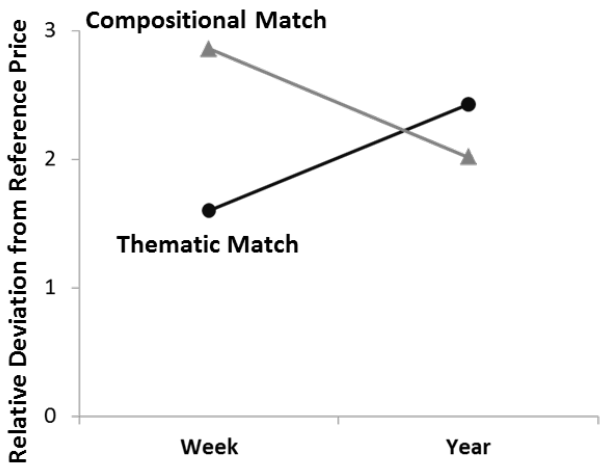


Next, we consider the effect of manipulating temporal context. The results of Study 3a indicate that associative matches are seen as more similar in the future than they are in the present. Comparative matches are seen as slightly more similar in the present than in the future. Therefore, we predict that in a year, associative matches should have a bigger influence on price estimates than comparative matches, and, given that our participants show a strong overall tendency to identify comparative similarity, that this tendency should be most pronounced for people who might not otherwise use associative similarity. To test this prediction, we regressed the difference in price deviation scores for associative versus comparative matches by (i) temporal context (week vs. year), (ii) the TS index, and (iii) their interaction. In addition to significant main effects of the manipulation and the TS index, the predicted interaction is found ($\beta_{\text{TS x Context}} = 16.9$, $t = 2.2$, $p < .05$). For those respondents who tend not to use thematic similarity (i.e., below the median on the TS index), price estimates are more influenced by an associatively similar referent in a year than in a week ($\beta = -.84$, $t = 2.2$, $p < .05$) and more influenced by a comparative referent in a week than in a year ($\beta = .83$, $t = 2.1$, $p < .05$). However, for those higher in the tendency to use associative (e.g. thematic) similarity (i.e., above the median on the TS index)—those respondents who recognize *both* associative and comparative similarity—temporal context does not change the relative impact of associative versus comparative matches on price estimates (both p's > .10).

As can be seen in Figure 2, among those who are low in use of thematic similarity, framing the purchase occasion being estimated as occurring a year from now (as opposed to in a

week) reduces deviations from the price of an associatively similar referent product, but increases deviations from the price of a comparatively similar referent product. This is consistent with our argument that the basis of similarity can shift and, in turn, affect the degree to which each type of referent product influences price estimations, even when the notion of similarity has not been explicitly suggested to the participant in the study.

FIGURE 2: IMPACT OF TEMPORAL CONTEXT AMONG THOSE LOW IN USE OF THEMATIC SIMILARITY



As an additional control, we had also included two price estimation tasks in which the referent was highly (literally) dissimilar and two for which the referent was highly (literally) similar, regardless of the basis (see Table 1). Using analyses parallel to those described above, we confirmed that the similar referents influenced price estimates more than the dissimilar referents (e.g., yielded lower deviation scores). Furthermore, neither the individual difference in the tendency to use thematic similarity (TS index), the manipulation of temporal context, nor the interaction of the two had any effects on either the similar-referent or dissimilar-referent price estimates. This test of boundary conditions shows that the results of this study are due to differences in constructed similarity, rather than an influence of either TS index or temporal context on the degree to which general similarity is used in price inferences.

STUDY 4: PERCEIVED SIMILARITY TO AN IDEAL PRODUCT AND WILLINGNESS TO PAY

The results of the prior studies show that shifts in perceived similarity affect how the prices of products in other categories affect price estimates for products. Next, we turn to an investigation of price inferences involving within-category comparisons. In such tasks, a parallel has been demonstrated between how an "ideal" option (high-valued on all the relevant attributes) influences both similarity and preference evaluations (Medin, Goldstone and Markman 1995; Kaplan and Medin 1997). We argue that contextual factors can likewise shift the perception of comparative similarity within a category, with consequences for how an ideal option influences judgments about target products in the same category. In particular, when a product is seen as more similar to a high-priced ideal product, we predict that people will have a higher reservation price (willingness-to-pay) for the product, compared to when the product seems less similar to the ideal product. We will provide more evidence that perceived similarity is constructed—that it depends on both (i) the subjective distance on an attribute dimension and (ii) the basis used for judging similarity.

This study and the next, we will contrast features that relate to very practical concerns (e.g., the durability of the product) and those features that relate directly to the enjoyment of consuming the product. This distinction is closely linked to an early distinction drawn in the literature on construal level theory between "feasibility" and "desirability" (Liberman and Trope 1998). In those terms, desirability concerns to the value of an experience (e.g., "that's a fun car to drive"), whereas feasibility concerns the ease or difficulty of achieving the experience (e.g., "but it's always in the repair shop").

This study will demonstrate that changes in the comparisons prompted by the consideration set (e.g., merely by manipulating the attributes of a clearly inferior option) impact how similar to the ideal a target product seems to be, which, in turn, drives valuations of the target product. Study 4 demonstrates this effect using a range manipulation which manipulates similarity directly (but does not involve construal). Then, in Study 5, we will manipulate similarity indirectly, via changes in temporal context, and show that this indirect manipulation of similarity produces the same changes in customers' willingness to pay.

Pretest.

