LEARNING TO IMPROVE:

THE BIASED PROCESSING OF MIXED PRICE COMPARISONS

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Consumers often compare their obtained outcome to other possible outcomes to learn from their past decisions and improve their future decisions. Often, this comparative feedback is mixed: the chosen option performs better than one alternative (a favorable comparison) but worse than another (an unfavorable comparison). In this paper, we examine how the expectation of future decisions influences consumers' reaction to mixed store price comparisons. We observe that participants who anticipate future store choices are more sensitive to unfavorable comparisons, resulting in an overly negative perception of their chosen store. We demonstrate that this effect is not driven by differences in regret, involvement, counterfactual generation, or biased retrieval. However, the effect does depend on participants' prior beliefs about the available stores. We conclude that forward-looking consumers selectively search for opportunities to improve, leading them to overemphasize unfavorable comparisons and underestimate the value of their current selection.

Most of our purchase decisions are decisions we have made before. For example, consumers must repeatedly decide where to shop for groceries, which TV channel to watch, or which meal to order in a restaurant. Because of the repetitive nature of these decisions, savvy consumers have the opportunity to improve later decisions by comparing their own experience to other outcomes they could have obtained by choosing differently (e.g., Inman, Dyer, and Jia 1997; Tsiros and Mittal 2000). For instance, consumers can prepare for future store choices by comparing the price they paid at their chosen store to the prices charged for the same product at other stores. Comparisons in which the chosen store performs better (favorable comparisons) suggest that they should again choose the same store, whereas comparisons in which an alternative option performs better (unfavorable comparisons) suggest that they should switch stores (Inman and Zeelenberg (2002).

However, in many situations, the comparative information is *mixed*, containing both favorable and unfavorable comparisons. The chosen store can be cheaper on one item, but more expensive on another item. The objective of this paper is to examine how consumers who are preparing for future choices learn from such mixed feedback. Do forward-looking consumers assign equal weight to favorable and unfavorable comparisons, as normatively required? If not, do they tend to overemphasize the favorable comparisons, resulting in an inflated opinion of their chosen option? Or do they overemphasize the unfavorable comparisons, resulting in a tendency to avoid their chosen alternative in future decisions?

Existing research suggests that both types of biases are possible. On the one hand, people who are faced with mixed evidence have been shown to emphasize information that confirms their prior choices or beliefs (Gilovich 1983). This result is consistent with studies on confirmatory hypothesis testing (Pyszczynski and Greenberg 1987), belief perseverance

(Anderson 1983), and the status quo bias (Samuelson and Zeckhauser 1988). On the other hand, studies on social (Collins 1996) and counterfactual comparisons (Roese 1994) have shown that people sometimes emphasize the unfavorable comparisons instead.

In this paper, we examine how the relative focus on favorable versus unfavorable price comparisons changes as a function of consumers' anticipation of future store choices. We observe that consumers who anticipate future choices tend to shift their focus toward the unfavorable comparisons, resulting in an overly negative perception of the chosen store. We test the robustness and boundary conditions of this effect by varying the price differences between the stores, the importance of the price comparisons, participants' prior beliefs about the stores, and participants' control over the store selection process. We also examine why this shift in focus occurs by studying the roles of regret, involvement, the generation of upward counterfactuals, and the biased encoding versus retrieval of the price comparisons.

LEARNING BY COMPARING

Comparative information can provide valuable feedback for evaluating decisions. Whereas favorable comparisons indicate that the decision was appropriate, unfavorable comparisons indicate that the decision can be improved. To isolate the effects of favorable and unfavorable comparisons, most studies of comparative processing only provide one alternative outcome (e.g., Landman 1987). However, recent studies have pointed out that decision makers are often confronted with multiple, conflicting reference points (e.g., Tsiros 1998). For instance, when comparing store prices, consumers may learn that a second store charges more for one product, but less for another. Depending on whether consumers focus on favorable or unfavorable price comparisons, they will be more or less likely to switch stores.

Processes that Promote a Focus on Favorable Comparisons

By comparing the obtained outcome to alternative outcomes, people can test the hypothesis that they made the right choice. For instance, consumers who compare store prices can test the hypothesis that they have chosen the cheapest store. The extensive literature on confirmatory hypothesis testing suggests that consumers will test this hypothesis in a biased fashion by emphasizing evidence that confirms the hypothesis, that is, by emphasizing the favorable comparisons. Previous studies have demonstrated that people tend to overemphasize confirming evidence (Pyszczynski and Greenberg 1987), selectively search for confirming evidence (Snyder and Swann 1978), and interpret ambiguous evidence as supportive of original beliefs (Hoch and Ha 1986). Whereas the confirmation bias literature has often relied on information processing explanations (Sanbonmatsu et al. 1998), people may also focus on favorable comparisons because they are motivated to believe that they have made the correct choice. For instance, people may want to avoid cognitive dissonance (Festinger 1957), or they may simply like to feel better about their situation. Consistent with this perspective, recent research has documented that people often "improve their lot" by generating downward counterfactuals: they imagine how things "could have been worse" (Roese 1994). Furthermore, people often compare themselves to others who made worse decisions than they did (Wills 1981), especially in unfavorable situations (Tsiros 1998).

Processes that Promote a Focus on Unfavorable Comparisons

Although the preceding research suggests that consumers will tend to focus on the favorable price comparisons, other findings suggest that consumers will sometimes focus on the unfavorable comparisons instead. In particular, unfavorable comparisons could have a disproportionate impact because they create strong feelings of regret or because they can help

consumers improve their decisions. Previous studies on counterfactual reasoning have indicated that the regret caused by upward counterfactuals (imagining how things could have been better) often outweighs the elation caused by downward counterfactuals (imaging how things could have been worse; Landman 1987; Mellers et al. 1997). Similarly, the regret caused by unfavorable price comparisons tends to outweigh the elation caused by favorable price comparisons (Cooke, Meyvis, and Schwartz 2001). If unfavorable comparisons elicit stronger affective reactions than favorable comparisons, they may also be more salient or memorable and, thus, have a disproportionate impact on consumers' store price perceptions.

Consumers may also focus on unfavorable comparisons because these comparisons reveal opportunities for improving future choices. If this is the case, a focus on unfavorable comparisons should be most likely when consumers are preparing for future decisions. Consistent with this perspective, studies in the social comparison literature have indicated that people request information about others who are better off to gain inspiration for future improvement (Taylor and Lobel 1989), a tendency that is more pronounced when people perceive to have control over their future performance (Ybema and Buunk 1993). Similarly, studies on counterfactual comparisons have shown that people are more likely to imagine how their situation could have been better when they are motivated to learn to improve their decisions. People are more likely to generate upward counterfactual comparisons when they expect to perform the same task in the future (Markman et al. 1993), when they have control over their outcome (Roese and Olson 1995a), and following failure rather than success (Markman et al. 1993; Roese and Olson 1995a).

