

Learning from Mixed Feedback:
Anticipation of the Future Reduces Appreciation of the Present

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Consumers can evaluate their past choices by comparing their obtained outcome to other possible outcomes. We demonstrate that how people process this comparative feedback depends on whether they use it to prepare for future decisions. In particular, the anticipation of similar future choices increases consumers' sensitivity to comparisons with better alternatives and reduces their liking of the chosen option. Our findings indicate that forward-looking consumers selectively test the hypothesis that their current choice can be improved upon and, as a result, disproportionately attend to the unfavorable comparisons and fail to appreciate the value of their current choice.

We can often compare the outcomes of our decisions to what would have happened if we had chosen differently (e.g., Inman, Dyer, and Jia 1997; Tsiros and Mittal 2000). This comparative feedback can be straightforward, such as when we discover that another restaurant is more expensive than the one we just dined at (a favorable comparison) or that another store has a larger assortment than the one we just visited (an unfavorable comparison). However, with continuous increases in both the number of options we face as consumers and the amount of information that is available to us, comparative feedback has become increasingly complex—and is more likely to provide mixed signals as a result. For instance, we may discover that while our favorite store is cheaper for some products, it is more expensive for others. How do we process such complex mixed feedback? Are we equally influenced by all comparisons or are some comparisons more impactful than others?

In this paper, we will argue that how we process these comparisons depends on whether we expect to make similar decisions in the future. When we anticipate similar future decisions, we can use comparative feedback to prepare for these decisions: favorable comparisons encourage us to repeat the same choice, whereas unfavorable comparisons encourage us to switch. We will argue that this emphasis on future choices can lead consumers to selectively search for ways to improve their decisions, which disproportionately increases consumers' sensitivity to unfavorable comparisons, resulting in an overly negative opinion of their current choice. Ironically, consumers who are actively trying to learn from comparative feedback to prepare for future decisions may actually end up with a more biased interpretation of this feedback than those who do not expect to repeat the decision.

To examine how a forward-looking perspective affects the processing of mixed feedback, we present a series of studies in which participants receive comparative price information

following a store choice. We demonstrate that the anticipation of future choices between these stores increases the relative impact of the unfavorable comparisons, resulting in a less favorable perception of the chosen store. First, however, we discuss how consumers process mixed feedback when they are not anticipating future decisions, before considering how the anticipation of future choices may change their processing strategy.

LEARNING FROM MIXED FEEDBACK

Both favorable and unfavorable comparisons provide valuable information to the decision maker. Favorable comparisons suggest that we've made a good choice and that there are worse alternatives that should be avoided. Unfavorable comparisons suggest that we've made a bad choice and that the decision can be improved by switching to a better alternative. Yet, although both types of comparisons are informative, prior research suggests that we do not always treat them equally. Instead, we selectively process one type of comparisons, resulting in biased perceptions of both our current choice and the available alternatives.

Prior work on information processing and decision making has documented a persistent bias in favor of the current choice, suggesting that consumers will focus on the favorable comparisons. People show an exaggerated preference for the current state of affairs (the status quo bias, Samuelson and Zeckhauser 1988), they attach more value to an object once it is in their possession (the endowment effect, Kahneman, Knetsch, and Thaler 1990), and, when faced with mixed evidence, they emphasize information that confirms their prior choices or beliefs (Gilovich 1983). Furthermore, the literature on confirmatory hypothesis testing suggests that consumers who test the hypothesis that they made the correct choice will 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 their original beliefs (Hoch and Ha 1986). Aside from these cognitive biases, consumers may want to emphasize favorable comparisons to feel better about their situation, just as people “improve their lot” by imagining how things could have been worse (i.e., by generating downward counterfactuals, Roese 1994) or by comparing themselves to others who made worse decisions than they did (Tsiros 1998, Wills 1981).

While the preceding suggests a general bias toward favorable comparisons (i.e., comparisons that support the current choice), it does not tell us how this bias will be affected by the anticipation of future choices. This issue is particularly relevant in a consumer context as many consumer decisions involve repeated choices among the same set of alternatives (e.g., restaurants in the neighborhood) with the same objective in mind (e.g., the best food at the lowest price). We propose that the anticipation of such similar future choices will encourage consumers to selectively search for ways to improve on their current choice, thus increasing the relative impact of unfavorable comparisons. Prior work on social comparisons and counterfactual reasoning indicates that the anticipation of future tasks shifts people’s concern from appreciating their current performance to improving their future performance. People are more likely to request information about others who are better off than themselves when they expect to have control over their future performance (Ybema and Buunk 1993) and they are more likely to imagine how things could have been better when they expect to perform the same task in the future (Markman et al. 1993) and when they have control over their outcome (Roese and Olson 1995b).