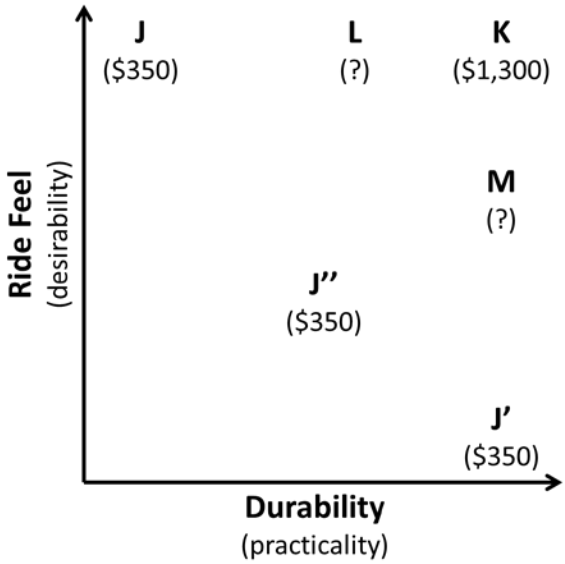
We ran a pretest to select a product category for which we could identify features which uniquely related to pragmatic feasibility considerations versus desirability considerations. As part of a larger study, 82 participants were presented with two attributes for each of a set of product categories and were asked to rate “to what extent does this attribute determine the product’s desirability” versus “to what extent does this attribute determine the product’s feasibility” on a one (desirability) to six (feasibility) scale. On the basis of this pretest, we selected bicycles described in terms of durability and ride feel for the main study. In particular, participants distinguished durability (M = 4.77) from ride feel ratings (M = 2.77, paired-t (81) = 8.34, $p < .001$) along the feasibility and desirability dimensions. Durability was rated significantly above the midpoint of the scale (and thus, seen as determining the product’s feasibility; $t(81) = 8.31$, $p < .001$) and ride feel was rated significantly below the middle of the scale (seen as determining desirability; $t(81) = -4.34$, $p < .001$).

Method.

One hundred thirteen participants completed this study. This study uses a two-condition between-subjects design, manipulating the perceived range of either the durability ratings or the ride-feel ratings by changing the attribute values of an inferior option while holding all other options constant. Participants were asked to imagine buying a bicycle in the intermediate future (in six weeks). Then, they were shown the durability and ride feel ratings for four bikes, with an ideal bike K and an inferior bike J. In the extended durability condition, item J was inferior due to a very low rating on durability while in the extended ride-feel condition, item J was inferior due to a very low rating on ride feel. The stimuli used in both this study and Study 5 are illustrated in Exhibit 1. Note that participants were not presented with a figure—they were presented only with a table with Bikes K, L, M and one of the rows for Bike J, depending on the condition. We have numbered the three alternative formulations of Bike J here for expository purposes only—respondents always saw the inferior bicycle labeled as Bike J.

FIGURE 3: STIMULI FOR STUDIES 4 AND 5

	Durability Rating	Ride Feel	Retail Price
Bike J (extended durability, Study 4)	1.2	9.3	$350
Bike J' (extended ride feel, Study 4)	8.5	1.2	$350
Bike J'' (Study 5)	4.4	3.7	$350
Bike K	8.5	9.3	$1,300
Bike L	6.7	9.3	?
Bike M	8.5	6.8	?



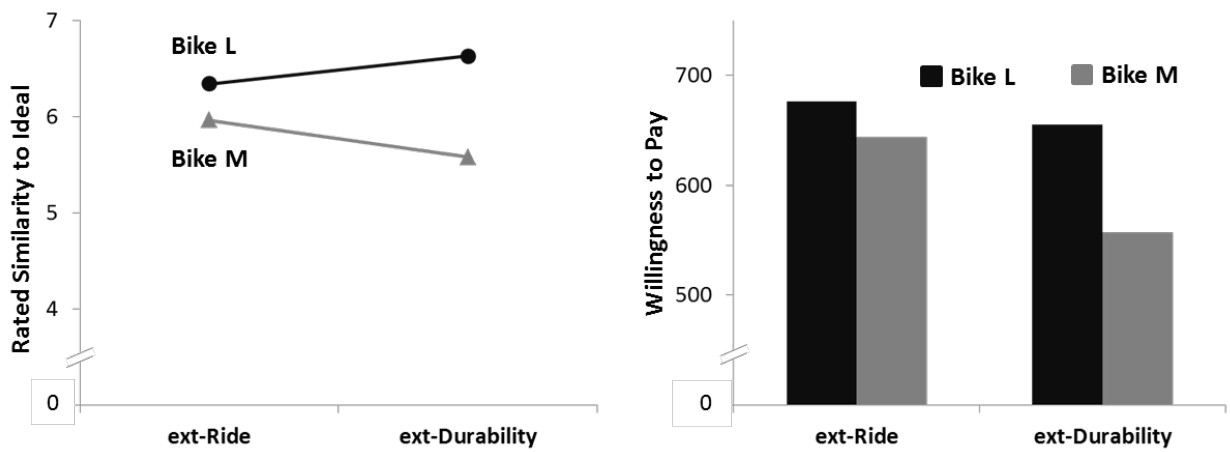
Participants rated the similarity on a nine point scale between the ideal product in the category (Bike K) and each of three other products. Then, they indicated their willingness to pay for the ideal product and both target products. Bike L matched the ideal product (Bike K) on the attribute which determined its desirability but was inferior on the pragmatic, feasibility dimension and Bike M matched the ideal product on the feasibility dimension but was inferior on the desirability dimension. Bike J's low score extends the range on one dimension (either durability or ride feel, depending on the condition) and should therefore make the target bike that scores high on that dimension seem more similar to the ideal (cf. Parducci 1965). Thus, we predicted that Bike L (the more desirable, less practical option) would seem more similar to the ideal and be higher valued in the extended ride-feel condition and that Bike M (the less desirable, more practical option) would seem more similar to the ideal product and would have higher valuation in the extended durability condition.