Conclusions

The general finding of previous studies is that, due to both cognitive and affective biases,

people tend to emphasize evidence that confirms their prior choices, indicating that consumers will tend to focus on favorable price comparisons. However, some studies on social and counterfactual comparisons suggest that there are situations in which unfavorable comparisons can have a greater impact, either because of the stronger emotional reactions associated with these comparisons, or because these comparisons reveal opportunities for future improvement. In this paper, we examine how consumers' attempts to improve future choices changes their relative emphasis on favorable versus unfavorable comparisons, while controlling for changes in consumers' affective reactions to these comparisons. The previously reviewed studies suggest that the anticipation of future store choices will shift consumers' focus toward the unfavorable price comparisons. However, before we test this prediction, we need to understand how the prior work on social and counterfactual comparisons relates to consumers' processing of explicit price comparisons.

PROCESSING MIXED PRICE COMPARISONS

Price Comparisons, Social Comparisons, and Counterfactual Comparisons

Despite obvious similarities, there are important conceptual distinctions between the processing of explicit price comparisons and the phenomena typically studied in research on social and counterfactual comparisons. First, the fact that people sometimes prefer to *search* for upward social comparisons or prefer to *imagine* better counterfactual alternatives does not imply that they will be more sensitive to unfavorable comparisons when both favorable and unfavorable comparisons are *explicitly available*. In fact, Markman and his colleagues (1993) observed that the expectation of a future task increased the spontaneous generation of upward counterfactuals when the alternatives had to be imagined, but did not affect counterfactual

generation when the alternatives were made available. Second, the comparison of reference prices is less involving than the phenomena commonly studied in the social and counterfactual comparison literatures. Thus, if the increased impact of unfavorable comparisons is driven by stronger emotional responses to these comparisons, this effect may not hold for store price comparisons, particularly when consumers have not yet committed to the store. In light of these differences, we will briefly review prior research that has focused on explicit price comparisons before presenting the current studies.

Previous Price Comparison Research

Although many studies have examined how price perceptions are influenced by comparisons with internal and external reference prices (e.g., Mayhew and Winer 1992; Urbany, Bearden, and Weilbaker 1988), only a few studies have examined how consumers process information from multiple price comparisons. In a series of studies by Alba and colleagues, participants were presented with multiple price comparisons between different stores (Alba et al. 1994) or between different brands (Alba et al. 1999). Participants were then asked to estimate average prices or to indicate which store or brand was the cheapest. Because the studies did not feature an explicit focal option (such as a chosen store or brand), there were no favorable or unfavorable comparisons. However, in Alba et al. (1999), some participants were shown a control brand that had a constant price, which was between the regular and discount prices of the other two brands. Because the price of this brand did not vary, it is possible that participants used it as a natural standard of comparison. Furthermore, this control brand was consistently perceived as more expensive than the other brands (even though the mean prices were identical), suggesting that participants focused on unfavorable price comparisons.

In another study that used multiple price comparisons (Cooke et al. 2001), participants

monitored randomly fluctuating prices for either coffee or gas and had to decide when to buy the product. After purchasing the product, some participants learned about the prices they would have paid if they had waited one, two, or three weeks longer to purchase. Thus, this study involved one focal outcome (the obtained price) which could be compared to multiple pre- and post-purchase reference prices. The results showed that (unfavorable) comparisons with lower reference prices had a greater effect on participants' satisfaction than did (favorable) comparisons with higher reference prices. Since both the Alba et al. (1999) and Cooke et al. (2001) studies involved an explicit learning task, these findings tentatively suggest that, to the extent that people are motivated to learn from mixed price comparisons, they tend to focus on the unfavorable comparisons.

The Present Studies

In the present studies, we examine how consumers process comparisons between prices charged at a chosen store and prices charged for the same products at two alternative stores. The first study shows that the expectation of future choices leads consumers to focus on unfavorable comparisons, even in the absence of strong affective reactions. The robustness and consequences of this shift in focus are then examined in the second and third studies. In the fourth study, we aim to further specify the driving mechanism behind this effect by distinguishing between learning for accuracy and learning for future choices. Finally, the fifth study demonstrates that the effect of anticipating future choices depends on consumers' prior beliefs about the stores, thus establishing a boundary condition of the effect.

EXPERIMENT 1

The objective of experiment 1 was to examine how consumers' interpretation of mixed

price comparisons is influenced by their motivation to learn from these comparisons and by their affective reactions to the comparisons. All participants first chose one of three fictitious stores to visit on 36 shopping trips. On each trip, they purchased a different product and were shown the price of that product at their chosen store, as well as at the prices charged at the other two stores. At the end of the 36 trips, participants indicated which store was the cheapest across all trips (though, in actuality, the three stores had the same mean price) and then selected one of the three stores to visit on an additional eight trips.

We manipulated participants' anticipation of the second store choice and the financial consequences of the first 36 shopping trips. Participants in the *learning* condition were told at the outset that they would have to make a second choice between the same three stores and that they would be paid based on the money left in their budget after both sets of shopping trips. Participants in the *practice* condition also expected a second store choice, but their payment would be based only on the second set of shopping trips. The first set of trips were described as "practice" trips in which they could gather information for their actual store choice. Finally, participants in the *experiential* condition were not told about the second choice until after they had completed the first set of trips and the dependent measures. They also did not expect any payment.

Let us first compare the learning condition to the experiential condition. Whereas experiential participants had little incentive to learn about these fictitious stores, we expected that learning participants would be selectively looking for information that would help them make better future decisions and increase their expected payoff (i.e., cheaper prices offered at other stores). Thus, we predicted that, compared to experiential participants, learning participants would be more sensitive to unfavorable comparisons and therefore less likely to perceive their

chosen store as the cheapest store. However, a greater impact of unfavorable comparisons in the learning condition could also be explained by differences in affective responses. Because learning participants are paid based on the prices shown and experiential participants are not, learning participants may experience greater feelings of regret when confronted with an unfavorable comparison, which may cause these trips to be more salient. To test this account, we need to consider the practice condition as well.

If participants' sensitivity to unfavorable comparisons derives from the regret evoked by these comparisons, their responses in the practice condition should be similar to those in the experiential condition, where the first trips did not have any consequences, but different from those in the learning condition, where the first trips did impact their earnings. In short, the affective account predicts that participants in the learning condition should be more sensitive to unfavorable comparisons than participants in both practice and experiential conditions.

Alternatively, if participants' sensitivity to unfavorable comparisons directly results from the processing strategy used in preparation for future decisions, then their responses in the practice condition should be similar to those in the learning condition, where participants also expected an important second choice, but different from those in the experiential condition, where participants had no such expectation. Thus, according to this learning account, participants in both learning and practice conditions should be more sensitive to unfavorable comparisons than participants in the experiential condition.

Method

Seventy-nine undergraduate students participated in exchange for course credit. Participants were asked to choose one of three stores to visit on 36 shopping trips. Participants in the learning and practice conditions were also told that, after the first 36 trips, they would make

another choice between the three stores followed by a second set of trips. Furthermore, they were told that they would receive one fifth of the amount remaining in their budget at the end of the experiment. Participants in the learning condition were told that all prices would be deducted from their budget, while participants in the practice condition were told that only prices paid during the second set of trips would be deducted from their budget. Participants in the experiential condition were not told about the second choice nor were they promised any payment.