In the context of mixed comparative feedback, we predict that the anticipation of similar

future decisions will increase consumers' sensitivity to the unfavorable comparisons, since these comparisons reveal opportunities for improvement. In particular, we propose that forward-looking consumers test the hypothesis that there is a way to improve their current choice, rather than the default hypothesis that they made the correct choice. Consumers test this hypothesis selectively by disproportionately attending to the unfavorable comparisons, resulting in a failure to appreciate the value of the current option and an exaggerated enthusiasm for the alternatives.

In summary, we propose that the general bias in favor of the current choice is reduced or even reversed when consumers expect similar future choices. We also propose that this effect occurs because selective hypothesis testing increases the impact of the unfavorable comparisons. However, as we test this prediction, we need to consider other mechanisms that may also increase the influence of unfavorable comparisons. First, unfavorable comparisons could have a disproportionate impact because they tend to elicit strong affective reactions. Previous studies on both counterfactual reasoning and price comparisons have indicated that the regret caused by the unfavorable comparisons often outweighs the elation caused by the favorable comparisons (Cooke, Meyvis, and Schwartz 2001; Landman 1987; Mellers et al. 1997). The stronger affective reactions associated with the unfavorable comparisons could make them more salient or memorable, thus increasing their relative impact. Second, the relative influence of unfavorable comparisons may also increase as consumers are more involved with the decision. Involved consumers may be more motivated to carefully process the comparisons, resulting in a reduction of the inherent bias favoring the current choice. Although we aim to study the unique consequences of a forward-looking mindset, we acknowledge that regret and involvement may also increase the relative impact of the unfavorable comparisons and we control for these alternative processes in our studies.

PROCESSING MULTIPLE PRICE COMPARISONS

The proposed link between the anticipation of future decisions and an increased impact of unfavorable comparisons is primarily based on findings in the social and counterfactual comparisons literature. However, the most common consumer decisions tend to involve comparisons of explicitly presented information, most notably prices, as opposed to the active imagination of alternative realities or the deliberate search for comparative information. To study the processing of explicitly provided comparisons, we need to posit a different cognitive mechanism (i.e., selectively attending to hypothesis confirming comparisons) and, by extension, different boundary conditions. In addition, whereas research on social comparisons (Huguet et al. 2001) and counterfactual comparisons (Nasco and Marsh 1999) has argued that an increased willingness to imagine and search for upward comparisons tends to improve future performance, we argue that increased attention to unfavorable feedback can result in an underappreciation of the current choice and unnecessary switching to inferior alternatives. Finally, the explicit availability of the comparative feedback may not only change the underlying mechanism of the effect and its normative consequences, but it could possibly eliminate the effect of anticipated future choices altogether. In fact, Markman and his colleagues (1993) observed that the anticipation of a future task increased the spontaneous generation of upward counterfactuals when the alternatives had to be imagined, but not when the alternatives were made available. In light of this important distinction, we now provide a brief review of prior research on the processing of explicit price comparisons to complement our previous discussion of social and counterfactual comparisons.

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 (Alba et al. 1994, 1999; Cooke et al. 2001). In Alba et al. (1999), participants were presented with multiple price comparisons between different brands. Although these studies did not feature an explicit focal option (such as a chosen brand), 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. Participants perceived this control brand as more expensive than the other brands, suggesting a disproportionate impact of the 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 their purchase, they were able to compare the price they paid to higher or lower prices they would have paid if they had purchased earlier or later. 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 these two studies did not manipulate the anticipation of future choices, they cannot inform us about the impact of adopting a forward-looking perspective. However, these results do suggest that unfavorable comparisons can have a disproportionate impact in an explicit learning task.

