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Disambiguating the role of ambiguity in perceptual assimilation and contrast effects

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Testing Models of Contrast and Assimilation Effects Using the Method of Forced-Anchors

We test several models of contrast and assimilation effects by examining the processes that underlie these effects. In experiment 1, we test two competing models and find support for the process stage model proposed by Stapel and colleagues (e.g. Stapel, Koomen, and van der Pligt 1997). In particular, we find that when an ambiguous target is evaluated in the presence of extreme exemplars, a perceptual assimilation effect occurs at encoding and a response language contrast effect occurs at judgment. In experiment 2, we replicate findings by Lynch, Chakravarti, and Mitra (1991) that show perceptual contrast effects when novices judge targets in the context of extreme exemplars. Since targets are likely to be ambiguous to novices, a potential inconsistency between the findings of experiments 1 and 2 arises. We reconcile these findings in experiment 3, by showing that novelty of targets is key to the emergence of a perceptual assimilation effect.

A consumer's expressed preference for an object can appear to be remarkably fickle, lacking consistency over time, as well as being sensitive to the elicitation method employed and other contextual factors. The malleability of preferences and its susceptibility to irrelevant and sometimes fleeting features of a context has been investigated under the rubric of context effects – a term that encompasses a wide-ranging phenomena, from the attraction effect (Huber, Payne, and Puto 1982) to framing effects (Janiszewski and Cunha 2004). The particular context effects that are the focus of this paper, and ones that have received significant attention in the literature, are the *contrast effect* and the *assimilation effect*.

An assimilation effect occurs when the judgment of a target object is biased in the direction of the context, such as when a consumer judges a new perfume she encounters in the store to be expensive because she had just heard radio commercials for expensive products on the way to the store. A contrast effect, on the other hand, refers to when the exact opposite happens – that is, when judgment of a target object is biased in the direction opposite to that of the context. The *context* that can bring about these effects may be other items that appear in the same judgment set as the target (e.g. Lynch et al. 1991) or, as in the case of the preceding example, concepts or exemplars made accessible in memory as the result of frequent or recent activation (e.g. Park et al. 2001; Srull and Wyer 1979). Given that the contrast and assimilation effects are diametrically opposed outcomes, the discussion thus far begs the question of when one occurs at the expense of the other, and perhaps more importantly, why they occur.

A number of theoretical accounts of contrast and assimilation effects have been proposed in the literature, including (what we will refer to as a matter of shorthand) the *set-reset* model (Martin, Seta, and Crelia 1986), the *overlap* model (Herr, Sherman, and Fazio 1983), and the more recent *process stage* model (Stapel et al. 1997). Moskowitz and Skurnik (1999) referred to

the latter two collectively as the standard-of-comparison models (given the similarity both in the outcomes they predict and the posited underlying mechanisms) and demonstrated compellingly that contrast effects can obtain through multiple routes, with trait priming leading to contrast effects consistent with the set-reset model and exemplar priming leading to contrast effects consistent with the standard-of-comparison models. They showed that when trait words such as 'malevolent' were used as primes, the results were as predicted by the set-reset model, whereas when exemplars such as 'Dracula' were used instead, the results were consistent with the standard-of-comparison models. The present paper has a different focus: Granting that the set-reset model best explains contrast effects in the domain of traits, we focus instead on the case of exemplars and examine the underlying processes that give rise to context effects, as proposed by standard-of-comparison models. In particular, we examine contrast effects that occur separately at the encoding and judgment stages of stimulus processing, unlike studies in the extant literature that report overall observed context effects.

In the next section, we briefly review models of contrast and assimilation, focusing on the differences between them with respect to the underlying mechanism each posits. We then discuss how the use of forced anchor scales can help illuminate the process that underlies contrast effects due to exemplar priming. Using that method, we test two competing models – the overlap model (Herr et al. 1983) and the process stage model (Stapel et al. 1997) – in experiment 1 and we find support for the latter. We note that the results of experiment 1 (and the predictions of the process stage model) are potentially inconsistent with findings by Lynch et al. (1991), which examined the role of knowledge in moderating contrast effects. We attempt to resolve this by first testing the robustness of Lynch et al.'s findings using the method of forced anchors in experiment 2. Finally, in experiment 3, we show that the predictions of the process stage model and the

findings by Lynch et al. (1991) can be reconciled by taking into consideration the degree of ambiguity of the target item.

MODELS OF ASSIMILATION AND CONTRAST

The overlap model by Herr and his colleagues (Herr 1986, 1989; Herr et al. 1983) proposes that, in judging a target, one brings to bear information accessible in memory or made accessible by the context. The degree of overlap in features between target and context items is critical in determining whether an assimilation or a contrast effect obtains. Where there is a high degree of shared features, the target will be perceived as being a member of the same category as the context items, and will be judged in a manner consistent with that category. As a result, an assimilation effect is observed. A contrast effect obtains in the converse scenario where the target is not perceived to belong to the same category as the context and the context instead serves as a comparison standard when one is judging the target. The determinants of the degree of overlap include such variables as extremity of the context and ambiguity of the target. Extreme context exemplars tend to lead to contrast effects regardless of the target ambiguity because they are less likely to share features with the target compared to moderate exemplars. A contrast effect is also expected when the target is unambiguous or familiar since such a target would be perceived to have distinctive features and therefore less similar to context exemplars. In short, an assimilation effect is expected only when context exemplars are moderate and the target is ambiguous.

More recently, Stapel and his colleagues (Stapel et al. 1997, 1998) proposed the process stage model, according to which context exemplars can exert separate effects at the encoding

and/or judgment stages of target processing. In a typical rating task, the target stimulus has to first be encoded or interpreted and then judged on the given scale. Context exemplars can activate relevant concepts which then guide interpretation of the target, resulting in an assimilation effect at the encoding stage (a perceptual assimilation effect). These exemplars can also affect the judgment stage by being used to anchor the response scale, resulting in a contrast effect at the judgment stage (a response language contrast effect).

According to the process stage model, whether these encoding and judgment effects occur is crucially dependent on characteristics of the target and of the exemplars used. Context exemplars exert an effect at encoding only if the respondent does not have well-formed perceptions of the target. It may be ambiguous and therefore requires interpretation. Familiar targets, on the other hand, do not, and are immune to context effects exerted at the encoding stage. At the judgment stage, it is the nature of the exemplars that determines if a response language contrast effect will occur. Only exemplars that are (1) concrete, (2) comparison relevant and (3) sufficiently extreme are likely to be used as a comparison standard or scale anchor. Concrete concepts are ones for which people have a clear conception; for example, 'Hitler' as opposed to 'hostility' which is more abstract. Exemplars are comparison relevant if they belong to the same category as the target, such as 'Hitler' when the target to be judged is a person, and "Morton's of Chicago" when the target is a restaurant. Finally, an exemplar such as 'Ferrari' is more extreme than "Toyota Camry" if the dimension of interest is price. Hence, a contrast effect is likely to emerge at the judgment stage only if the context exemplars are concrete, comparison relevant and extreme. The overall context effect observed is the net of the effects at encoding and judgment, so that an overall assimilation effect is observed when a perceptual assimilation effect outweighs a response language contrast effect, and vice versa. If

the target is ambiguous and context exemplars are distinct and comparison relevant, there would be an assimilative encoding effect countervailed by a contrastive judgment effect. According to Stapel et al. (1997), given exemplars that are sufficiently extreme, the net outcome is likely to be a contrast effect.