After participants chose a store, they received price information for 36 shopping trips to that store. On each trip, participants were first shown the price charged at the chosen store, followed by the prices charged at the other two stores. The three stores had an identical mean price across the 36 product categories and the same number and magnitude of favorable and unfavorable comparisons. Appendix A illustrates the store prices used as well as price comparisons assuming that Store A was chosen. Regardless of choice, the chosen store was either cheaper than both other stores (9 trips), more expensive than both other stores (9 trips), cheaper than one but more expensive than the other store (12 trips), or identical to one but cheaper / more expensive than the other store (3 trips each).

After 36 trips, participants were asked to select the store that was cheapest across all trips. Participants then provided estimates of (1) the number of trips on which the chosen store was cheaper than both other stores, (2) the number of trips on which the chosen store was more expensive than both other stores, and (3) the number of other trips. Participants also indicated how much regret they felt with their initial store choice (on a 7-point scale), how satisfied they were with their choice (on a 9-point scale), and how much attention they had paid to the store prices (on a 9-point scale). All participants were then asked to choose again between the three

stores, followed by eight more shopping trips, which were inconsequential to the study.

Results

In the experiential condition, 46 percent of the participants perceived their store as the cheapest store, compared to only 21 percent in the learning condition and 22 percent in the practice condition. Learning participants were significantly less likely to perceive their chosen store as the cheapest store than were experiential participants ($\chi^2(1) = 3.90$, $p < .05$), consistent with both the affective and learning explanations. However, practice participants were also less likely to perceive their chosen store as the cheapest store than were experiential participants ($\chi^2(1) = 3.37$, $p = .07$) and did not respond differently from learning participants ($\chi^2(1) = 0.00$, *ns*). This result is consistent with the learning account, but inconsistent with an account based on the affective reactions to the comparisons. Similar results were found for the second set of store choices. The proportion of participants who remained loyal to their first choice was significantly greater in the experiential condition (46 percent) than in both the learning condition (21 percent; $\chi^2(1) = 3.90$, $p < .05$) and the practice condition (17 percent; $\chi^2(1) = 4.79$, $p < .05$), which did not differ from each other ($\chi^2(1) = 0.13$, *ns*).

Insert Figure 1 about here

Participants' frequency estimates of the different types of price comparisons are shown in Figure 1. To compare these estimates, we computed the difference between the estimated number of uniquely unfavorable and uniquely favorable trips. Consistent with the learning

account, experiential participants reported relatively fewer unfavorable comparisons (D = -0.11) than did learning (D = 4.85, $F(1,76) = 3.25$, $p = .08$) and practice participants (D = 5.92, $F(1,76) = 4.31$, $p < .05$), which did not differ from each other ($F(1,76) < 1$, *ns*). Interestingly, learning and practice participants recalled significantly more unfavorable than favorable comparisons ($F(1,76) = 6.22$, $p < .05$ and ; $F(1,76) = 7.57$, $p < .01$, respectively), whereas experiential participants, on average, correctly recalled an equal number of favorable and unfavorable comparisons ($F(1,76) = 0.00$, *ns*). Furthermore, the conditions did not differ in self-reported regret associated with the first store choice ($M_{experiential} = 3.39$, $M_{learning} = 3.61$, $M_{practice} = 3.87$, all F's < 1), or in the self-reported attention paid to the prices ($M_{experiential} = 6.86$, $M_{learning} = 6.89$, $M_{practice} = 6.96$, all F's < 1). These results provide further evidence that the observed differences in the interpretation of the mixed price comparisons did not result from differences in experienced regret or from differences in effort spent during the task.

Discussion

Compared to participants who merely experienced the price comparisons, participants in the learning condition (1) recalled a greater number of trips on which the chosen store was more expensive rather than cheaper than the other two stores, (2) were less likely to perceive the chosen store as the cheapest store, and (3) were more likely to switch stores. These results suggest that people who are learning for future choices tend to selectively look for opportunities to improve their decisions and thus shift their focus toward unfavorable comparisons. However, given that the trips in the learning condition had actual monetary consequences, one could argue that the unfavorable comparisons in this condition had more impact because they caused more regret. Yet, two pieces of evidence contradict this alternative explanation. First, the self-reported regret measure did not reveal any differences between the conditions. Second, and more

important, participants for whom the first set of trips were simply practice trips for future decisions also showed an increased greater impact of unfavorable comparisons.

These results do not necessarily imply that the regret associated with unfavorable comparisons cannot increase the relative impact of these comparisons. However, these results do demonstrate that the anticipation of future choices can increase the relative impact of unfavorable comparisons *and* that this effect is not mediated by changes in the affective reactions to these comparisons. In the following experiments, we will first examine the robustness and consequences of this effect and then focus on the underlying process.

EXPERIMENT 2A

Experiment 1 demonstrated that the expectation of similar future choices shifts consumers' focus toward the unfavorable comparisons, resulting in a less favorable perception of the chosen store. Experiments 2A, 2B, and 2C test the robustness of this effect by systematically changing different aspects of the procedure and thus provide more insight into the possible implications of the phenomenon as well as the nature of the underlying process. Experiment 2A extends the first experiment in two ways: by testing the normative implications of this effect and by replicating it in a more externally valid context. First, since all stores in the first experiment had equivalent price distributions, there was no normatively correct answer for the selection of the cheapest store. As a result, we could not test whether the expectation of future choices could actually diminish the quality of these choices. The second experiment addresses this issue by making the chosen store cheaper than the other two stores. If the shift toward unfavorable comparisons persists in this context, it would indicate that consumers who are using mixed comparisons to prepare for future choices may end up with worse choices than those who are merely

experiencing the comparisons. The second objective of this experiment is to increase the external validity of the task. It is unlikely that consumers will obtain comparative price information for two other stores after each of 36 different shopping trips. However, external agents such as Internet websites (e.g., "shopping bots") can easily provide consumers with a wealth of comparative price information without actual shopping trips taking place. Therefore, in the second experiment, the price comparisons were not presented as shopping trips, but as comparative price information provided by a shopping bot. Thus, the selected store only served as the focal store in the comparisons, not as the store at which they made actual purchases. Finally, aside from these two main changes, we also included additional control measures to provide more insight into the underlying effect. In particular, we aimed to test whether the increased impact of unfavorable comparisons resulted from a selective search for ways to improve the decision or from the active generation of upward counterfactuals.

Method

Seventy-six undergraduate students participated in exchange for course credit. Participants were randomly assigned to either the *practice* condition or the *experiential* condition. These conditions were identical to the corresponding conditions in experiment 1 with the following exceptions. First, the price comparisons were not presented as actual shopping trips but as comparative price information supplied by an internet "shopping bot". Participants in the practice condition were asked to rely on this practice information to make an informed store choice in the second part of the experiment. Participants in the experiential condition, who did not expect a second choice, were asked to assess the ease of processing the price comparisons so that they could later evaluate the shopping bot based on this impression. Second, the store prices were adjusted so that, across all products, the chosen store was $9

cheaper than the other stores. Third, participants in the practice condition did not expect to be paid based on their performance. Instead, they were told that they would receive feedback on the accuracy of their choice. Finally, some changes were made to the dependent measures. Aside from the selection of the cheapest store, the second store choice and the attention measure, participants were also asked whether they were looking for ways to improve their choice (on a 9-point scale), whether they were focusing on cheaper prices at the other store or cheaper prices at the store they had selected (on a slider scale, anchored by -100 = "…cheaper prices at the other stores" and +100 = "…cheaper prices at the store I had selected"), and how often they had thought "if only I had chosen the other store" (i.e., generation of upward counterfactuals, measured on a 9-point scale).