In the present studies, we examine how the anticipation of future store choices influences consumers' processing of store price comparisons. The first study shows that the anticipation of future choices increases the relative impact of the unfavorable comparisons, even in the absence of strong affective reactions. The next two studies examine the robustness of this effect and rule out explanations based on involvement and counterfactual thinking. The fourth study directly

tests the selective hypothesis testing mechanism by manipulating the focal hypothesis participants adopt. We demonstrate that when consumers believe that one of the options is much worse than the other options, forward-looking consumers adopt the focal hypothesis that their current situation can be *worsened*, rather than improved, by switching, resulting in a disproportionate focus on favorable comparisons and, thus, a reversal of the effect. The remaining studies allow us to further specify the selective hypothesis testing mechanism by testing additional moderators of the effect.

EXPERIMENT 1

The first experiment examined how the anticipation of similar future choices influences consumers' interpretation of mixed price comparisons, while controlling for consumers' affective reactions to these comparisons. All participants first chose one of three fictitious stores to visit on 36 simulated shopping trips. On each trip, they purchased a different product and were shown the price of that product at their chosen store and the prices charged at the other two stores. At the end of the trips, participants indicated which store was the cheapest across all trips and then again selected one of the three stores to visit on eight additional trips.

We manipulated both 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 was only based on the second set of 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 did not expect to be paid and were not told about the second choice until after they had completed the first set of trips and the dependent measures.

Let us first compare the learning condition to the experiential condition. Unlike participants in the experiential condition, participants in the learning condition expected an important second choice between the same stores. We propose that the anticipation of a future choice will lead participants to selectively test the hypothesis that their current choice can be improved upon. As a result, compared to experiential participants, learning participants will be more sensitive to unfavorable comparisons and therefore less likely to perceive their chosen store as the cheapest store. However, an increased impact of unfavorable comparisons in the learning condition could also be explained by differences in affective responses. Because learning participants were paid based on the prices shown and experiential participants were not, learning participants may have experienced greater feelings of regret when confronted with unfavorable comparisons, which may have caused these trips to be more salient. To test this account, we need to consider the practice condition.

If participants’ sensitivity to unfavorable comparisons derives from the regret evoked by these comparisons, 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. Thus, according to the regret account, learning participants should be more sensitive to unfavorable comparisons than both practice and experiential participants. Alternatively, if participants’ sensitivity to unfavorable comparisons directly results from the processing strategy used to prepare for future decisions, 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 preparatory testing account, both learning and practice participants should be more sensitive to unfavorable comparisons than experiential participants.

Method

Seventy-nine undergraduate students participated in exchange for course credit. Participants chose one of three stores to visit on 36 computer-based shopping trips without any prior information. Participants in the learning and practice conditions were told that they would make a second choice between the three stores and receive one fifth of the amount remaining in their budget. 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 payment.

After participants chose a store, they received price information for 36 shopping trips. 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 all product categories and the same number and magnitude of favorable and unfavorable comparisons (see appendix). On any given trip, 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 not the other store (3 trips each). The order of the trips was randomized.

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 seven-point scale), how satisfied they were with their choice (on a nine-point scale), and how much attention they had paid to the store prices (on a nine-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% of the participants perceived their store as the cheapest store, compared to only 21% in the learning condition and 22% 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 preparatory testing accounts. However, practice participants were also less likely to perceive their chosen store as the cheapest store than experiential participants ($\chi^2(1) = 3.37, p = .07$), consistent with the preparatory testing account, but contrary to the affective account. Even cleaner results were found for the second store choice. The proportion of participants who stuck with their first choice was significantly greater in the experiential condition (46%) than in both the learning (21%; $\chi^2(1) = 3.90, p < .05$) and practice conditions (17%; $\chi^2(1) = 4.79, p < .05$).

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 preparatory testing account, experiential participants reported relatively fewer unfavorable comparisons ($D = -0.11$) than practice participants ($D = 5.92$, $F(1, 76) = 4.31$, $p < .05$) and marginally fewer than learning participants ($D = 4.85$, $F(1, 76) = 3.25$, $p = .08$). 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 ($F(1, 76) < 1$, ns).

Furthermore, the conditions did not differ in self-reported regret associated with the first store choice ($M_{\text{experiential}} = 3.39$, $M_{\text{learning}} = 3.61$, $M_{\text{practice}} = 3.87$, $F < 1$) or in self-reported attention paid to the prices ($M_{\text{experiential}} = 6.86$, $M_{\text{learning}} = 6.89$, $M_{\text{practice}} = 6.96$, $F < 1$). 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 involvement.