It is apparent from the brief review that the overlap model and the process stage model make virtually indistinguishable predictions about the observed effect on judgment due to the presence of exemplars in the context. Both say that when exemplars and target are from the same category and exemplars are extreme, a contrast effect will result regardless of the ambiguity of the target. If exemplars are instead only moderate in extremity, an assimilation effect will result in the case of an ambiguous target and a contrast effect will result in the case of a familiar target. There is, however, an important distinction to be made between the two models with respect to the underlying process giving rise to the observed effects. In the first instance described above where the exemplars are extreme, the overlap model says that a contrast effect will obtain when the target is ambiguous because one would deem an ambiguous target to have little feature overlap with extreme exemplars and would use these exemplars instead as a standard of comparison (Herr 1989). The process stage model, on the other hand, says that these extreme exemplars can activate the relevant concept (e.g. hostility) that guides interpretation of an ambiguous target, leading to a perceptual assimilation effect. But these same exemplars also act as a comparison standard at judgment, leading to a contrast effect that overrules the assimilation effect that occurs at encoding (Stapel et al. 1997).

This difference between the two models provides the impetus for experiment 1. Studies of assimilation and contrast effects thus far have all examined the overall effect of context rather than examine separately what happens at encoding and at judgment. To tease apart effects at

encoding and at judgment, we use the method of forced anchors. The two models make contrasting predictions about the observed outcome when forced-anchor scales are used, thereby allowing us to pit one model against the other. Before we present the details of such an experiment, we describe in the next section the logic behind the use of forced-anchor scales.

THE METHOD OF FORCED-ANCHORS

The forced-anchors method proposed here is based on the rationale that if context effects arise from a response language bias, it would be possible to eliminate it by quite simply forcing the use of a common anchor. Hence, instead of soliciting ratings on a typical semantic-differential scale anchored by adjectives such as 'expensive' and 'inexpensive,' the forced anchoring method would present expensive or inexpensive exemplars along with their adjective anchors. Take the situation where respondents are required to rate target cars on a scale anchored by 'expensive' and 'inexpensive,' in the presence of very expensive context cars in one condition and very inexpensive context cars in another. A response language contrast effect would occur because of a tendency for participants in the expensive (inexpensive) condition to use the context cars as comparison standards; that is, to anchor one end of the response scale with very expensive (inexpensive) cars that are more extreme than for participants in the inexpensive (expensive) condition. If the response scale had been one that was anchored by "very inexpensive e.g. Honda Civic" or "very expensive e.g. Nissan Maxima" instead, the tendency to use context cars as anchors would be suppressed and the contrast effect should then be eliminated. Respondents are forced to make a judgment relative to the anchor provided rather than the anchor they would have been led to use by the context. If, on the other hand, the context

influenced the way the target was encoded, then the effect should be evident even when any judgment effect due to differential scale anchoring is removed with the use of forced anchors. Hence, the use of forced-anchor scales essentially eliminates any context effect that has to do with how the response scale is anchored and any effect still evident thereafter would have to be the result of differences in how the target is perceived. In other words, if participants rate the target differently in the expensive and inexpensive contexts despite using the same comparison standards, the difference must owe to the contexts exerting an effect on how the target was perceived or encoded.

In order for forced-anchor scales to be effective at eliminating response language effects, appropriate exemplars have to be used as anchors – in particular, anchor exemplars should be familiar to respondents and should not be more extreme than context exemplars on the dimension of interest. The first requirement ensures that the anchors are meaningful to respondents irrespective of their level of knowledge about the product category, accordingly allowing for meaningful comparative judgments. The second requirement is necessary so that detection of a true perceptual change will not be hampered. More specifically, if there was a real difference in how the price of the target was perceived in the expensive and inexpensive context conditions, the fact that the anchor exemplars are more extreme than the context exemplars would diminish the magnitude of the differences as reported on the response scale, making the difference statistically harder to detect.

Evidence supporting the validity of this method comes from Wedell, Parducci, and Lane (1990), which looked at whether the provision of exemplar anchors on rating scales would help to reduce contrast effects when judges diagnose the severity of psychopathology cases. They presented a case example (i.e., a psychopathology case history) for each endpoint of a 7-point

rating scale (1 = very, very mild disturbance, 7 = very, very severe disturbance). A comparison with the unanchored condition revealed that the use of case examples as anchors reduced context-induced contrast effects, presenting evidence that standardizing the comparison standards vis-à-vis common scale anchors can help to control for context effects. Unlike our study, however, Wedell et al. (1990) did not use exemplar anchors as a means to explore the mechanism that underlies context effects.

EXPERIMENT 1

As noted earlier, the overlap model and the process stage model make different assumptions about the processes that underlie the effect of context exemplars on encoding and judgment. Experiment 1 provides a test of these two competing models. We examine the situation where participants are primed with exemplars that are extreme and that belong to the same category as the target. Given this, both the overlap and process stage models predict that where ordinary adjective-anchored rating scales are used, a contrast effect will be found regardless of the ambiguity of the target. This prediction is supported by previous research (Herr 1989; Herr et al. 1983; Stapel et al. 1997, 1998) that has used conventional semantic-differential scales. When forced-anchor scales are used instead, the two models make different predictions. In the case of both ambiguous and familiar targets, the overlap model argues that a contrast effect arises from the anchoring of response scales with context exemplars. Hence, forcing the use of common scale anchors should eliminate the contrast effect for ambiguous and familiar

targets alike, and a null effect of context results. The process stage model, on the other hand, predicts that primed exemplars affect how an ambiguous target is encoded, leading to a perceptual assimilation effect. Therefore, eliminating any potential response language contrast effect with the use of forced anchors should reveal an assimilation effect due to differences in how the target was perceived. For a familiar target, since primed exemplars do not exert an effect at encoding, removing the contrast effect that occurs at judgment should lead to a null effect of context.

To summarize, the hypotheses we are testing with respect to ambiguous targets are as follows:

H1: When an ambiguous target is rated on an adjective-anchored scale, exemplar priming leads to a contrast effect.