Results and Discussion.

Similarity ratings. As can be seen in the left panel of Figure 4, the high feasibility, low desirability Bike M is seen as directionally more similar to the ideal Bike K in the extended ride-feel condition (when Bike J has low ride-feel) than in the extended durability condition (when

Bike J has low durability; $M_{\text{ext-Ride}}$ = 5.96 vs. M = 5.58$_{\text{ext-Durability}}$). Conversely, the high desirability, low feasibility Bike L is seen as directionally more similar to the ideal Bike K in the extended durability condition than in the extended ride-feel condition ($M_{\text{ext-Durability}}$ = 6.63 vs. $M_{\text{ext-Ride}}$ = 6.34). A 2 (condition: extended ride-feel vs. durability) x 2 (product: Bike L vs. Bike M) mixed ANOVA finds a significant interaction ($F(1,111) = 8.18$, $p < .01$), as well as a significant main effect of which bike is being compared to K ($F(1,111) = 36.32$, $p < .001$). There was no main effect of manipulating the attribute values of the inferior option Bike J (e.g., extending ride-feel vs. durability, $F < 1$). Thus, we conclude that the manipulation was successful in shifting the perceived similarity of the two products to the ideal product.

FIGURE 4: EFFECTS OF OPTION SET ON SIMILARITY AND WILLINGNESS TO PAY IN STUDY 4



Willingness to pay. Correspondingly, the manipulation of the inferior option shifts the relative willingness to pay for the two target products. A 2 (condition: extended ride-feel vs. durability) x 2 (product: Bike L vs. Bike M) mixed ANOVA finds the predicted interaction ($F(1, 111) = 6.15$, $p < .05$) as well as a main effect of the product ($F(1, 111) = 23.39$, $p < .001$), but no main effect of the manipulation ($F < 1.5$, $p > .1$). In particular, consumers had a higher valuation for the desirable Bike L than for the feasible Bike M, but the difference was fairly small in the extended ride-feel condition (M_{BikeL} = \$676 vs. M_{BikeM} = \$644) and was much larger in the extended durability condition (where Bike L was seen as more similar to the ideal, M_{BikeL} = \$655 vs. M_{BikeM} =\$557). We have argued that this occurs because manipulating the range shifts the

perceived similarity to the more expensive ideal product, impacting the degree to which the price of the ideal bike is incorporated into the judgment of willingness to pay.

To further support this interpretation, we ran a mediation analysis using each participant's difference in rated similarity (ΔSim_{ML}= rated similarity of Bike M to the ideal - rated similarity of Bike L to the ideal) and each participant's difference in buying prices for the focal products (ΔWTP_{ML} = willingness to pay for Bike M - willingness to pay for Bike L). First, we confirm that the range manipulation (extending durability vs. ride-feel) impacts the difference in similarity (β = .68, t = 2.9, p < .01) in a simple regression. Second, we confirm that the range manipulation likewise impacts the difference in willingness to pay (β = 66.3, t = 2.5, p < .05) in a simple regression. Lastly, in a multiple regression predicting difference in willingness to pay, we find a significant effect of difference in similarity (β = 34.5, t = 3.4, p < .01) and a non-significant effect of the attribute range manipulation (β = 42.9, t = 1.6, p = .11). We find a significant indirect effect of the range manipulation on differences in willingness to pay via the difference in similarity (β = 23.4, bootstrap 95%CI = [6.8, 53.6], Sobel test Z = 2.2, p < .05).

STUDY 5: IMPACT OF TEMPORAL CONTEXT ON SIMILARITY TO AN IDEAL PRODUCT AND WILLINGNESS TO PAY

Study 4 showed that the perceived similarity of a target product to an ideal product drove people's valuations, and that this constructed similarity could be directly manipulated by changing the location of the inferior option in the consideration set and thereby extending the range of one of the attributes. In Study 5, we hold the consideration set constant and test whether changes in the temporal context can have a corresponding effect on perceived similarity and, via similarity, on willingness-to-pay.

If thinking about products in the distant future increases the subjective value of the desirability benefits (over the pragmatic benefits), then consumers' willingness to pay for products whose benefits are predominantly defined by either pragmatic or desirability attributes will be directly affected by temporal context. In particular, willingness to pay will be higher when construal level (abstract vs. concrete) matches the dominant benefits (desirable vs. feasible, as demonstrated by Agrawal et al. 2006). In this understanding of temporal context, however, the

perceived relationship between the target product and any comparison or referent products will not be affected, and the change in valuation will not depend on perceived similarity.

If, however, temporal context also induces a representational change (Day and Bartels 2008), the impact of temporal context on valuation might extend beyond changes in direct preferences to inferences being influenced by different referent products, due to shifts in which products within a category are seen as comparatively similar. In this view, if thinking about the near future makes pragmatic feasibility considerations more prominent as a basis of similarity, the products that perform similarly on dimensions relating to the practical use of the product should be perceived as relatively more similar in the near future than in the distant future. In contrast, if thinking about products in the distant future leads to a focus on desirability, then products which are similarly enjoyable should be perceived as relatively more similar in the distant future than in the near future.