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 anticipate important future choices tend to selectively look for

opportunities to improve their decisions, resulting in a heightened sensitivity to 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 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 impact of unfavorable comparisons. As such, these results demonstrate that the anticipation of important future choices can increase the relative impact of unfavorable comparisons and suggest that this effect is not dependent on changes in the affective reactions to these comparisons. In the following experiments, we will test the robustness of this effect and further examine the underlying mechanism.

EXPERIMENT 2

Experiment 2 extends the first experiment by testing the normative implications of the observed effect, replicating it in a more externally valid context, and testing an alternative explanation. First, since the stores in the first experiment had equivalent price distributions, there was no normatively correct choice and we could not test whether the anticipation of future choices can diminish the quality of these choices. Experiment 2 addresses this issue by making the chosen store cheaper than the other two stores. If the shift toward unfavorable comparisons persists, it would indicate that consumers who are actively preparing for future choices may end up with worse choices than those who do not. The second objective of this experiment is to increase the external validity of the task. While it is unlikely that consumers will obtain

comparative price information after each shopping trip, agents such as Internet websites can easily provide consumers with a wealth of comparative price information without actual shopping trips taking place. Therefore, in the second experiment, the prices were not presented as shopping trips, but as comparative price information provided by a shopping bot. Therefore, the selected store only served as the focal store in the comparisons, not as the store at which actual purchases were made. Finally, we also tested whether the higher perceived price of the chosen store could have resulted from the generation of upward counterfactuals (Markman et al. 1993) rather than an increased sensitivity to unfavorable comparisons.

Method

Seventy-six undergraduate students 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 described as information supplied by an Internet “shopping bot”. Participants in the practice condition were asked to rely on this information to make an informed store choice in the second part of the experiment. Participants in the experiential condition, who did not anticipate a second choice, were asked to assess the ease of processing the price comparisons. Second, the program adjusted the prices so that, across all products, the chosen store was always \$9 cheaper than the other stores. Third, participants in the practice condition did not expect to be paid, but instead were told that they would receive feedback on the accuracy of their choice. Finally, as additional process measures, participants were asked whether they were looking for ways to improve their choice (on a nine-point scale) and how often they had thought “if only I had

chosen the other store" (i.e., generation of upward counterfactuals, measured on a nine-point scale).

Results and Discussion

In the practice condition, 13% of participants perceived their chosen store as the cheapest store, compared to 35% 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 participants who were assessing 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 ($M_{\text{practice}} = -4.1, M_{\text{experiential}} = -1.4, F(1, 74) = 6.70, p < .05$) and were less likely to stick with their chosen store for their actual shopping trips ($\hat{\pi}_{\text{practice}} = .18, \hat{\pi}_{\text{experiential}} = .46, \chi^2(1) = 6.89, p < .01$). The additional control measures indicate that, compared to experiential participants, practice participants were more motivated to look for ways to improve their initial choice ($M_{\text{practice}} = 5.9, M_{\text{experiential}} = 4.8, F(1, 73) = 5.18, p < .05$), but did not generate more upward counterfactuals ($M_{\text{practice}} = 4.0, M_{\text{experiential}} = 4.4, F(1, 73) < 1, ns$). Together, these results indicate that consumers who anticipate future choices may in fact make worse future choices than those who do not. In particular, anticipation of future choices can increase consumers' sensitivity to unfavorable comparisons, resulting in a failure to appreciate the quality of their current choice. The results also indicate that this negative effect of anticipation does not follow from an increased generation of upward counterfactuals, but instead seems to result from a selective search for ways in which the current selection can be improved.