H2a: (Overlap Model) When an ambiguous target is rated on a forced-anchor scale, exemplar priming leads to neither an assimilation nor a contrast effect.

H2b: (Process Stage Model) When an ambiguous target is rated on a forced-anchor scale, exemplar priming leads to an assimilation effect.

The hypotheses we are testing with respect to familiar targets are:

H3: When a familiar target is rated on an adjective-anchored scale, exemplar priming leads to a contrast effect.

H4: (Overlap and Process Stage Models) When a familiar target is rated on a forced-anchor scale, exemplar priming leads to neither an assimilation nor a contrast effect.

The above hypotheses are tested in an experiment that is an adaptation of Meyers-Levy and Sternthal (1993) and Stapel et al. (1998, Study 2). Hypotheses H1 and H3 represent a replication of previous studies (e.g., Moskowitz and Skurnik 1999) that used adjective-anchored scales. Hypotheses H2a and H2b represent the contrary predictions of the overlap model and the process stage model when forced-anchor scales are used.

Method

Participants and Design. A total of 94 undergraduate students enrolled in an introductory marketing course participated in the experiment for extra course credit. This study had a 2 (target type: ambiguous vs. familiar) x 2 (prime valence: positive vs. negative) x 2 (response scale type: adjective anchors vs. forced anchors) mixed design, with the first factor being a within-subject factor and the remaining two factors between-subject factors.

Stimuli, Procedure, and Measures. The research stimuli employed and the procedure adopted follow that of Stapel et al. (1998) which examined the effects of exemplar priming on the evaluation of restaurants. Participants were run in groups of approximately 30 in large classrooms. They were each given a booklet that contained the experimental stimuli and the dependent measures. The introductory paragraph in the booklet read as follows: "We are daily confronted with all kinds of information. Sometimes this information is specific and brief. When we are confronted with such information we attempt to form an impression that is as good and precise as possible. For example, we will have to work hard to form an impression of the following restaurants." Then, the next line presented the names of three restaurants along with their logos, through which the prime valence was manipulated. In the positive valence priming condition, three restaurants that were favorably perceived in terms of having a more elegant

ambience and friendly service ("Mission Inn's Duane's Prime Steak and Seafood Restaurant," "Benihana Japanese Restaurant," and "Wolfgang Puck's Spago Beverly Hills") were presented. In the negative valence priming condition, less favorably perceived restaurants that were more casual and had less friendly service ("Carl's Jr.," "Jack in the Box," and "McDonald's") were presented. These priming stimuli were selected from a pretest in which participants (n = 22) were asked to list the names of three restaurants conforming to the above characteristics for each prime type. The primed restaurants were the three restaurants with the highest frequency counts. A second pretest (n = 15) showed that evaluations of the inexpensive context restaurants (M = 2.79) are less favorable than expensive context restaurants (M = 5.58), measured on ambience and service.

The ad for the ambiguous target restaurant was presented below the restaurant primes. Participants were asked to read an advertising message for a new restaurant, Eveylon, and to form an impression of it. The ad is similar to ones used in contrast/assimilation effect studies by Meyers-Levy and Sternthal (1993) and by Stapel et al. (1998) and contained a description of the restaurant's food, atmosphere, and service (appendix). This new restaurant is a mock one and consequently participants had no prior conceptions of it.

Participants were then asked to evaluate the ambiguous target restaurant, Eveylon, and a familiar restaurant, Denny's, on rating scales. Denny's was selected based on a third pretest (n = 30) that indicated that it was a well known restaurant (familiarity score = 5.55 out of 7.0) with moderate evaluations (average rating = 4.51 on 7-point scales measuring ambience and service). In the adjective anchors condition, these restaurants were rated on seven-point semantic differential scales measuring the restaurant's ambience (1 = casual, 7 = intimate ambience) and service (1 = unfriendly, 7 = friendly service). These scales were simply anchored by adjectives

such as “very casual” and “very intimate”. The same scales were used in the forced anchors condition, except that the rating scales were additionally anchored by an exemplar: “very casual e.g. Wendy’s” on one end and “very intimate e.g. Olive garden” on the other. These exemplar anchors were also selected based on results of a pretest (n = 30), where participants indicated a high level of familiarity with the two restaurants ($M_{\text{Olive Garden}}$ = 5.83, $M_{\text{Wendy's}}$ = 5.53) and familiarity levels were not significantly different ($F(1,29) < 1.0$). The results of a pretest (n = 30) also showed that evaluations for Wendy’s (M = 3.55) and for Olive Garden (M = 5.39) are more extreme than the familiar target (i.e., Denny’s), but are not more extreme than the mean evaluation of the context restaurants.

As a check on the success of the prime manipulation, participants were also asked to rate the favorability of each of the three prime restaurants on seven-point scales. The final three measures provided a check on participants’ level of motivation in completing the ratings and on awareness of the potential biasing influence of the exemplar anchors. Participants were asked to rate how motivated they were to provide evaluations of the restaurants that accurately reflected their opinion (1 = Not at all motivated, 7 = Very motivated) and to indicate the amount of effort that they put into evaluating the restaurants (1 = Very little effort, 7 = A lot of effort). They also rated how likely they thought the prime restaurants might have influenced their evaluation of Eveylon (1 = Very unlikely, 7 = Very likely).

Results

Manipulation Checks. Participants’ mean ratings of the prime restaurants were submitted to a two-way ANOVA. This yielded only a significant main effect of prime valence ($F(1, 90) = 270.9$, $p < .01$). Participants rated the restaurants as more favorable in the positive valence

priming condition (M = 5.56) than in the negative valence priming condition (M = 1.99). Neither a main effect of the type of anchor nor a two-way interaction was significant (F's < 1.0). These results indicate that the manipulation was successful.

Evaluation of Targets. The data were submitted to a three-way ANOVA with target type (ambiguous vs. familiar restaurant) as a repeated factor. The main effect of target type was significant ($F(1, 90) = 104.38$, $p < .01$), as were the interactions between target type and context ($F(1,90) = 8.86$, $p < .01$), and response scale type and context ($F(1,90) = 8.30$, $p < .01$). More importantly, the three-way interaction was also significant ($F(1, 90) = 4.53$, $p < .05$). Table 1 presents participants' mean ratings of the target restaurant as a function of the valence of the prime and response scale type.

Given our hypotheses, we examined further effects found for ambiguous and familiar targets separately. For the ambiguous target, only a two-way interaction between the response scale type and context was significant ($F(1,90) = 14.24$, $p < .01$). No main effects were significant (F's < 1.0). For the familiar target, tests yielded a significant main effect of context ($F(1,90) = 10.00$, $p < .01$), with evaluation of the familiar target being more favorable when the context was negative (M = 4.00) than positive (M = 3.39). Neither a main effect of type of response scale nor a two-way interaction was significant.