Method.

One hundred twelve participants filled out a brief questionnaire in exchange for a nominal cash payment. This study employed a two-condition (temporal context: near vs. distant future), between-subjects design. Participants were asked to imagine buying a bicycle either in a week (near future condition) or in a year (distant future condition). Then, they rated the similarity (on a nine point scale) of an ideal product in the category (Bike K, with the highest ratings on both durability and ride feel) and each of three other products. As in Study 4, the exact attribute rating values were provided to the participants (see Figure 3).Providing the actual values helps to control for possible effects of temporal context on different inferences or interpretations that might occur with more natural feature descriptions. Participants then indicated their willingness to pay for the ideal product and both target products.

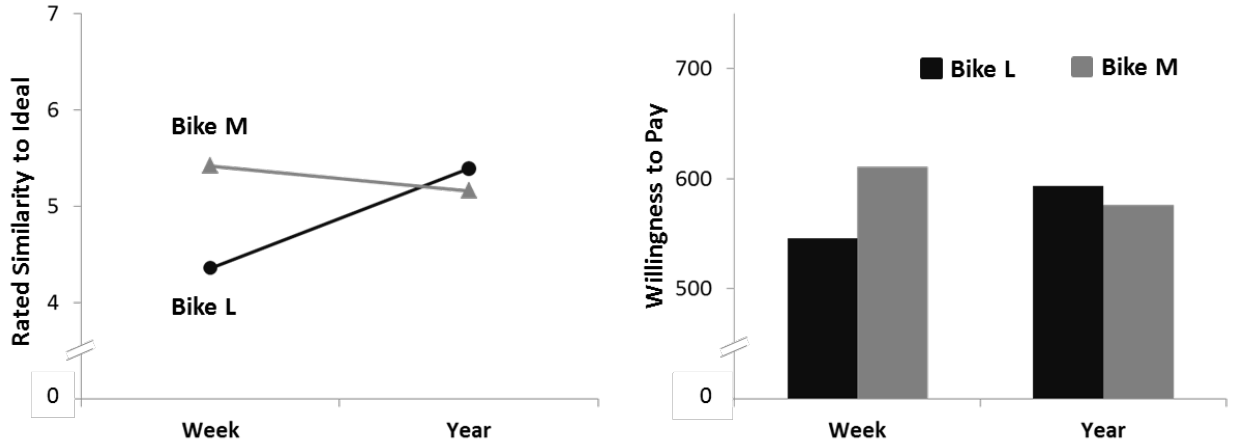
The products were described such that Bike J was dominated by all three competing products. Bike L matched the ideal product (Bike K) on the desirability attribute (ride feel) but was inferior on the pragmatic, feasibility dimension (durability). Conversely, Bike M matched the ideal product on the feasibility dimension but was inferior on the desirability dimension. The test of our hypothesis was whether Bikes L (the more desirable, less practical option) and Bike M (the less desirable, more practical option) would be perceived as relatively more or less

similar to the relatively expensive ideal product, and whether these similarity relations would then affect people's willingness to pay for Bikes L and M.

Results and Discussion.

Similarity ratings. As can be seen in the left panel of Figure 5, in the near future, the high feasibility, low desirability bike is seen as more similar to the ideal than the low desirability, high feasibility bike. In the distant future, the pattern reverses. A 2 (condition: near vs. distant future) x 2 (product: Bike L vs. Bike M) mixed ANOVA finds two main effects and the predicted interaction. Overall, people thought Bike M was more similar to the ideal (M = 5.42) than was Bike L (M = 5.02, $F(1, 110) = 5.9$, $p < .05$), and they perceived directionally greater similarity overall in the distant future than in the near future ($F(1,110) = 3.59$, $p < .10$). Most importantly, for present purposes, the perceived relative similarity of the two target products to the ideal shifted over time, as revealed by the significant interaction term ($F(1,110) = 14.7$, $p < .001$)

FIGURE 5: EFFECTS OF TIME ON SIMILARITY AND WILLINGNESS TO PAY IN STUDY 5



Willingness to pay. As predicted, temporal context shifts the relative willingness to pay for the two target products. As can be seen in the right panel of Figure 5, in the near future, people are willing to pay more for the high feasibility, low desirability bike than the low desirability, high feasibility bike. In the distant future, however, the pattern reverses. A 2 (condition: near vs. distant future) x 2 (product: Bike L vs. Bike M) mixed ANOVA finds only

the predicted interaction ($F(1, 110) = 6.36$, $p < .05$) and no main effects for product or temporal context (both ps > .1).

Thus, the similarity of each bike to the ideal product in the option set plays a key role in the valuation, such that valuation changes as the temporal context shifts the perceived similarities to the ideal. In the near future, the more feasible bike is both seen as more similar to the ideal bike and consumers are willing to pay a higher price for it, compared to the less feasible but more desirable bike. In contrast, when consumers consider the distant future, they see the more desirable bike as more similar to the ideal bike and they are willing to pay more for it. We have argued that this occurs because psychological distance (in this case, temporal delay) shifts the basis of similarity from the feasibility attribute to the desirability attribute, impacting the degree to which the price of the ideal bike is incorporated into the judgment of willingness to pay.