To further test these conclusions, we ran a follow-up study with 161 participants that exactly replicated experiment 2 with two changes. First, the focal store was randomly selected by the computer, thus removing participants' control over the decision. As a result, there was no decision they could possibly regret and they should be less likely to generate upward counterfactuals (Markman et al. 1995). In addition, the experiential condition was replaced with a quiz condition in which participants expected to be quizzed on the prices at the end of the experiment. This allowed us to examine whether any increase in learning motivation could increase the impact of unfavorable comparisons or whether there was something unique about preparing for future choices. The results showed that, compared to participants who were learning for a quiz, participants who were preparing for future choices were less likely to perceive the focal store as the cheapest store ($\hat{\pi}_{\text{quiz}} = .34$, $\hat{\pi}_{\text{practice}} = .20$; $\chi^2(1) = 4.14$, $p < .05$) and reported focusing more on the unfavorable comparisons ($M_{\text{practice}} = -32.61$, $M_{\text{quiz}} = -10.08$, $F(1, 159) = 6.99$, $p < .01$). These differences occurred even though practice participants did not pay more attention to the price comparisons than quiz participants ($M_{\text{practice}} = 6.93$, $M_{\text{quiz}} = 6.79$, $F < 1$, ns) and were actually *less* interested in the outcome of the initial store selection ($M_{\text{practice}} = 3.64$, $M_{\text{quiz}} = 4.33$, $F(1, 159) = 4.06$, $p < .05$). Since the focal store was selected by the computer, these results indicate that the experience of regret and the generation of counterfactuals are not necessary and increased involvement or an increased motivation to learn are not sufficient for explaining the increased impact of unfavorable comparisons. However, it should be noted that these findings do not demonstrate that the anticipation of future choices is necessary for this effect to occur, since there may have been other ways in which the practice condition differed from the quiz condition, such as a greater emphasis on relative price comparisons rather than absolute prices.

EXPERIMENT 3

The preceding experiments demonstrated that the anticipation of future store choices increases the impact of unfavorable comparisons, which can result in an overly negative perception of the chosen store and lead consumers to switch to more expensive alternatives. We have argued that consumers who expect future choices prepare for these choices by selectively testing the hypothesis that their current choice can be improved upon. However, while we have provided evidence that is inconsistent with alternative explanations in terms of regret, involvement, or counterfactual thinking, we have not directly tested the preparatory hypothesis testing account of the effect. The objective of experiment 3 is to examine the hypothesis testing explanation and, in doing so, demonstrate a boundary condition of the effect.

We have argued that the anticipation of future choices shifts consumers' perspective from appreciating their current choice to preparing for future choices. We have assumed that, to prepare for future choices, consumers look for ways to improve upon their current choice, and that they do so by selectively testing the hypothesis that one of the alternative options is better than their current choice. This account implies that the effect of anticipating future choices can be changed or even reversed if consumers adopt a different hypothesis. While prior work on counterfactual thinking and social comparisons supports our assumption that people usually prepare for future choices by looking for improvement, people can also prepare for the future by looking for pitfalls to avoid instead of opportunities to improve (e.g., McMullen and Markman 2000). When the anticipation of future choices motivates people to look for pitfalls to avoid rather than for ways to improve, we expect consumers to selectively test the hypothesis that one

of the alternative options is worse than the chosen option, thus increasing the impact of favorable rather than unfavorable comparisons.

When would the anticipation of future choices sensitize consumers to hazards to avoid rather than opportunities to improve? We propose that the effect of anticipating future choices depends on consumers' prior beliefs about the relative attractiveness of the different options. When consumers believe that one of the options is substantially better than the others, the focus will be on identifying this superior option. In this case, preparing for the future implies testing the hypothesis that one of the alternative options is the superior option. This is assumed to be the default hypothesis for consumers in a competitive marketplace. We tend to search for products that can provide us with the greatest benefit rather than for products that we should avoid. However, when we believe that one of the options is substantially worse than the others, the focus will shift to identifying this inferior option. In this case, preparing for the future implies selectively testing the hypothesis that one of the alternative options is the inferior option. In other words, the anticipation of future choices will typically motivate us to scrutinize the alternatives for opportunities to improve. Yet, when we expect one of the options to be clearly worse than the others, the anticipation of future choices will instead motivate us to scrutinize the alternatives for pitfalls to avoid. Through a process of selective hypothesis testing, the search for improvement will increase the relative impact of unfavorable comparisons, whereas the search for pitfalls to avoid will increase the relative impact of favorable comparisons.

In experiment 3, we manipulated participants' prior beliefs about the relative attractiveness of the stores as well as their anticipation of a second store choice. The design includes two learning conditions in which participants expected a second store choice. In the *discount store* condition, participants were told that one of the stores was significantly cheaper

than the other two stores, whereas in the *rip-off store* condition, participants were told that one of the stores was significantly more expensive than the other two. We expected that participants in the discount store condition would prepare for their second choice by selectively testing the hypothesis that one of the alternative stores was the discount store, resulting in an emphasis on unfavorable comparisons. In contrast, participants in the rip-off store condition were expected to prepare for their second choice by selectively testing the hypothesis that one of the alternative stores was the rip-off store, resulting in an emphasis on favorable comparisons.