Our predictions were tested through a series of cell mean contrasts. For the ambiguous target, cell means contrasts yielded a significant contrast effect when adjective anchors were used ($M_{positive}$ = 4.79 vs. $M_{negative}$ = 5.32, $F(1,90) = 3.85$, $p < .05$), supporting H1. There was an assimilation effect, however, when forced anchors were used ($M_{positive}$ = 5.61 vs. $M_{negative}$ = 4.67, $F(1,90) = 11.20$, $p < .01$), lending support to H2b, as predicted by the process stage model. For

familiar targets, a contrast effect emerged when adjective anchors were used ($M_{positive}$ = 3.45 vs. $M_{negative}$ = 4.22, $F(1,90) = 8.18$, $p < .01$) and a null effect obtained when forced anchors were used ($M_{positive}$ = 3.78 vs. $M_{negative}$ = 3.32, $F(1,90) = 2.68$, $p > .10$). These results support H3 and H4 respectively.

Insert table 1 about here

Check on Correction Processes. We address here a potential alternative account for our results provided by the flexible correction model (Wegener and Petty 1995), according to which there is a tendency for people to correct their evaluations for any perceived bias. This tendency is greater the more motivated they are to be accurate in their evaluations. The direction of the correction depends on the perceivers' naive theories of bias. The flexible correction model provides a potential alternative explanation for our results if one considers that the presence of exemplar anchors might have somehow sensitized participants to the potential biasing influence of context. An attempt to correct for this bias coupled with a tendency to over-correct would lead to a context effect in the forced-anchor condition that is opposite to that in the adjective-anchored condition

For this to be a viable alternative account, levels for all three variables (i.e., motivation, effect, and awareness) should be higher in the forced-anchor condition than in the adjective-anchored condition. Participants' responses on each of the three measures were submitted to a two-way ANOVA, with response scale type and context valence as the factors. On the first two

measures of motivation and amount of effort, no main or interaction effects were found (F's < 1.40). The same was true for the measure of awareness (F <1.0). This pattern of results does not support flexible correction processes as an alternative explanation for our findings.

Discussion

The process stage model proposed by Stapel and colleagues propose a dual role for context exemplars. Such exemplars are argued to be capable of exerting an effect at the encoding stage by influencing how an ambiguous target is perceived or interpreted, leading to an assimilation effect. They can also serve as anchors at the judgment stage, thereby giving rise to a response language contrast effect and importantly, such an effect is expected to outweigh the assimilative encoding effect, leading to the observed outcome of a net contrast effect.

Studies that have presented evidence in support of the process stage model thus far have manipulated variables believed to affect the prime's likelihood of exerting an effect in the encoding and/or judgment stage, such as by manipulating extremity of context exemplars (Stapel et al. 1997) or context-target similarity (Stapel and Koomen 1998) and by activating an interpretation goal versus a comparison goal (Stapel and Koomen 2001). These studies have, nonetheless, all mustered evidence based on observed net outcomes, rather than examining context effects that occur specifically at each stage. Experiment 1 therefore presents the first evidence in support of the process stage model that disentangles the perceptual assimilation effect from the response language contrast effect.

It is interesting to note that with the process stage model, the effect of context exemplars on perception necessarily results in an assimilation effect, and this is contrary to the theoretical account of context effects proposed by Lynch et al. (1991). According to these authors, context

exemplars can give rise to contrast effects that are due to differences in how the target was perceived (or mentally represented) or due to a response language effect, and a critical determinant of which of the two occurs is consumer knowledge. A contrast effect that emerges when experts rate a target product in the context of expensive or inexpensive products is argued to be due to differences in how the response scale is anchored, whereas a contrast effect that occurs with novices is said to be due to differences in how the target is perceived in relation to other context exemplars. Hence, the process stage model departs from Lynch et al.'s account in two ways. First, the former does not allow for the possibility of a contrast effect of a perceptual nature. Second, if one takes knowledge level to be a proxy for familiarity with domain objects – that is, that the same objects are more ambiguous to novices than to experts – then the process stage model would predict that a perceptual assimilation effect should occur for novices. Lynch et al. found instead, a perceptual contrast effect. As a step toward answering the question of whether exemplars can lead to perceptual contrast effects and to test the robustness of Lynch et al.'s findings, we attempt a replication of their study using the method of forced anchors in experiment 2.

EXPERIMENT 2

In contrast to the priming paradigm that characterizes much of work related to the overlap model or the process stage model, Lynch et al. (1991) employed a paradigm more aligned with research in psychophysics, involving the successive judgments of context and target items. Participants in that study were presented with context and target items that were described by two attributes and the range of values for these attributes was extended upwards for one group of

participants relative to a control group. Participants rated the overall attractiveness of each item and the correlation between these overall ratings and the levels of the context-varying attribute was examined. It is argued that if the extension of the attribute range leads to a change in how the attribute levels for the target items are perceived, such an effect ought to decrease the relative impact of that attribute on overall attractiveness ratings and consequently a lower correlation should be obtained in the context condition relative to the control condition. Conversely, if the extension of the attribute range merely alters how the overall rating scale is anchored and leaves perception of attribute levels unchanged, the correlation obtained should accordingly be no different in the context condition than in the control condition. Using this method, it was found that a contrast effect due to differences in how target items were encoded was true of participants with a low level of category knowledge, whereas a differential scale anchoring explanation was appropriate to high knowledge participants.

In experiment 2, we keep with the general paradigm used by Lynch et al. and have participants rate all context and target items, but we apply the method of forced anchors to separate effects that occur at a perceptual level from response language effects. We also include a condition where participants rate the items on conventional adjective-anchored scales for the purpose of comparison and replication. If Lynch et al.'s account is accurate, we should find that after eliminating any potential response language effect using forced anchors, a contrast effect remains for novices but a null effect is found for experts. On the adjective-anchored scales, a contrast effect should be found for both experts and novices.

The hypotheses tested in experiment 2 are therefore as follows:

H5: When both novices and experts rate on adjective-anchored scales, presenting target items in expensive versus inexpensive contexts will lead to a contrast effect in price ratings.

H6: When novices rate on forced-anchor scales, presenting target items in expensive versus inexpensive contexts will lead to a contrast effect in price ratings.

H7: When experts rate on forced-anchor scales, presenting target items in expensive versus inexpensive contexts will lead to neither an assimilation nor a contrast effect in price ratings.

Method

Participants and Design. Participants were 153 students enrolled in an undergraduate business course. Participation in the experiment was solicited on a voluntary basis. The study had a 2 (context: expensive vs. inexpensive) x 2 (category knowledge: novice vs. expert) x 2 (response scale type: adjective anchors vs. forced anchors) between-subjects design.