To further support this interpretation, we ran a mediation analysis using each participant's difference in rated similarity (ΔSim_{ML}= rated similarity of Bike M to the ideal - rated similarity of Bike L to the ideal) and each participant's difference in buying prices for the focal products (ΔWTP_{ML} = willingness to pay for Bike M - willingness to pay for Bike L). First, we confirm that the timing manipulation (week vs. year) impacts the difference in similarity (β = 1.3, $t = 3.8$, $p < .001$) in a simple regression. Second, we confirm that the timing manipulation (week vs. year) likewise impacts the difference in willingness to pay ($\beta = 80.8$, $t = 2.5$, $p < .05$) in a simple regression. Lastly, in a multiple regression predicting difference in willingness to pay, we find a significant effect of difference in similarity ($\beta = 23.50$, $t = 2.7$, $p < .01$) and a non-significant effect of the timing manipulation ($\beta = 50.5$, $t = 1.5$, $p = .13$). We find a significant indirect effect of the timing manipulation on differences in willingness to pay via the difference in similarity ($\beta = 30.3$, bootstrap 95%CI = [10.8, 60.9], Sobel test $Z = 2.2$, $p < .05$).

Using a Sobel test, we find that the effect of the manipulation is significantly reduced when controlling for difference in similarity ($z = 2.18$, p =.02), suggesting that it is the shift in similarity that mediates the impact of the timing manipulation on willingness to pay.

Study 5 demonstrates that temporal context systematically changes the willingness to pay for bikes defined by feasibility versus desirability benefits. Moreover, in our findings, temporal context operates by changing the underlying perceived similarity within the option set, between the target products and the ideal product. This supports our proposition that temporal context can affect valuation indirectly via representational change, rather than by directly affecting the

perceived value of attributes. This interpretation is supported by our mediation results. Furthermore, recall that Study 4 found very similar effects on willingness to pay occurred by manipulating similarity directly, holding temporal context fixed. Thus, these two studies, taken together, provided further support for our proposed causal chain in which temporal context shifts similarity and it is specifically the shifts in similarity to an ideal product (whether spontaneously generated or explicitly provided, as in our studies) which affect valuation.

STUDY 6: DIFFERENTIAL SUBSTITUTION IN MULTI-ITEM CHOICE

The prior two studies demonstrated that shifts in similarity (whether due to changes in the choice set or temporal context) yield changes in how comparison prices impact willingness to pay. Study 6 builds on the literature on how configural properties, like the number and placement of alternatives within a choice set, alter preferences (Huber, Payne, Puto, 1982; Simonson, 1989). Specifically, we extend our analysis to investigate how external contextual factors (such as temporal context) interact with similarity-based context effects specific to the choice set. In Study 6, we distinguish between the direct effect of temporal context on preferences in two item choices (where we replicate prior effects) and how temporal context impacts three-item choices via shifts in similarity among the options, yielding patterns of choice that would not otherwise be predicted as a direct effect of temporal context.

In this study, participants were asked to choose the internship they would prefer from a set of possible internships. We designed internship descriptions which varied along the dimensions of how enjoyable the everyday experiences were and how consistent or inconsistent the internship was with the participants' higher-order goals. Our design makes use of the distinction between commonalities in concrete experiences versus commonalities in how behaviors relate to higher-order abstractions (goals). As in the findings of Day and Bartels (2008), we expect that internships with commonalities in features relating to everyday experiences will be perceived as more similar in the near future than in the distant future.

While such shifts in similarity are not likely to impact choices between two items, the addition of a third option to the choice set induces a more complex assessment that can hinge on the similarity relations between items in a set, as in Dhar and Glazer's (1996) finding for the attraction effect. This study uses naturalistic descriptions of internships (rather than attribute

ratings), and focus primarily on substitution effects (also sometimes referred to as similarity effects; see Tversky 1972, Huber and Puto 1983), in which a choice option is more substitutable for, and therefore will differentially cannibalize choice of, the more similar-seeming of two other options (Ratneshwar and Shocker 1991). The "desirable" internship was designed to be relatively unattractive with respect to daily activities (feasibility) but attractive insofar as it was largely consistent with the intern's higher-order goals (desirability), described in more detail below. The "feasible" internship was designed to be relatively attractive with respect to daily activities but be relatively unattractive in terms of the participant's higher-order goals. Some participants were also offered a third internship, which were designed to have intermediate levels for both how appealing the everyday, concrete experiences were and for the fit with higher-order goals.

In the binary choice conditions, temporal distance is predicted by prior research to have a direct effect on preferences. Namely, thinking about the choice farther in the future should increase the relative share of the most desirable internship (over the most feasible internship; as in Liberman & Trope, 1998). We predict, however, that the effect will reverse with the addition of a third (intermediate) option, due to a higher tendency to cannibalize the most desirable internship.

Method.

One hundred thirteen native-English speaking undergraduate participants who self-identified as politically moderate or liberal (e.g., non-conservative) completed a short survey. This study employed a 2 (temporal context: near vs. distant future) x 2 (choice set: 2 vs. 3 options), between-subjects design. Participants were either asked to choose between serving one of two or between serving one of three internships, depending on the condition. After making their choice, they were asked to rate all pair-wise similarities among the options they had read about.

The "desirable" internship was described thusly:

> *"Carnegie Endowment for International Peace, Administrative Intern—Interns provide clerical assistance (copying, filing and maintaining office supplies) and receptionist support to Associates working on the Carnegie Endowment's projects such as non-proliferation, democracy building, trade, China-related issues, South*

Asian issues and Russian/Eurasian studies."