Results and Discussion

In the practice condition, 13 percent of participants perceived their chosen store as the cheapest store, compared to 35 percent in the experiential condition. Participants who were preparing for a future store choice were significantly less likely to perceive their chosen store as the cheapest store than were participants who were focusing on the ease of processing the price information ($\chi^2(1) = 5.23$, $p < .05$), replicating the basic effect of experiment 1. Furthermore, compared to experiential participants, practice participants were less confident that the chosen store was the cheapest store ($M_{\text{practice}} = -4.1$, $M_{\text{experiential}} = -1.4$, $F(1,74) = 6.70$, $p < .05$) were less likely to stick with their chosen store for their actual shopping trips ($\hat{\pi}_{\text{practice}} = .18$, $\hat{\pi}_{\text{experiential}} = .46$, $\chi^2(1) = 6.89$, $p < .01$), and reported focusing more on the cheaper prices at the other stores (rather than at their own store), though this last difference did not reach significance ($M_{\text{practice}} = -22.1$, $M_{\text{experiential}} = -0.9$, $F(1,73) = 2.52$, $p = .12$).

The additional control measures indicate that, compared to experiential participants,

practice participants were not generating more upward counterfactuals ($M_{practice} = 4.0$, $M_{experiential} = 4.4$, $F(1,73) < 1$, *ns*), but did report paying more attention to the prices, though this difference did not reach significance ($M_{practice} = 6.5$, $M_{experiential} = 5.8$, $F(1,73) = 2.44$, $p = .12$). Practice participants also reported being more motivated to look for ways to improve their initial choice ($M_{practice} = 5.9$, $M_{experiential} = 4.8$, $F(1,73) = 5.18$, $p < .05$). Furthermore, participants who were more motivated to look for improvement were less likely to select the chosen store as the cheapest store ($\chi^2(1) = 3.84$, $p < .05$) and, when this motivation measure was entered into the model, the effect of our manipulation on the on the selection of the cheapest store became only marginally significant ($\chi^2(1) = 2.66$, $p = .10$).

Together, these results indicate that consumers' anticipation of future choices can result in less optimal future choices, as a result of an increased emphasis on unfavorable comparisons. Furthermore, the increased focus on unfavorable comparisons does not follow from increased generation of upward counterfactuals, but instead seems to result from a selective search for ways in which the current selection can be improved.

EXPERIMENT 2B

Experiment 2A replicated the results of the first experiment in a more externally valid context in which there were clear normative consequences. Experiment 2B aimed to further examine the scope of the effect by testing an implication for the perception of alternative stores. If consumers who are learning for future choices focus on unfavorable comparisons, then they should perceive a store that charges prices that are negatively correlated with the prices at the chosen store as cheaper than a store that charges prices that are positively correlated with the prices at the chosen store. Indeed, when the chosen store is more expensive than the other two

stores, the negatively correlated store will tend to be cheaper than the positively correlated store (even though it is more expensive on the favorable comparisons), as is illustrated in appendix 2, which lists the price deviations used in experiment 2B.

Method

Seventy-one undergraduate students participated in exchange for course credit. All participants were assigned to a practice condition that was identical to the practice condition in experiment 2A except for the store prices and the dependent measures. Both alternative stores had the same average price as the chosen store, but one store's prices were positively correlated with the chosen store, whereas the other store's prices were negatively correlated. The position on the screen of the two stores was counterbalanced. The dependent measures included the selection of the cheapest store, frequency estimates of the number of times that the left versus right store was cheaper than the other store, and a slider scale measure of the relative cheapness of the left versus the right store (anchored by -100 = "Left store was clearly cheaper" and +100 = "Right store was clearly cheaper").

Results and Discussion

Consistent with the practice conditions in the previous experiments, the majority of the participants (68 percent) did not select the chosen store as the cheapest store. Out of these 48 participants, the majority (71 percent) selected the negatively correlated store as the cheapest store ($z = 3.2$, $p < .01$). Participants also estimated that the negatively correlated store was cheaper than the positively correlated store on 21.2 trips, whereas the positively correlated store was cheaper on 14.8 trips (F (1,70) = 13.5, $p < .01$). In actuality, each store was cheaper than the other one on 18 trips. Finally, the slider measure also demonstrated that participants perceived the negatively correlated store as cheaper ($M = -34.9$, t (70) = -6.1, $p < .01$). These

results are consistent with our assertion that participants who are preparing for future choices attend more to unfavorable comparisons, resulting not only in an overly negative perception of the chosen store (as demonstrated in the previous experiments), but also in a biased perception of other stores, favoring the store that is cheapest on the unfavorable comparisons.

EXPERIMENT 2C

The preceding experiments demonstrated that consumers who anticipate future store choices tend to overemphasize the unfavorable comparisons which can result in an overly negative perception of the chosen store, lead consumers to switch to more expensive stores, and bias their perception of competing stores. To account for these effects, we have proposed that consumers who expect similar future choices selectively search for ways to improve their choice. Since unfavorable comparisons reveal opportunities for improvement, they pay more attention to these comparisons, thus increasing their impact. The objective of experiment 2C is to test some alternative explanations for the observed effect and provide more insight into the underlying process. In doing so, this experiment will also more clearly determine the boundaries of the phenomenon that we are studying.

First, we have argued that participants in the practice conditions process the price information differently from those in the experiential conditions because the latter do not expect any future choices. However, the differences between the conditions may also be driven by differences in the perceived importance of the price comparisons. Since practice participants are trying to learn from the comparisons, they should be processing the comparisons more intensely than experiential participants. Therefore, it is possible that the shift toward unfavorable comparisons is the result of a general increase in learning motivation and is not unique to the

preparation for future choices. To address this issue, we replaced the experiential condition with a quiz condition. Similar to practice participants, quiz participants were trying to learn from the price comparisons. However, unlike practice participants, quiz participants expected a quiz about the relative store prices at the end of the experiment, rather than a second choice. Therefore, quiz participants were not learning for future choices, but were learning to perform well on a quiz at the end of the experiment. If the increased focus on unfavorable comparisons was due to the expectation of a future choice, practice participants should perceive the selected store as more expensive than quiz participants. However, if the increased focus on unfavorable comparisons was due to a general increase in learning motivation or involvement, then there should be no difference in store perception between the two conditions.

Second, we have argued that the increased impact of the unfavorable comparisons is the result of a selective search strategy and not due to heightened feelings of regret or increased generation of upward counterfactuals. Some of the preceding findings were already inconsistent with these alternative explanations, in particular the persistence of the effect in the price bot scenarios and the lack of differences on the self-report measure of counterfactual generation. In the procedure of experiment 2C, we further reduce the likelihood of these processes by having the computer randomly select the focal store for the price comparisons. If people do not have personal control over a situation, there is no decision they can possibly regret and they are less likely to generate upward counterfactuals (i.e., "if only I had selected a different store,…") (Markman et al. 1995).