Stimuli, Procedure, and Measures. Participants received a three page questionnaire and were asked to rate each car listed (described by make and model, e.g. Ford Taurus) on a price scale according to how expensive or inexpensive they thought each car was. They were informed that the objective of the exercise was to determine the accuracy of consumers' perceptions of car prices. A total of 19 cars were listed on the questionnaire to be rated, consisting of 10 target cars interspersed with nine context cars. Target cars were moderately-priced cars, while the nine context cars presented were either very expensive cars (e.g. Porsche 911 Carrera) or very inexpensive cars (e.g. Geo Metro), depending on the context condition to which the participant was assigned. Participants rated all cars listed on either adjective-anchored scales or on forced-

anchor scales. In the former condition, participants used a conventional 7-point semantic differential scale, with endpoints described by “very inexpensive” and “very expensive.” In the latter condition, cars were rated on a 7-point scale, anchored by both an adjective and an exemplar: “very expensive e.g. Nissan Maxima” on one end and “very inexpensive e.g. Honda Civic” on the other. Participants were instructed to rate cars at the extreme points of the scale if they thought they were at least as expensive or as inexpensive as the anchors given. These cars were selected as anchors based on a pretest (n = 15) where both Honda Civic and Nissan Maxima were found to be familiar to both experts and novices alike (Honda: $M_{experts}$ = 6.56, $M_{novices}$ = 6.50, $F(1, 13) < 1.0$; Nissan: $M_{experts}$ = 5.78, $M_{novices}$ = 5.83, $F(1, 13) < 1.0$). They were also similarly perceived to be moderately inexpensive and expensive to both experts and novices (Honda: $M_{experts}$ = 2.78, $M_{novices}$ = 3.00, $F(1, 13) < 1.0$; Nissan: $M_{experts}$ = 4.78, $M_{novices}$ = 4.83, $F(1, 13) < 1.0$). Based on a survey of manufacturer’s suggested retail prices, the inexpensive ($13,210) and expensive anchors ($21,249) were not more extreme in price relative to the context cars ($M_{inexpensive}$ = $12,127, $M_{inexpensive}$ = $75,457).

Upon completion of these ratings, participants responded to five questions measuring their subjective knowledge of cars. They were asked to rate on seven-point scales, their familiarity with cars in general (1 = not at all familiar, 7 = extremely familiar), their self-assessed knowledge ("I know a lot about cars": 1 = agree, 7 = disagree), their knowledge relative to their peers (1 = one of the least knowledgeable, 7 = one of the most knowledgeable), the extent to which they have a clear idea about the correspondence between car features and overall quality (1 = not very clear, 7 = very clear), and their overall interest in cars (1 = not interested, 7 = very interested).

Results

Subjective Knowledge. The average of the five knowledge scales was computed and used as a summary index of subjective knowledge (Cronbach's α = .87**)**. Participants were categorized as experts and novices using a median split (median = 4.2), which resulted in 83 participants being classified as novices and 70 as experts.

Manipulation Checks. As a check on the context manipulation (expensive vs. inexpensive), a three-way ANOVA (with context, response scale type, and knowledge level as independent variables) was performed on mean ratings of the nine context cars (Cronbach's α = .98). There was a significant main effect of context ($M_{expensive}$ = 6.28 vs. $M_{inexpensive}$ = 2.93, $F(1, 145) = 944.78$, $p < .01$), a significant interaction between context and response scale type ($F(1, 145) = 5.77$, $p < .05$), and a significant interaction between knowledge and response scale type ($F(1, 145) = 10.24$, $p < .01$). The main effect of response scale type was also marginally significant ($M_{adjective}$ = 4.51 vs. M_{forced} = 4.69, $F(1, 145) = 2.76$, $p < .10$).

The main effect of context suggests that the manipulation of context was successful. The interaction between context and response scale type was the result of the more extreme ratings given to context cars when anchors were provided ($M_{expensive}$ = 6.50 vs. $M_{inexpensive}$ = 2.89, $F(1, 145) = 517.47$, $p < .01$) than when anchors were absent ($M_{expensive}$ = 6.06 vs. $M_{inexpensive}$ = 3.00, $F(1, 145) = 374.79$, $p < .01$). This is to be expected given that the anchors were not cars extreme on price, but rather were moderately expensive and moderately inexpensive ones. Participants were instructed to rate cars at the extreme points of the scale if they thought they were at least as expensive or as inexpensive as the anchors given. This artificially creates floor and ceiling effects on the ratings of context cars only, and does not compromise the main findings and conclusions we hope to draw from this study. The interaction between context and knowledge

was the result of experts being more extreme in their ratings of context cars. Nonetheless, cell mean contrasts indicate that the price ratings of context cars in the expensive context and inexpensive context conditions were significantly different for both experts ($M_{expensive}$ = 6.47, $M_{inexpensive}$ = 2.76, F = 567.50, $p < .01$) and novices ($M_{expensive}$ = 6.10, $M_{inexpensive}$ = 3.09, F = 419.68, $p < .01$).

Evaluation of Target Cars. The mean ratings of target cars (Cronbach's α = .81) were submitted to a three-way ANOVA. Significant main effects were obtained for context (F(1, 145) = 16.03, $p < .01$; $M_{expensive}$ = 3.95, $M_{inexpensive}$ = 4.41), response scale type (F(1,145) = 12.17, $p < .01$; $M_{forced\ anchors}$ = 4.38, $M_{adjective\ anchors}$ = 3.98), and knowledge (F(1,145) = 4.34, $p < .05$; $M_{experts}$ = 4.30, $M_{novices}$ = 4.06). Interaction effects between response scale type and knowledge (F(1,145) = 6.04, $p < .05$) and between response scale type and context (F(1,145) = 6.72, $p < .01$) were also significant. In addition, the predicted three-way interaction was marginally significant (F(1,145) = 3.29, $p < .10$).

Further planned contrasts were performed in order to test the hypotheses. The results are as indicated in table 2. When adjective-anchored scales were used, a significant contrast effect was found for both novices (M = 3.72 vs. M = 4.29, F (1,145) = 7.34, $p < .01$) and experts (M = 3.49 vs. M = 4.43, F (1,145) = 13.99, $p < .01$), lending support to H5. When forced-anchor scales were used, a marginally significant contrast effect remained for novices (M = 3.93 vs. M = 4.32, F (1,145) = 2.92, $p < .10$). However, for experts, the contrast effect previously found on adjective-anchored scales was eliminated (M = 4.67 vs. M = 4.61, F (1,145) < 1.0). Hence, both hypotheses H6 and H7 are also supported by the results.