The "feasible" internship read as follows:

> *"Exxon, Advertising and Social Events Intern—Exxon is the world's largest publicly traded international oil and gas company. Interns provide day to day direction to ad agency counterparts on project basis, attend filming of commercials and organize social events."*

As noted above, in the 2-choice conditions, we expect to replicate the findings of Liberman and Trope (1998), such that temporal distance induces a preference for the desirable over the feasible options, and therefore induces a preference for the Carnegie internship over the Exxon internship. Thus, half of our participants read about these two internships and imagined having to make a choice about which one to serve starting either next week or next year.

The other half of our sample read about and chose from an option set including these two internships as well as a third internship, which were designed to have intermediate levels for both how appealing the everyday, concrete experiences were and for the fit with higher-order goals.

> *"Target Corporation, Marketing Intern—Target is the fifth largest retailer in the U.S. Interns will assist in the development of marketing programs, analyze current consumer trends, business results and competitor activities and help develop presentations to the product management teams."*

In this study, we will compare how temporal context affects the relative choice shares of the Carnegie and Exxon internships in the two-choice and three-choice conditions. We will explain the findings by examining temporal context affects the similarity relations among the trinary choice set, and in turn, how those similarity relations affect the middle option's (i.e. Target) cannibalization of the choice shares of our focal options.

Pretest.

Eighty-three undergraduate participants who self-identified as politically moderate or liberal rated all three internships on two five-point scales that assessed the degree to which the

internship would be a good fit for them, one focusing on the “broad implications” (desirability) and the other on the “concrete experiences” (feasibility). Participants were screened by political ideology in order to ensure that our participants’ higher order goals were consistent with our manipulation (Carnegie Foundation vs. Exxon).To make sure that the way the internships are perceived is consistent in both time-frames used in the study, participants evaluated the internships as either occurring in a week or in a year. As intended, the Carnegie internship was seen as a better fit in terms of broad implications than concrete experiences (3.2 vs. 2.5, $t(82) = 4.2$, $p < .001$), while the Exxon internship was seen as a better fit in terms of concrete experiences than broad implications (3.6 vs. 2.9, $t(82) = 4.3$, $p < .001$). The Target internship was also rated higher on concrete experiences than broad implications (3.7 vs. 3.1, $t(82) = 4.9$, $p < .001$) but its concrete experiences rating was similar to Exxon’s and its broad implications rating was similar to Carnegie’s, suggesting that it was seen as sharing both advantages. We also ran a series of mixed between-within ANOVA to confirm that temporal frame did not affect these results. While main effects for both time and the concrete versus broad questions were found, temporal context did not moderate the differences between concrete and broad evaluations for any of the internships (all Fs < 1). Thus, we conclude that the differences in perceived benefits of the internships (feasibility vs. desirability) remain stable even as temporal context changes.

Results and Discussion.

Two-choice Conditions. Construal level theory would predict that, because people focus more on higher-order aspects than on everyday experiences in the distant future, people would prefer the job working for Carnegie over the job working for Exxon in this condition. In the near future condition, according to construal level theory, people would focus more on concrete experiences than on the broad implications, and thus would prefer the enjoyable job working for Exxon over the goal-congruent job working for Carnegie. We observed a non-significant effect in the predicted direction. Participants who made choices about which internship to serve when it started in a year selected Exxon only 40% of the time (and Carnegie 60% of the time) whereas those who made choices about which internship to serve in a week chose Exxon 57% of the time and Carnegie 43% of the time ($\chi^2(1)= 1.55$, $p = .17$, one tailed Fisher exact test).

Three-choice Conditions: Similarity. Next, we analyze the similarity relations between the intermediate option, Target, and each of the focal options. Recall that in the pretest, the Target internship was rated higher for "concrete experiences" than for "broad implications", similar to the Exxon internship. However, the Target internship's ratings for "broad implications" were similar in value to the Carnegie internship. Thus, we predict that in the distant future, people would base their similarity judgments more on the higher-order aspects of the job and therefore see Target as being intermediate between Carnegie and Exxon. However, in the near future, when concrete experiences are highlighted, people would see Target as being more similar to Exxon than to Carnegie. A 2 (near vs. distant future) x 2 mixed within-between ANOVA (similarity of Target to Carnegie vs. Exxon) finds the predicted interaction ($F(1,58) = 5.0$, $p < .05$) as well as a main effect of comparison internship ($F(1,58) = 94.7$, $p < .001$) but no main effect of temporal context ($F < 1$). In the near future, the Exxon internship is seen as more similar to the Target internship than is the Carnegie internship ($M_{\text{Exxon}} = 3.5$ vs. $M_{\text{Carnegie}} = 1.9$; difference = 1.6). In the distant future, however, the difference in the Target internship's similarity to the Exxon internship versus similarity to the Carnegie internship is significantly reduced ($M_{\text{Exxon}} = 3.2$ vs. $M_{\text{Carnegie}} = 2.1$; difference = 1.0).

Three-choice Conditions: Choice Shares. In the distant future, when people focus more on the broad implications as a basis for similarity, the Target internship is seen as more similar to both Exxon and Carnegie, and it draws choice share approximately equally from each. Among those who chose either Exxon or Carnegie in the distant future condition (N=18), the relative choice share for Exxon was 61% (vs. 60% in the two-choice condition) and the relative choice share for Carnegie was 39% (vs. 40% in the two-choice condition).