Method

Ninety-three undergraduate students participated in exchange for course credit. Participants were randomly assigned to either the *practice* condition or the *quiz* condition. The

practice condition was identical to the practice condition in experiment 2A with the exception that the focal store was randomly selected by the computer. In the quiz condition, participants did not expect an actual store choice, but instead expected to be quizzed at the end of the experiment "to test how much you have learned about the prices that the three stores offer".

Results and Discussion

In the practice condition, 22 percent of participants perceived their chosen store as the cheapest store, compared to 41 percent in the quiz condition. Participants who were learning for a future choice were less likely to perceive their chosen store as the cheapest store than were participants who were learning for a quiz about the store prices ($\chi^2(1) = 3.68$, $p < .06$). Although the two conditions did not differ on the actual store choice ($\hat{\pi}_{\text{practice}} = .24$, $\hat{\pi}_{\text{quiz}} = .30$, $\chi^2(1) < 1$, *ns*), practice participants were significantly less confident that the chosen store was the cheapest store ($M_{\text{practice}} = -3.3$, $M_{\text{quiz}} = -0.9$, $F(1,91) = 4.41$, $p < .05$), and reported focusing more on the unfavorable comparisons ($M_{\text{practice}} = -34.3$, $M_{\text{quiz}} = -7.2$, $F(1,91) = 5.97$, $p < .05$).

Although practice participants had a more negative perception of the chosen store, they did not report paying more attention to the price comparisons ($M_{\text{practice}} = 7.0$, $M_{\text{quiz}} = 6.6$, $F(1,91) = 1.44$, *ns*), or being more interested in the outcome of the initial store selection ($M_{\text{practice}} = 3.6$, $M_{\text{quiz}} = 3.9$, $F(1,91) < 1$, *ns*), indicating that increased attention or involvement was not essential for shifting consumers' focus toward the unfavorable comparisons. Furthermore, the basic effect was replicated, even though the focal store for the price comparisons was selected by the shopping bot, suggesting that the unfavorable impression of the chosen store was not driven by an increased generation of upward counterfactuals. Finally, as in experiment 2A, practice participants were more likely to report looking for ways to improve the store selection ($M_{\text{practice}} = 6.2$, $M_{\text{quiz}} = 5.1$, $F(1,91) = 6.83$, $p < .05$). Furthermore, participants who were looking

for ways to improve were less likely to perceive the chosen store as the cheapest store ($\chi^2(1) = 3.27$, $p = .07$) and when this term was added to the model, the effect of the instructions on the cheapest store selection became less pronounced ($\chi^2(1) = 2.20$, $p = .14$).

Together, these results indicate that the preparative mindset adopted by the practice participants led them to strategically shift their attention toward the unfavorable comparisons in search for ways to improve their current situation. Furthermore, these results also illustrate the strength and pervasiveness of the effect. The difference between the practice and quiz conditions consisted of an almost negligible change in the instructions: participants in both conditions were trying to learn from the comparisons, only the ultimate application of the learned information was slightly different. The difference between the stores was equally subtle: the "chosen store" was merely a store that had been randomly selected to serve as the focus of the (inconsequential) price comparisons. However, despite the subtlety of these differences, participants in the quiz condition were still twice as likely to perceive the focal store as the cheapest store. This demonstrates that small changes in expectations and store presentation can have a meaningful impact on consumers' store perceptions.

EXPERIMENT 3

In each of the preceding experiments, participants shifted their attention toward the unfavorable price comparisons when they expected similar future choices. Thus, consumers' focus on the unfavorable price comparisons seems to serve a similar preparative function as does the generation of upward counterfactuals (Roese 1994) and the search for upward social comparisons (Taylor and Schneider 1989). However, the unfavorable comparisons may not be the only comparisons that can serve a preparative function. Recently, McMullen and Markman

(2000) demonstrated that the generation of *downward* counterfactuals can sometimes increase people's learning motivation by serving as a wake-up call. It should be noted that they only demonstrated that generating downward counterfactuals can increase learning motivation, not that an increased learning motivation can lead people to generate downward counterfactuals (or shift their attention to favorable comparisons). Yet, the argument that downward counterfactuals can point out alternatives that should be avoided suggests that favorable comparisons can serve a preparative function as well. As we argue below, this implies that the link between the expectation of future choices and an increased emphasis on unfavorable price comparisons may depend on people's prior beliefs about the alternatives in the decision environment.

In experiment 3, we manipulated participants' prior beliefs about the stores as well as their expectation of a second store choice. The procedure for this experiment was based on experiment 1: participants selected a store and made simulated shopping trips to their chosen store. The design included two learning conditions, in both of which participants expected a second store choice. In the first condition (the *discount store* condition), participants were told that one of the stores was significantly cheaper than the other two stores, whereas in the second condition (the *rip-off store* condition), participants were told that one of the stores was significantly more expensive than the other two stores. In the discount store condition, the anticipation of a second store choice should increase participants' sensitivity to lower prices charged at an alternative store, given that these prices suggest that this alternative store may be the discount store. This is the classic situation in which unfavorable comparisons can reveal opportunities for future improvement. However, in the rip-off store condition, the anticipation of a second choice should increase the sensitivity to both higher and lower prices charged at alternative stores. Unfavorable comparisons suggest that the chosen store may be the rip-off

store, and thus reveal an opportunity for future improvement; consistent with the view that the preparative function is served by unfavorable comparisons. However, in this situation, favorable comparisons may also serve a preparative function since they point out possible pitfalls that have to be avoided. Higher prices charged at an alternative store suggest that this other store may be the rip-off store and thus should be avoided on future trips. Thus, we predict that the expectation of a second choice will reduce the likelihood of perceiving the chosen store as the cheapest store in the discount store condition, but not in the rip-off store condition.

To measure the effect of participants' preparative mindset, an experiential *control* condition was included in which participants did not expect a second store choice. Participants in this condition were also not given any prior information about the presence of a discount or rip-off store since we worried that this may automatically create the expectation of future choices (in which they had to select the discount store or avoid the rip-off store). Unfortunately, this implied that comparing the learning conditions to the control condition measured the effects of store information as well as learning perspective. To isolate the effect of the store information, we included two additional experiential conditions. In these conditions, participants were informed about the second choice and about the presence of either a discount store or a rip-off store after the shopping trips, but before the dependent measures. Thus, like control participants, participants in the *experiential / discount store* and *experiential / rip-off store* conditions processed the price comparisons without the additional information in mind. However, like learning participants, participants in these experiential conditions had all the information available to them when they selected the cheapest store and answered the dependent measures. Therefore, by comparing these two experiential conditions to the control condition, we can measure the direct effect of the belief manipulation, and by comparing them to the learning

conditions, we can measure the effect of processing the price comparisons with the second choice and the belief manipulation in mind.