Insert table 2 about here

Discussion

Experiment 2 successfully replicated the findings of Lynch et al. (1991) using an alternative method, that of forced anchors. When participants responded on adjective-anchored scales, contrast effects were found regardless of the respondents' level of knowledge. Different results, however, emerged when forced-anchor scales were used. When experts were provided with scales that were explicitly anchored on both ends with exemplars, the contrast effect was no longer evident, indicating that perceptions of the targets did not differ in the two context conditions. For novices, on the other hand, a contrast effect was evident even when they rated on forced-anchor scales, suggesting that the context affected how they perceived target stimuli.

The process stage model posits that when context exemplars affect how the target is perceived, an assimilation effect results and does not allow for the possibility of a perceptual contrast effect. The findings of Lynch et al. and of experiment 2 clearly suggest that, at least under some circumstances, a perceptual contrast effect is possible, and one particular circumstance is when novices low in product category knowledge judge products in the context of other very expensive or inexpensive products. This conclusion, however, brings to the fore a puzzle – since novices by definition have low levels of familiarity with members of the domain of interest, it should follow that the target cars were ambiguous to them in a fashion analogous to how the new restaurant, Eveylon, was ambiguous to participants in experiment 1. Given this, it

would have been reasonable to expect a perceptual assimilation effect instead of a contrastive one.

What then accounts for the contrary findings of experiment 1 and 2 and at the same time, the contrary predictions of the process stage model and Lynch et al.'s account of context effects? One possibility is that the method is critically important to the cognitive processes evoked which in turn influence the direction of the context effect. The method employed in experiment 1 was identical to that used in previous studies (Meyers-Levy and Sternthal 1993; Stapel et al. 1998) and involved priming participants with context exemplars presented in incidental fashion as part of instructions for the task. In experiment 2, as was in Lynch et al.'s study, context exemplars appeared along with target items as items to be judged. Hence, one readily apparent difference is the fact that participants rated the target item only in the former, but rated all context and target items in the latter. Perhaps the successive judging of all context and target items invokes a discriminatory process that involves locating the relative positions of items in some mentally held distribution, and it is this process that is necessary for the emergence of perceptual contrast effects. In the absence of such a discriminatory process, such as when context exemplars are presented as primes, the context is more likely to serve as an interpretation frame, leading to a perceptual assimilation effect.

Another possible explanation is that context exemplars play the role of interpretation frame only in the case where targets are truly novel, that is, when participants possess no prior knowledge about the target. Recall that mock restaurants were used as targets in experiment 1 where perceptual assimilation effects were found, whereas real cars were used as targets in experiment 2. Participants classified as novices in experiment 2 may not have had precise knowledge about the prices of the target cars, but they are likely to have had some familiarity

with them and perhaps vague conceptions of their price level. Therefore, there was little room for the context to exert interpretative effects, compared to if the targets had been never-before-encountered novel cars.

In experiment 3, we test which of the two possible explanations described above best accounts for why a perceptual assimilation effect was found in experiment 1 (as predicted by the process stage model) and why a perceptual contrast effect was found in experiment 2 (as predicted by Lynch et al.).

EXPERIMENT 3

Experiment 3 was procedurally the same as experiment 2 in that participants were made to rate all context and target cars. The main difference is that target cars were novel to participants. If the discriminatory process explanation holds true, then we should find a perceptual contrast effect for novel target cars when participants rate on forced-anchor scales. When they rate on adjective-anchored scales, on the other hand, this perceptual contrast effect should be augmented by a response language contrast effect and an overall contrast effect should be observed. These results should not differ as a function of category knowledge level. If novelty of the targets is necessary for the context to exert an interpretive effect, we should find a perceptual assimilation effect for novel target cars when forced-anchor scales are used. When adjective-anchored scales are used, this assimilation effect should be counteracted by a response language contrast effect, leading to an overall contrast effect. These results, once again, should not differ between novices and experts.

The critical hypotheses tested may be summarily stated as follows:

H8: **(Discriminatory process explanation)** Using forced-anchor scales, presenting novel target items in expensive vs. inexpensive contexts will lead to a contrast effect in price ratings, irrespective of category knowledge level.

H9: **(Novelty explanation)** Using forced-anchor scales, presenting target items in expensive vs. inexpensive contexts will lead to an assimilation effect in price ratings, irrespective of category knowledge level.

Method

Participants and Design. A total of 125 undergraduate business students participated in the experiment to earn course credit. The experiment had a 2 (context: expensive vs. inexpensive) x 2 (category knowledge: novice and expert) x 2 (response scale type: adjective anchors vs. forced anchors) between-subjects design.

Stimuli, Procedure, and Measures. Participants were told that they were about to participate in a survey to give marketers insight into the perceived prices of various cars among university students. They were to simply rate each of 11 cars on a seven-point price scale. For half of the participants, the scale was a semantic-differential scale anchored by "very expensive" and "very inexpensive". The remaining half of the participants were told to rate the cars on forced anchor scales anchored by "very expensive, e.g. Mercedes C200" and "very inexpensive, e.g. Toyota Corolla."

Of the 11 cars that participants had to rate, four were target novel cars (mock car names: Tacia Nova, Kofas Lift, Daimen 2, Murata MJ). The target cars were presented amongst seven

expensive context cars (e.g., BMW Z4, Rolls Royce Phantom) for half the participants and among seven inexpensive context cars (e.g., Hyundai Accent, Kia Rio) for the remaining half.

Anchor cars were selected based on an earlier pretest (n = 28) where Toyota Corolla and Mercedes C200 were found to be familiar to both experts and novices alike (Toyota: $M_{experts}$ = 5.77, $M_{novices}$ = 5.71, $F(1,26) < 1.0$; Mercedes: $M_{experts}$ = 5.62, $M_{novices}$ = 5.21, $F(1,26) < 1.0$). They were also selected on the basis that they had prices that were less extreme (Toyota: $33,000, Mercedes: $101,000) compared to the average prices of the inexpensive ($24,000) and expensive context cars ($190,000). These prices were obtained from a price guide published by the local Automobile Association.

After participants rated all 11 cars, they were asked to rate their subjective knowledge about cars on the same scales used in experiment 2 (Cronbach's α = .92). This was followed by an open-ended question that had participants write down what they thought was the purpose of the study. This question was included as a check on hypothesis awareness and none of the participants correctly guessed the objective of the study.

Results

Subjective Knowledge and Manipulation Checks. Participants were divided into novices (n = 65) and experts (n = 60) according to the average knowledge index (median = 3.60). Analysis of the ratings of context cars revealed a main effect of context ($F(1,117) = 590.57$, $p < .01$). These main effects were, however, qualified by a marginal knowledge by context interaction ($F(1,117) = 3.65$, $p < .10$). Expensive context cars were rated as significantly more expensive than inexpensive context cars for both experts (M = 6.40 vs. M = 2.77, $F(1, 58) = 333.63$, $p < .01$) and novices (M = 6.25 vs. M = 3.20, $F(1, 63) = 212.76$, $p < .01$), suggesting that

context manipulation was successful for both groups. While ratings given to expensive cars were not significantly different between experts and novices ($p > .10$), experts gave marginally lower ratings to inexpensive cars compared to novices ($p < .10$). There was also a main effect of response scale type ($F(1,117) = 5.67$, $p < .05$) and an interaction between response scale type and context ($F(1,117) = 11.39$, $p < .01$). Once again, as in experiment 2, this interaction was the result of more extreme ratings given to context cars when forced anchors were used ($M_{expensive} = 6.39$ and $M_{inexpensive} = 2.58$) than when adjective anchors were used ($M_{expensive} = 6.26$ and $M_{inexpensive} = 3.37$). No other effects were significant.