In the near future, however, when people focus more on the concrete experiences as the basis for similarity, the Target internship is viewed as substantially more similar to the Exxon internship than it is to the Carnegie internship. The choice share results indicate that this shift in perceived similarity creates the predicted substitution effect, whereby Target cannibalizes the share of (the highly similar) Exxon more than the share of Carnegie. Among those who chose either Exxon or Carnegie in the near future condition (N=21), the relative choice share for Exxon was only 19% (down from 57% in the two-choice condition) and the relative choice share for

Carnegie was 81% (up from 43% in the two-choice condition; $\chi^2(1) = 7.2$, $p < .01$, Fisher exact test). Note that these data are also directionally consistent with a repulsion effect (Frederick and Lee, 2011) for Carnegie, but that the change in choice from 43% to 81% is not significant. To confirm that the degree of cannibalization differs in the near future versus distant future conditions, we ran a logistic regression analysis which found a significant interaction (time x choice condition, $\beta_{INT} = -1.7$, Wald = 3.3, $p < .05$ one-tailed) as well as main effects of condition and time ($\beta_{COND} = 2.4$, Wald = 3.2, $p < .10$ and $\beta_{TIME} = 3.4$, Wald = 5.3, $p < .05$).

Note that people's preferences in the three option conditions cannot be explained by a theory whereby construal level differentially affects decision weights for lower-order and higher-order attributes. If that were the case, we would predict polarization—that people would instead choose the option which dominates the other two on the dimension highlighted by the temporal context and thus overwhelmingly choose Exxon in the near future and Carnegie in the distant future. Likewise, our results are not explained by a heightened sensitivity to tradeoffs in an abstract (vs. concrete) mindset (Khan, Zhu and Kalra 2011). Rather, our results are explained by the shift in the basis of similarity judgments—in the distant future, the intermediate option does not affect the choice share of the original options, but in the near future this option is seen as highly similar to one and thus differentially cannibalizes its share.

GENERAL DISCUSSION

In this paper, we have argued that the malleability of perceived similarity plays an important and understudied role in consumers' inferences, valuations and choices. The bases of similarity comparisons—which in our studies, were affected by having made prior judgments (Study 1), the attribute range represented in a choice set (Study 4) and even external contextual factors not generally associated with similarity, such as temporal distance (Studies 2, 3, 5 and 6)—systematically impact similarity. In turn, these factors can impact general decision making processes specifically via changes in perceived similarity. This paper has focused on several specific elements of the decision process and specific direct and indirect manipulations of the bases of similarity. However, we believe that the impact of shifts in similarity on decision making remains highly understudied. Accordingly, we highlight several key implications of our findings, suggesting directions for future research.

Implications for Consumer Decision Making.

First, our findings have implications for the specific decision making processes implicated in the experiments. In Studies 1 through 3, we present evidence for a view of reference price formation that is substantially different from what has been studied to date. Past approaches have primarily assumed that reference prices are generated either primarily through a learning process of repeatedly observing the price for a given product (e.g., a weighted average of prior prices, Winer 1986), or in conjunction with external cues, such as external reference price claims (Biswas and Blair 1991). In contrast, we find that estimated prices can also be influenced by different products, when judged to be either comparatively or associatively similar, even when the products are drawn from very different product categories (e.g., neither a ceiling fan nor mugs would normally be considered to be in the same product category as a blender). Furthermore, these broader influences on price expectations are shaped by contextual cues or factors which can determine whether a potential referent impacts price expectations. While our studies explicitly presented comparison products, our results suggest that the combination of how similarity is judged and which comparison products are present or come to mind may have an important (and otherwise difficult to account for) influence on price expectations.

The similarity of an item to an ideal version has been discussed as a potential key factor in judgments (Barsalou 1985, Kahneman and Miller 1986) and choices (Medin, Goldstone and Markman 1995). Studies 4 and 5 present direct evidence for exactly such a role, demonstrating that the perceived similarity to a category ideal impacts willingness to pay, holding constant the objective features of the products. Furthermore, the perceived similarity to the ideal is malleable, shifting with the range of attribute values or even temporal context. While we explicitly present an ideal product in the option set in our studies, in general, the consideration of such ideals may be spontaneously prompted by recalled products or by ideals implied by the combination of the best attribute values present in the choice set, yielding similar effects on valuation.

Furthermore, our findings support the view that similarity to options within the choice set is implicated in some context effects (Dhar and Glazer 1996). In particular, while cannibalization (or, equivalently, similarity) effects have been found to be relatively weak when providing quantified attribute information (Huber and Puto 1983), we provide evidence for this effect in a choice set with naturalistic descriptions (e.g., where attribute levels are inferred from the

description, rather than explicitly provided). Furthermore, our results suggest that this effect on choice depends, in part, on factors in the external context (e.g., temporal framing), which change the perceived similarity among the choice options.

While our studies have demonstrated the effects of shifts in similarity on general decision processes (estimation, valuation, and choice), the malleability of similarity has strong implications for other, more specific, consumer decisions as well. For example, we would predict that the evaluation of "fit" in brand extensions would be subject to the same shifts as the parallel process of evaluating similarity. In an unpublished pilot study, we have found some initial evidence that comparatively related brand extensions are judged as having higher fit in the present, while associatively related brand extensions are judged as having higher fit in the future. Thus, in addition to recent work showing that contextual factors can impact the degree to which brands can extend (Ahluwalia 2008) as well as the weight put on brand fit versus quality (Meyvis, Goldsmith and Dhar 2011), our findings suggest that contextual factors may also moderate which types of brand extensions are seen as maintaining fit. As another example, variety-seeking and satiation are processes that depend on perceived similarity (Hoch, Bradlow and Wansink 1999; Redden 2008). We would predict that when the actual differences present across a set of items are highlighted by the basis of similarity employed, the set of items will be judged as more varied, will be more favored when seeking variety and will give rise to less satiation.