Method

One hundred and seventy-one undergraduate students were randomly assigned to a 2 (belief manipulation) × 2 (learning / experiential) design with an additional experiential control condition. Because we noticed that several participants rushed through the task, we excluded data from the fastest ten percent of participants in each condition (20 participants in total) to ensure that participants had adequately processed the stimuli. The use of alternative criteria did not alter our pattern of results. Whereas the control condition was identical to the experiential condition in experiment 1, participants in the four other conditions received additional store information. Participants in the rip-off store conditions were told that, although no two stores had the same average price, one of the stores was substantially more expensive than the other two stores. In contrast, participants in the discount store conditions were told that, although no two stores had the same average price, one of the stores was substantially less expensive than the other two stores. In the learning conditions, the store information was provided before the shopping trips, whereas in the experiential conditions, the information was provided after the shopping trips, but before the dependent measures. Unlike experiential participants, participants in the learning conditions also expected a second choice.

Results and Discussion

Figure 2 shows the proportion of participants who perceived the chosen store as the cheapest store, while Figure 3 shows the mean estimates of the different types of comparisons.

Insert Figures 2 and 3 about here

Learning Conditions

Participants who had been told prior to the shopping trips that one of the stores was a discount store were less likely to perceive their chosen store as the cheapest store ($\hat{\pi}$ = .16) than were participants who believed that one of the stores was a rip-off store ($\hat{\pi}$ = .43; $\chi^2(1) = 5.12$, $p < .05$). Furthermore, compared to rip-off store participants, participants in the discount store condition recalled relatively more unfavorable versus favorable price comparisons ($D_{\text{discount}} = 4.68$, $D_{\text{rip-off}} = -2.11$, $F(1,146) = 6.60$, $p < .05$). Participants in the discount store condition appeared to be looking for ways to improve their decision by testing whether one of the other stores could be the discount store. As a result, compared to control participants, participants in the discount store condition were less likely to perceive the chosen store as the cheapest store ($\hat{\pi}_{\text{discount}} = .16$, $\hat{\pi}_{\text{control}} = .35$; $\chi^2(1) = 3.17$, $p = .08$) and recalled relatively more unfavorable versus favorable price comparisons ($D_{\text{discount}} = 4.68$, $D_{\text{control}} = -0.63$; $F(1,146) = 4.79$, $p < .05$). In contrast, participants in the rip-off store condition were not only looking for ways to improve their decision by examining whether their chosen store was the rip-off store, but were also trying to detect if one of the alternative stores was the rip-off store. Said differently, these participants were preparing for future choices by looking for opportunities for improvement (unfavorable comparisons) as well as for pitfalls to avoid (favorable comparisons). As a result, compared to control participants, participants in the rip-off store condition did not show a greater focus on unfavorable comparisons ($D_{\text{rip-off}} = -2.11$, $D_{\text{control}} = -0.63$; $F = (1,146) = 0.35$, *ns*) nor a decreased likelihood of selecting their chosen store as the cheapest store ($\hat{\pi}_{\text{rip-off}} = .43$, $\hat{\pi}_{\text{control}} = .35$; $\chi^2(1) = 0.43$, *ns*). These results indicate that consumers' focus on unfavorable versus favorable

comparisons does not only depend on their learning perspective, but also on their prior beliefs about the available options.

Experiential Conditions

In the preceding analysis, we assumed that the store information influenced participants' store perceptions by changing how they processed the comparisons. However, the store information could also have had a direct influence on participants' perceptions of their chosen store. If this is the case, the information should have the same effect in the experiential conditions. Although participants in these conditions did not process the price comparisons with this information in mind, they did receive the store information immediately before responding to the dependent measures and should therefore also be influenced by it. However, the results show that when the store information was provided after the shopping trips, it did not affect participants' selection of the cheapest store ($\hat{\pi}_{\text{discount}} = .24$, $\hat{\pi}_{\text{rip-off}} = .26$; $\chi^2(1) = 0.03$, *ns*), nor did it change the estimated number of unfavorable versus favorable comparisons ($D_{\text{discount}} = -3.04$, $D_{\text{rip-off}} = -3.44$; $F(1,146) = 0.02$, *ns*).

We can also compare the two discount store conditions (learning and experiential) to better understand why participants in that learning condition perceived the chosen store as more expensive than did those in the control condition. Although participants in the experiential condition did not differ significantly from those in the learning condition in their selection of the cheapest store ($\hat{\pi}_{\text{experiential}} = .24$, $\hat{\pi}_{\text{learning}} = .16$, $\chi^2 < 1$), participants in the experiential condition did recall significantly fewer unfavorable versus favorable comparisons than did those in the learning condition ($D_{\text{experiential}} = -3.04$, $D_{\text{learning}} = 4.68$; $F(1,146) = 8.04$, $p < .01$). Responses in the experiential condition did not differ from those in the control condition on either of the dependent measures ($\chi^2 < 1$, $F < 1$, *ns*). Together, these findings indicate that the belief

manipulation in the learning conditions did not directly affect participants' store perceptions, but instead changed their processing of the mixed price comparisons. In sum, people's focus on favorable versus unfavorable comparisons depends on the interaction of their expectation of future choices and their prior beliefs about the available options.

GENERAL DISCUSSION

When people encounter mixed comparisons, they can focus on comparisons with better alternatives, comparisons with worse alternatives, or give equal weight to both types of comparison. Although established phenomena such as hypothesis confirmation and status quo biases suggest that people will focus on the comparisons that favor their current choice, we observe that the expectation of similar future choices can result in a disproportionate sensitivity to the unfavorable comparisons. The emphasis on unfavorable comparisons in turn leads to an overly negative perception of the current choice and increases the likelihood of switching to another alternative. The shift toward unfavorable comparisons persists even when people have not yet committed to their choice (practice conditions), when the focal store is actually cheaper than the other stores (experiments 2A and 2C), and when participants do not select the focal store themselves (experiment 2C). However, the anticipation of future choices does not bias people when they are trying to avoid a particularly bad alternative (experiment 3).

Why were participants who anticipated future store choices relatively more sensitive to unfavorable price comparisons? A first possibility is that these participants had stronger affective reactions to the unfavorable comparisons (e.g., they feel more regret), which increased the salience of these comparisons, and thus their relative impact. A second, related possibility is that participants who were preparing for a second choice may have actively generated upward

counterfactuals, as did participants in the studies by Markman and colleagues (1993). However, neither account explains why people still focused on the unfavorable comparisons even when the selection of the focal store was outside their control and did not have any consequences for them, conditions that should suppress both feelings of regret and the generation of upward counterfactuals. Furthermore, the self-report measures of regret (experiment 1) and the generation of upward counterfactuals (experiment 2A) did not reveal any differences between the conditions.