To measure the effect of anticipating a future choice, 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 this information may automatically induce the anticipation of future choices. Unfortunately, this implied that comparing the learning conditions to the control condition measured the direct effect of the store information in addition to any preparatory testing effects. 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. By comparing these two experiential conditions to the control condition, we can measure the direct effect of the store information, and by comparing them to the learning conditions, we can measure the effect of processing the price comparisons with the

second choice and the store information in mind.

Method

Two hundred and twenty-four undergraduate students were randomly assigned to a 2 (discount / rip-off store) \times 2 (learning / experiential) design with an additional experiential control condition. Participants made 36 shopping trips to three stores that had the same average price. 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 (discount) store conditions were told that, although no two stores had the same average price, one of the stores was substantially more (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. Discount store participants were less likely to perceive their chosen store as the cheapest store ($\hat{\pi} = .19$) than were rip-off store participants ($\hat{\pi} = .50$; $\chi^2(1) = 10.22, p < .01$). Furthermore, compared to rip-off store participants, discount store participants recalled relatively more unfavorable versus favorable price comparisons ($D_{\text{discount}} = 4.42, D_{\text{rip-off}} = -3.15, F(1, 223) = 13.86, p < .001$). Whereas participants in the discount store condition recalled more unfavorable than favorable comparisons ($M_{\text{unfavorable}} = 15.6, M_{\text{favorable}} = 11.2; F(1, 223) = 9.03, p < .01$), those in the rip-off store condition recalled more favorable than unfavorable comparisons ($M_{\text{unfavorable}} = 12.4, M_{\text{favorable}} = 15.5; F(1, 223) = 4.41, p < .05$), effectively reversing the bias towards unfavorable comparisons. This is consistent with our prediction that discount store participants selectively tested the hypothesis that one of the alternative stores is the discount store, whereas rip-off store participants selectively tested the hypothesis that one of the alternative stores is the rip-off store. This conclusion was further supported by the fact that, compared to control participants, discount store participants were less likely to perceive the chosen store as the cheapest store ($\hat{\pi}_{\text{discount}} = .19, \hat{\pi}_{\text{control}} = .38; \chi^2(1) = 4.44, p < .05$) and recalled relatively more unfavorable versus favorable price comparisons ($D_{\text{discount}} = 4.42, D_{\text{control}} = -0.04; F(1, 223) = 5.51, p < .05$). As expected, this pattern was reversed when comparing the rip-off store condition to the control condition, although this reversal failed to reach significance for both the likelihood of perceiving the chosen store as the cheapest store ($\hat{\pi}_{\text{rip-off}} = .50, \hat{\pi}_{\text{control}} = .38; \chi^2(1) = 1.51, ns$) and the relative recall of unfavorable comparisons ($D_{\text{rip-off}} = -3.15, D_{\text{control}} = -0.04; F(1, 223) = 2.46, p = .12$).

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' store perceptions. If this is the case, the information should have the same effect in the experiential conditions. However, the results reveal that the effect of the store information on participants' store choices and perceptions depended on when it was received (selection of the cheapest store: $\chi^2(1) = 5.88, p < .05$; comparison estimates: $F(1,167) = 5.10, p < .05$). In contrast to store information received before the comparisons (see learning conditions), store information received afterwards did not affect participants' selection of the cheapest store ($\hat{\pi}_{\text{discount}} = .39, \hat{\pi}_{\text{rip-off}} = .36; \chi^2(1) = 0.10, ns$), nor did it change the estimated number of unfavorable versus favorable comparisons ($D_{\text{discount}} = -2.47, D_{\text{rip-off}} = -2.95; F(1, 223) = 0.04, ns$).