Evaluation of Target Cars. The mean rating for the four novel targets was computed for each subject (Cronbach's $\alpha = .81$) and submitted to a three-way ANOVA (table 3). There was a marginally significant main effect of context ($F(1,117) = 3.42$, $p < .10$), with target cars rated higher in the expensive context condition ($M = 3.72$) than in the inexpensive context condition ($M = 3.38$). There was also a significant main effect of response scale type ($F(1,117) = 7.16$, $p < .01$), with higher ratings found in the adjective anchors condition ($M = 3.80$) than in the forced anchors condition ($M = 3.31$). The three-way interaction was not significant ($F(1,117) < 1.0$). The two-way interactions involving knowledge level were not significant either.

The effect critical to testing our hypotheses, the response scale type by context interaction, was significant ($F(1, 117) = 5.87$, $p < .05$). Closer inspection of the interaction revealed the absence of a context effect when adjective anchors were used ($M_{expensive} = 3.75$ vs. $M_{inexpensive} = 3.82$, $F(1, 117) < 1.0$). In contrast, when forced anchors were imposed, there was a reliable assimilation effect ($M_{expensive} = 3.69$ vs. $M_{inexpensive} = 2.93$, $F(1,117) = 7.04$, $p < .01$). This is consistent with hypothesis H9 that is based on the novelty explanation.

Insert table 3 about here

Discussion

Experiment 3 was similar to experiment 2 except that novel cars rather than real cars were used as target cars to be rated. There are two key differences in the results yielded by the two experiments. First of all, while knowledge level moderated context effects in the forced anchors condition in experiment 2, it did not exert any effects in experiment 3. This latter finding is unsurprising given that the made-up target cars would have been novel to experts and novices alike. The second key difference in findings is that where a perceptual context effect had occurred in experiment 2 (in particular, for novices), it was contrastive in type. In experiment 3, however, a perceptual assimilation effect was found instead. This suggests that novelty of targets may be a necessary condition for context exemplars to exert assimilative effect on perception.

Past research in contrast and assimilation effects equate ambiguous and novel, and ambiguous targets are typically operationalized as made-up objects or mock brand names. Ambiguous is also taken to be the converse of familiar. If this were true, one would expect that real target cars would be ambiguous (and hence novel) to novices and consequently a perceptual assimilation effect ought to be found for novices in experiment 2, consistent with the perceptual assimilation effect found for novel cars in experiment 3. Contrary results were found, suggesting that the distinction between ambiguous and novel is an essential one to make. A target is novel when the perceiver has no pre-existing knowledge relating to it, and this allows the context to

exert interpretive effects and increases the tendency to encode the target in a manner that is consistent with the context. That is, a perceptual assimilation effect is more likely to occur. However, when the perceiver has some knowledge about the target, but does not have precise conceptions of its properties, in particular its standing relative to other category members on the dimension of interest (such as in the case of novices), the target is more appropriately described as ambiguous. In such a case, a perceptual contrast effect is more likely to occur. For instance, a novice might be aware that Honda Accords are priced at moderate price points, but may not have formed a precise conception of its price relative to other cars. The presence of extremely expensive context cars such as a Ferrari might influence the perceived distribution of car prices in general and consequently, the standing of a Honda Accord in that distribution would be perceived to be lower than if the context had included extremely inexpensive cars instead.

Experiments 1 and 3 were similar in that both involved targets that were novel to participants. A comparison of the results of the two experiments reveals assimilation effects on forced-anchor scales in both experiments, but a contrast effect on adjective-anchored scales in experiment 1 and a null effect in experiment 3. This may owe to the stronger perceptual assimilation effect in experiment 3 (mean difference between context conditions = 1.01 in experiment 3, vs. 0.33 in experiment 1), that was not sufficiently counteracted by a response language contrast effect.

GENERAL DISCUSSION

The process stage model and the overlap model make similar predictions with respect to contrast and assimilation effects that occur when an object is judged in the presence of extreme

exemplars. The two models, however, are different in that the process stage model proposes that context can exert effects at two distinct stages of stimuli processing – the encoding stage and the judgment stage. Evidence gathered in support of the process stage model in the literature have thus far manipulated aspects of the target or context and examined the net of effects that occur at encoding and at judgment.

In contrast, what we have done here is test the predictions of the process stage model by looking at effects obtained in the two stages separately, and in so doing, we found evidence suggesting that the process stage model should be modified to allow for contrast effects at the encoding stage in addition to just assimilation effects. In addition, we show that the forced anchoring method can be an effective means of eliminating contrast effects that occur at the judgment stage and consequently revealing if a contrast or assimilation effect had occurred at the encoding stage. Finally, as discussed in the previous section, we show that it is important to make the distinction between a stimulus that is novel as opposed to ambiguous. We expand on the theoretical and methodological contributions of our findings below.

Theoretical Implications

Perceptual effects. The process stage model (Stapel et al. 1997) posits that context exemplars belonging to the same category as the target activate relevant and applicable concepts and these concepts are used to interpret an ambiguous target, resulting in an assimilative encoding effect. The results of experiments 1 and 3 are consistent with this view. The process stage model in its current form, however, allows only for perceptual effects that are assimilative. As experiment 2 and the findings of Lynch et al. (1991) demonstrate, the presence of context exemplars can lead to perceptual contrast effects as well. This raises the question of when one

can expect a perceptual assimilation effect to occur and when a perceptual contrast effect is more likely instead. The results of experiments 2 and 3 taken together tell us that the novelty of the target is an important determining factor, with an assimilation effect occurring only when the target is one for which there is no prior knowledge. When the target is likely to have a pre-existing representation in one's mind and when one has low domain knowledge, a perceptual contrast effect occurs instead. This occurs because exposure to extreme context exemplars changes the perceived distribution of the class of objects on the dimension of interest and concomitantly, the perceived standing of the target in that distribution. This view is supported by prior research that shows that context information can change the perceived distributional features of a class of objects, such as its mean (Helson 1964), range (Volkmann 1951) and shape (Parducci 1965). Studies of reference prices, for instance, have found consumers' price evaluations to be influenced by the distributional range and shape (skewness) of context prices (Janiszweski and Lichtenstein 1999; Niedrich, Sharma, and Wedell 2001).