We propose an alternative account that explains the findings as the result of a strategic shift in attention. We argue that consumers who anticipate future choices tend to look for ways in which they can improve upon their current situation. Given that the unfavorable comparisons reveal such opportunities, consumers tend to shift their attention toward these comparisons and thus underestimate the value of their current choice. To provide more direct evidence of this selective attention account, we ran two additional studies that were variations on the procedure used in experiment 1. In the first study ($N = 85$), we created two learning conditions: a regular *learning* condition that followed the same procedure as the learning condition in experiment 1, and a *forced attention* condition. Participants in the latter condition were forced to indicate, on each trip and for each store, whether the price at that store was higher or lower than the price at the chosen store. When participants were thus forced to pay attention to each single comparison, they were significantly more likely to select the chosen store as the cheapest store, indicating that the focus on the unfavorable comparisons was severely reduced ($\hat{\pi}_{\text{learning}} = .21$, $\hat{\pi}_{\text{forced attention}} = .42$, $\chi^2(1) = 4.09$, $p < .05$). In the second study ($N = 60$), we varied the proportion of mixed trips. Mixed trips are trips on which the price at the chosen store is higher than the price at one alternative store, but lower than the price at a second alternative store. We assumed that the

processing of these trips would be most susceptible to a selective attention bias, because participants had to simultaneously encode a favorable and an unfavorable comparison. Consistent with this prediction, we found that participants were less likely to select the chosen store as the cheapest store when there were many mixed trips (18 out of 36 trips) than when each trip was either uniquely favorable or uniquely unfavorable ($\hat{\pi}_{\text{mixed}} = .19$, $\hat{\pi}_{\text{no mixed}} = .56$, $\chi^2(1) = 7.44$, $p < .01$). These two studies provide further support for a selective encoding explanation of our results.

How does this explanation compare with a more general perspective on the processing of mixed feedback: confirmatory hypothesis testing? Even though we observe that participants focus on information that disconfirms their current choice, our results are not necessarily inconsistent with the literatures on confirmatory hypothesis testing and biased assimilation. When consumers test the hypothesis that their chosen store is the cheapest store, confirmatory hypothesis testing implies that consumers will emphasize the favorable comparisons. However, when consumers are preparing for future choices, they may instead adopt the hypothesis that the current choice can be improved and then set out to selectively test this hypothesis by emphasizing the unfavorable comparisons. However, as experiment 3 demonstrates, the hypothesis consumers adopt also depends on their prior beliefs about the available options. Whereas consumers indeed focus on ways to improve their choice when they believe that one of the available options is clearly superior; they process the information in a more balanced manner when they believe that one of the options is clearly inferior. This suggests that the hypothesis that consumers set out to test depends not only on their expectation of future choices, but also on their beliefs about the available options.

The proposed account is also consistent with findings in some related, though

conceptually distinct literatures. First, studies on the negativity bias have stated that negative information has a greater impact than positive information because it has a greater diagnostic value (e.g., Skowronski and Carlston 1989). From this perspective, our studies indicate that the perceived diagnosticity of at least one type of negative information (unfavorable comparisons) depends on people's anticipation of future decisions.[1] Second, previous research on the generation of counterfactual comparisons (e.g., Roese and Olson 1995a) and the search for social comparisons (e.g., Tsiros 1998) have suggested that upward (unfavorable) comparisons serve a preparative function: they help us improve our situation by pointing out superior alternatives. Whereas the present studies indicate that explicit price comparisons may serve a similar function, the results from experiment 3 also indicate that the preparative function can in fact be served by both types of comparisons, depending on people's beliefs about the available options.

Studies on social and counterfactual comparisons have also demonstrated that both the search for upward social comparisons (e.g., Huguet et al. 2001) and the generation of upward counterfactuals (e.g., Nasco and Marsh 1999) can lead to actual improvements in performance. In the same way, one can wonder if an increased focus on unfavorable price comparisons also leads to more optimal store choices or more accurate store perceptions. Our results indicate that this is not always the case. Experiments 2A and 2C demonstrate that consumers who are preparing for future choices are less likely to notice that their selected store is in fact the cheapest store and therefore more likely to switch to a more expensive store. In addition, the frequency estimates observed in experiment 1 reveal that those participants who should have been motivated to carefully process the comparisons in fact produced a more biased perception of the

[1] Note, however, that "diagnosticity" in the negativity bias literature refers to diagnosticity for classification in evaluative categories (e.g., Skowronski and Carlston 1989), whereas the diagnosticity of the unfavorable comparisons is a function of the goal adopted by the decision maker (or the hypothesis being tested).

store comparisons than did those who were merely experiencing the comparisons. These results demonstrate that the anticipation of future choices can lead consumers astray when they are acting on mixed feedback. Consumers who are learning for future choices may be more likely to notice opportunities to improve when these opportunities are available, but they may also fail to recognize the value of what they currently have, and switch to inferior alternatives.

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APPENDIX 1

Example of Store Price Comparisons

Product	Store A	Store B	Store C	A to B*	A to C*	Level
Black Bistro Flatware	$23.66	$22.46	$19.96	-	-	Low
Serenity Shower Curtain	$23.49	$21.49	$19.99	-	-	Low
Universal Jar Opener	$22.96	$18.96	$21.46	-	-	Low
Wine Rack	$34.39	$28.49	$31.99	-	-	Medium
Braun Coffee Maker	$34.39	$31.89	$28.99	-	-	Medium
Dirt Devil Hand	$35.49	$33.09	$29.89	-	-	Medium
Seat Massager	$57.96	$53.66	$49.96	-	-	High
DeLonghi Fan Heater	$56.69	$53.89	$49.89	-	-	High
Haze Comforter	$56.89	$49.89	$53.39	-	-	High
Furio Dish Rack	$20.49	$18.99	$20.49	-	0	Low
Stir-Fry Pan	$31.99	$28.99	$31.99	-	0	Medium
Presto Pressure Cooker	$53.96	$49.96	$53.96	-	0	High
ToastMaster Toaster	$19.59	$17.89	$21.39	-	+	Low
Bell South Cordless	$31.39	$27.89	$33.79	-	+	Medium
Electric Warming	$52.99	$49.49	$56.49	-	+	High
Mikasa Ivy Vase	$22.29	$22.29	$18.89	0	-	Low
Mikasa Champagne	$36.19	$36.19	$29.99	0	-	Medium
Furio TV-Tray Set	$55.09	$55.09	$48.89	0	-	High
Serenity Bathroom Rug	$19.89	$19.89	$23.29	0	+	Low
Farbuware Knife Set	$28.89	$28.89	$35.09	0	+	Medium
Black & Decker Broiler	$47.89	$47.89	$54.09	0	+	High
Hamilton Electric Knife	$20.49	$21.49	$17.99	+	-	Low
Weather Station	$32.89	$35.39	$29.99	+	-	Medium
Holmes Portable Heater	$51.69	$55.99	$47.99	+	-	High
Ironing Board	$21.09	$22.99	$21.09	+	0	Low
First Alert Smoke Alarm	$33.09	$35.79	$33.09	+	0	Medium
Halogen Torchiere	$51.99	$55.99	$51.99	+	0	High
Furio Table Cloth	$17.99	$20.09	$21.69	+	+	Low
Furio Storage Box	$17.99	$19.69	$21.99	+	+	Low
Wall Clock	$19.99	$23.69	$21.69	+	+	Low
Chrome Bathroom Scale	$28.99	$32.49	$34.59	+	+	Medium
Atlantic CD Tower	$27.99	$30.99	$33.39	+	+	Medium
Mirro Dutch Oven	$29.49	$35.09	$32.39	+	+	Medium
Lava Lite Lamp	$48.99	$51.99	$55.79	+	+	High
Mr Coffee Espresso	$49.99	$56.79	$53.69	+	+	High
Regal Breadmaker	$48.49	$51.99	$56.49	+	+	High

Note. Within each price level, each product category was randomly assigned to a set of store prices. Only the product and store prices were shown to participants. Favorable, equal, and unfavorable price comparisons are designated by "+", "0", and "-", respectively.