Implications for Theories of Similarity and Mindset.

More generally, our findings have implications for our understanding of "constructed similarity." Our studies demonstrate that contextual factors affect not only the degree to which different attributes are used as a basis for comparative similarity judgments, but can even affect the actual similarity process, shifting judgments from comparative to thematic (i.e., associative) similarity. In Studies 2 and 3, the manipulation of temporal context from near future to distant future systematically shifted similarity judgments from comparative to thematic. This suggests that temporal context not only changes the way items are mentally represented, but shifts the basis of similarity judgments from a computation based on the accessible (high/low-level)

features to a very different process that computes similarity using thematic associations with other concepts, which may not involve the representation of these high/low-level features at all.

Similarly, our findings have implications for the literature on contextual factors and mindsets. Given that many consumer decisions involve choices that unfold over time, our indirect manipulations of the basis of similarity employed differences in temporal framing. It is important to note, however, that the effects demonstrated in the current studies are not limited to the impact of temporal context. Our hypotheses arise from the general effects of psychological distance on similarity and, via shifts in similarity, on decision making. We would predict that other dimensions of psychological distance, such as social distance, probability, or hypotheticality are likely to produce similar effects. In fact, our findings suggest that the psychological-distance-based effects of such factors on decision making might be thought of as either a direct effect of construal level (e.g., as changing the weights given to features involved in desirability and feasibility) or as an indirect effect, via shifts in similarity among either the explicit choice options themselves or between choice options and spontaneously generated comparison items.

We induced differences in construal level as a means to demonstrate the effect of contextual factors on shifts in similarity throughout the paper. However, we anticipate that a similar approach could be taken to developing a better understanding of how other contextual factors operate as well. As an example, incidental mood has been shown to have implications for similarity judgments (Gasper and Clore 2002, Murray et al. 1990). Incidental mood has also been shown to affect choice (Raghunathan and Pham 1999) and evaluation (Pocheptsova and Novemsky 2009; Martin, Harlow, and Strack 1992; Schwarz and Clore 1983). This raises the question of when it is that mood impacts decisions directly, and when it might exert an influence on decisions indirectly, via shifts in similarity. Further motivating this question is recent work indicating that incidental mood can impact the degree of abstraction or concreteness in subsequent reasoning (Labroo and Patrick 2008).

Beyond these specific examples, our approach has general implications for the recent proliferation of research on mindsets (see Forster and Liberman 2007; Wyer 2008 for reviews). A mindset can be characterized as knowledge activation that occurs in performing a specific task, which then spills over to subsequent decision processes (Xu and Wyer 2007). The knowledge activation process has been studied in terms of the activation of specific items in

memory (e.g., facts, goals or heuristics). We argue that the circumstances which give rise to knowledge activation can likewise highlight different sets of relations between items, and thereby activate different bases of similarity. Consequently, differences in mindset can affect how similatity is constructed, and the impact of mindset on choices may operate via differences in perceived similarity.

Similarity processes are fundamental to how we perceive, structure and assess information. Far from being a stable property of objects, similarity is best understood as constructed, sensitive to contextual cues and which specific basis of judgment is accessible in mind. This paper provides examples of how specific factors affecting choices can be explained by understanding shifts in perceived similarity. Given that similarity underlies cognition in general, and decision making in particular, such shifts in perceived similarity may be implicated in many other frequently encountered tasks and in the effects of contextual factors on a wide range of decisions and choices.

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APPENDIX A: MANIPULATION STIMULI FOR STUDY 1

	Taxonomic		Thematic	
Target	Similar	Dummy	Similar	Dummy
Bee	Butterfly	Moose	Honey	Maple syrup
Cake	Cookie	Soup	Birthday	Independence day
Cow	Pig	Ostrich	Ranch	Soccer field
Dog	Cat	Elephant	Bone	Potholder
Dust	Soot	Paint	Broom	Paintbrush
Fur	Hair	Veins	Coat	Socks
Knight	Soldier	Plumber	Armor	Hard hat
Monkey	Primate	Reptile	Banana	Apple
Needle	Pin	Chopstick	Thimble	Sponge
Oyster	Clam	Jellyfish	Pearl	Diamond
Prison	Jail	Library	Criminal	Teacher
Robe	Cloak	Vest	Bath	Soap
Sheep	Goat	Giraffe	Wool	Silk
Shirt	Jacket	Belt	Tie	Belt
Squirrel	Rat	Snail	Nut	Rose

TABLE 1: PRODUCT STIMULI FOR STUDY 3

Target	Associative Match	Comparative Match	Match-item price ($)
Test Stimuli			
Kitchen sink	Gas Oven	Bathtub	850
Laptop	Keyboard	MP3 player	45
Snow shovel	Winter gloves	Soup ladle	15
Pillowcase	Alarm clock	Sun dress	35
Dresser	Night stand	Filing cabinet	75
Meat carver	Rotisserie oven	Sawzall	140
Blender	Toaster	Pencil sharpener	25
Snowmobile helmet	Ski gloves	Hard hat	25
Wash cloth	Bar soap	Beach towel	10
Baby monitor	Crib	Teleconf. phone	250
Desk lamp	Printer	Chandelier	120
Rice cooker	Dining table	Gas water heater	800
Hi-Def TV	Blue-Ray player	LCD monitor	120
Shower head	Toilet brush	Hose nozzle	15
Control Stimuli			
Tennis racquet	Racquetball racquet		35
Clothes dryer	Thesaurus		6
Grill	Headphones		275
15" cutting board	12" cutting board		20