Response Language Effect. Context exemplars can also lead to response language contrast effects by affecting an individual's interpretation of scale anchors. When one is asked to judge a target on a given scale, there is a tendency to use the more extreme items in the context as the end points or anchors on the scale and to make their judgments with respect to that anchor. That is, the context does not alter how the target is perceived or mentally represented, but affects how that perception is expressed on a rating scale. The results of our experiments suggest that such an effect is a very robust one. Observed context effects were found to differ between adjective anchored scales and on forced anchored scales in all but one case and the contrast effect was the predominant effect found whenever adjective anchors were used. This indicates that the response language contrast effect tends to dominate when ratings are measured on

conventional semantic-differential scales with adjective anchors, making it difficult to uncover underlying perceptual effects unless forced anchors were imposed instead.

Methodological and Practical Implications

The use of the method of forced anchors is based on the simple idea that if a contrast effect occurs because context exemplars are used as scale anchors or comparison standards, then it should be possible to circumvent it by imposing common scale anchors across contexts (see Wedell, et al. 1990, for similar use of forced exemplar anchors). The validity of its use is contingent on exemplar anchors being familiar to participants and being less extreme than context exemplars, as explicated earlier, and an effort was made to ensure that this was true in all three experiments.

The appeal of the method of forced anchors is its simplicity. Whereas the method demonstrated by Lynch et al. (1991) involving correlations between attribute levels and overall ratings of is a clever way of getting at whether a contrast effect is due to differences in how the targets are perceived or to differences in how the response scale is anchored, it is somewhat restrictive in the sense of being applicable only to situations involving evaluations of multiple target items (in order for correlations to be computed) defined on multiple attributes. It also serves its role well as a diagnostic tool that can be used to ascertain the source of a context effect, but unlike the method of forced anchors, it is less useful as a tool for pre-empting response language contrast effects, nor is it useful as a means for telling apart situations involving a straight contrast effect and ones where a perceptual assimilation effect is outweighed by a response language contrast effect.

A potential criticism of the method of forced anchors, however, is the possibility that the exemplar anchors might be integrated into the context, thereby diluting the strength of the manipulated context. We clarify that the washing out of the response language effects is the intended function of the anchors, and acknowledge that indeed the anchors could potentially dilute the effects of the context at encoding. This ought to limit our ability to find differences, but clearly this did not hamper the finding of significant effects in the three experiments here. Also, a dilution explanation would falter at accounting for why the use of forced anchors would lead to assimilation effects sometimes, contrast effects at other times and null effects at still other times.

The practical implication of our findings then, is that in any market research where the presence of exemplars in the context might lead to response language effects, it is prudent to present explicit comparison standards against which the target should be judged. Without this, an accurate picture of how the target is really perceived will be obscured by response language effects.

Conclusion and Future Research

In summary, the presence of extreme context exemplars can lead to perceptual assimilation effects, perceptual contrast effects and/or response language contrast effects. Any comprehensive account of contrast and assimilation effects would have to take into account the multiplicity of effects that can occur, and this suggests perhaps that a modification of the process stage model is necessary in order to accommodate the empirical findings. What is undoubtedly necessary, however, is a better understanding of the critical factors that determine when a

perceptual assimilation or contrast effect will occur, beyond the conditions we have examined in this paper.

A further issue that future research may wish to address is the automaticity of perceptual assimilation and contrast effects. Studies of perceptual assimilation effects suggest that the assimilative process occurs instantly and automatically (e.g., Bargh and Pietromonaco 1982). It is not yet clear if perceptual contrast effects are similarly automatic or if they arise out of conscious and effortful comparisons between the target and context exemplars as a result of the judgment task imposed. The latter would imply that its prevalence in normal everyday situations may be more circumscribed.

Finally, the results of the present experiments also suggest that the direction of a perceptual context effect may differ along the continuum of familiarity, with assimilation occurring when there is no prior familiarity with the target, contrast occurring at low to moderate levels of familiarity and null effect occurring when familiarity is high. Future research may wish to corroborate the viability of this proposition.

APPENDIX

DESCRIPTION OF EVEYLON RESTAURANT (EXPERIMENT 1)

Eveylon opened its doors almost four decades ago. Its newest outlet is just two weeks old, but is already drawing a steady crowd. Among people who have been to this outlet, the most frequent comments expressed have to do with the wide variety of items on its menu, as well as its use of fresh vegetables and seafood. They also express satisfaction with the quality of the food for the price that they paid. This Eveylon outlet is comfortably air-conditioned, but it also has outdoor seating where there is usually a light breeze. Service is prompt and the staff is reasonably friendly. There is ample free parking for patrons. It is open from 10 am to 10 pm everyday and accepts reservations for weekends and public holidays.

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TABLE 1

MEAN RATINGS OF AMBIGUOUS AND FAMILIAR TARGET RESTAURANTS (EXPERIMENT 1)

	Positive valence prime	Negative valence prime	Direction of context effect
Ambiguous target			
Adjective anchors	4.79 (n = 25)	5.32 (n = 24)	Contrast
Forced anchors	5.61 (n = 23)	4.67 (n = 22)	Assimilation
Familiar target			
Adjective anchors	3.45 (n = 25)	4.22 (n = 24)	Contrast
Forced anchors	3.32 (n = 23)	3.78 (n = 22)	Null

NOTE.— Rating scales ranged between 1 (negative) and 7 (positive). Sample sizes are in parentheses.

TABLE 2

MEAN RATINGS OF REAL TARGET CARS (EXPERIMENT 2)

	Expensive context	Inexpensive context	Direction of context effect
Novices			
Adjective anchors	3.72 (n = 22)	4.29 (n = 23)	Contrast
Forced anchors	3.93 (n = 20)	4.32 (n = 18)	Contrast
Experts			
Adjective anchors	3.49 (n = 15)	4.43 (n = 16)	Contrast
Forced anchors	4.67 (n = 18)	4.61 (n = 21)	Null

NOTE.— Rating scales ranged between 1 (negative) and 7 (positive). Sample sizes are in parentheses.

TABLE 3

MEAN RATINGS OF NOVEL TARGET CARS (EXPERIMENT 3)

	Expensive context	Inexpensive context	Direction of context effect
Novices			
Adjective anchors	3.68 (n = 15)	3.68 (n = 19)	Null
Forced anchors	3.88 (n = 15)	3.09 (n = 16)	Assimilation
Experts			
Adjective anchors	3.81 (n = 17)	4.02 (n = 12)	Null
Forced anchors	3.52 (n = 16)	2.73 (n = 14)	Assimilation

NOTE.— Rating scales ranged between 1 (negative) and 7 (positive). Sample sizes are in parentheses.