APPENDIX 2

Experiment 1B: The tables list the deviations from the average price for the chosen store and the two alternative stores at each of the three price levels (each of the price levels has a fixed average price). The bottom rows list the average price deviation, the price variance, and the correlation with the prices of the chosen store.

Price level	Low			Medium			High		
Store	chosen store	alt store 1	alt store 2	chosen store	alt store 1	alt store 2	chosen store	alt store 1	alt store 2
	-4	-3.7	3.7	-5.8	-5.4	5.4	-6.9	-6.4	6.4
	-3.7	-3	3	-5.4	-4.9	4.9	-6.4	-5.3	5.3
	-3	-2.5	2.5	-4.9	-4	4	-5.3	-4.2	4.2
	-2.5	-2.1	2.1	-4	-3.1	3.1	-4.2	-3.4	3.4
	-2.1	-1.5	1.5	-3.1	-2.5	2.5	-3.4	-2.9	2.9
	-1.5	-1	1	-2.5	-2	2	-2.9	-1.5	1.5
	1.5	1	-1	2.5	2	-2	2.9	1.5	-1.5
	2.1	1.5	-1.5	3.1	2.5	-2.5	3.4	2.9	-2.9
	2.5	2.1	-2.1	4	3.1	-3.1	4.2	3.4	-3.4
	3	2.5	-2.5	4.9	4	-4	5.3	4.2	-4.2
	3.7	3	-3	5.4	4.9	-4.9	6.4	5.3	-5.3
	4	3.7	-3.7	5.8	5.4	-5.4	6.9	6.4	-6.4
average	0	0	0	0	0	0	0	0	0
variance	9.4	6.7	6.7	21.6	16.2	16.2	28	19.8	19.8
corr	1	1	-1	1	1	-1	1	1	-1

FIGURE 1

Experiment 1: Mean estimates of (1) the number of shopping trips on which the chosen store was cheaper than both other stores, and (2) the number of shopping trips on which the chosen store was more expensive than both other stores.

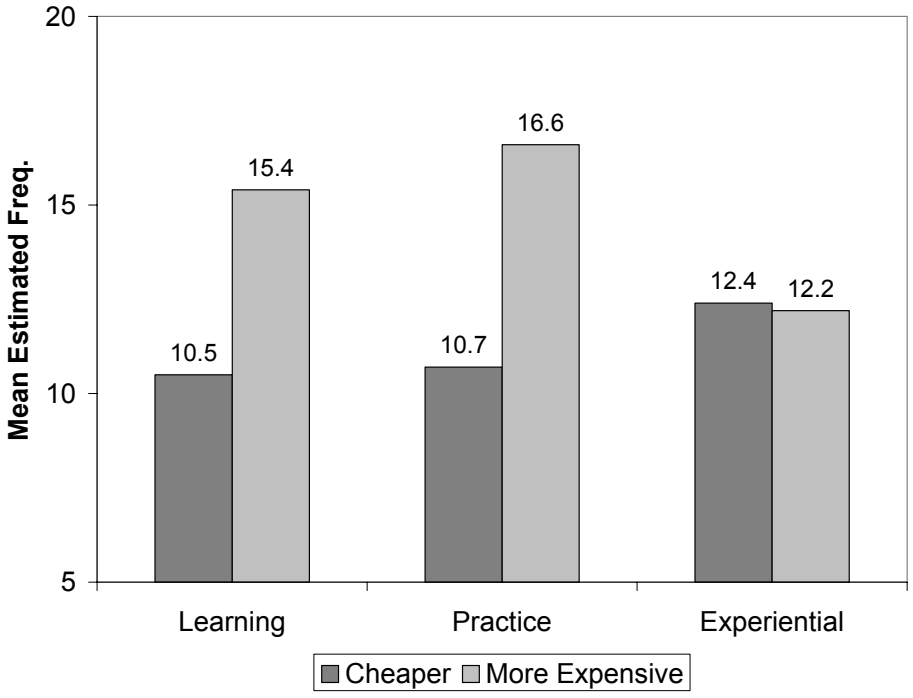

FIGURE 2

Experiment 3: Proportion of participants who indicated that the chosen store was the cheapest store.

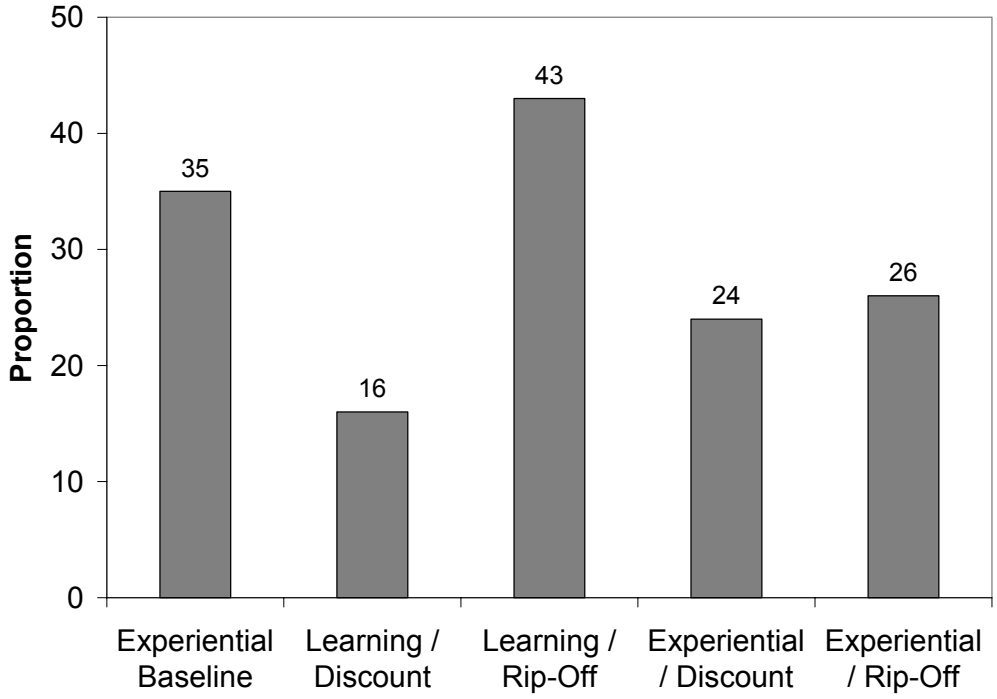

FIGURE 3

Experiment 3: Mean estimates of (1) the number of shopping trips on which the chosen store was cheaper than both other stores, and (2) the number of shopping trips on which the chosen store was more expensive than both other stores.