In summary, these results indicate that the mere anticipation of future choices does not directly increase the relative impact of unfavorable comparisons. Instead, the effect of adopting a forward-looking perspective depends on consumers' prior beliefs about the relative attractiveness of the options. In particular, consumers' priors determine which hypothesis they selectively test to prepare for future choices. When participants believed that one of the choice alternatives was much better than the others, they selectively tested the hypothesis that one of the alternatives would provide an opportunity to improve. As a result, they recalled significantly more unfavorable than favorable comparisons. However, when participants expected that one of the choice alternatives was much worse than the others, they selectively tested the hypothesis that one of the alternatives was the store to avoid. As a result, they recalled significantly more favorable than unfavorable comparisons.

The greater impact of unfavorable comparisons observed in the discount store condition is consistent with the findings in the previous experiments, suggesting that a selective search for

an option that is better than the others may be the default strategy to prepare for future choices in a competitive market place. The latter may also explain why instructing participants that one of the stores was worse than the others—even though it resulted in a significant overestimation of favorable comparisons relative to unfavorable comparisons—did not completely reverse the effect when compared to the control condition. If consumers who anticipate future choices by default selectively search for opportunities to improve, then offering them an alternative, opposite hypothesis to test may not work for all consumers all the time, resulting in a significant change in perceptions, but not a significant reversal.

EXPERIMENTS 4A-4D

Experiment 3 supports our assertion that the anticipation of future choices increases the impact of unfavorable comparisons through a selective hypothesis testing mechanism, but it does not inform us about the processing stage at which this mechanism operates. To further specify the hypothesis testing mechanism, we ran four additional experiments, the results of which indicate that the increased impact of the unfavorable comparisons is due to selective attention to the comparisons rather than selective recall or biased weighting of the comparisons. In experiment 4A ($N = 85$), we replicated the learning condition from experiment 1 and added a second learning condition in which participants were asked 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. Compared to participants in the regular learning condition, those who were forced to pay attention to each comparison (regardless of direction) were significantly more likely to select the chosen store as the cheapest store, reflecting a reduction in the focus on unfavorable comparisons

($\hat{\pi}_{\text{learning}} = .21$, $\hat{\pi}_{\text{forced attention}} = .42$, $\chi^2(1) = 4.09$, $p < .05$). This result indicates that forward-looking consumers are selectively *attending* to unfavorable comparisons rather than selectively recalling or overweighting unfavorable comparisons.

This conclusion is further supported by experiment 4B ($N = 60$) in which we varied the proportion of mixed trips (i.e., trips on which the price at the chosen store is between those of the two alternative stores). If the preparatory testing effect is driven by selective attention, the effect should strengthen with increases in the number of trips on which favorable and unfavorable comparisons simultaneously compete for attention. Increasing the number of mixed trips should increase consumers' cognitive load and provide more opportunity for selective attention to operate. Consistent with this prediction, participants were less likely to select the chosen store as the cheapest store when there were many mixed trips than when each trip was either uniquely favorable or uniquely unfavorable ($\hat{\pi}_{\text{mixed}} = .19$, $\hat{\pi}_{\text{no mixed}} = .56$, $\chi^2(1) = 7.44$, $p < .01$).

While mixed comparisons provide greater opportunity for selective attention effects, a third experiment demonstrated that mixed comparisons are not necessary for selective attention to occur. In experiment 4C ($N = 71$), we tested whether forward-looking consumers pay more attention to uniquely unfavorable comparisons than uniquely favorable comparisons. If participants who anticipate future choices pay more attention to unfavorable comparisons, 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 prices at the chosen store. Indeed, on the unfavorable trips (i.e., when the chosen store is more expensive), the negatively correlated store will tend to be cheaper than the positively correlated store (even though it is more expensive on favorable trips). The procedure in this experiment was identical to the practice condition in experiment 2, except that the alternative stores were

either positively or negatively correlated with the chosen store and that all shopping trips were either uniquely favorable or uniquely unfavorable. All participants in this experiment anticipated a second choice, and, as expected, the majority (68%) selected an alternative store as the cheapest store. Out of these 48 participants, the majority (71%) selected the negatively correlated store as the cheapest store ($z = 3.2, p < .01$), suggesting that they paid more attention to the unfavorable comparisons than to the favorable comparisons.

Finally, to test our assumption that selective hypothesis testing was indeed sufficient to increase the impact of unfavorable comparisons, we ran an additional study (experiment 4D, $N = 68$) in which none of the participants anticipated a second choice, but half of the participants were asked to explicitly test, for each shopping trip, whether this trip indicated that one of the alternative stores was cheaper. As expected, participants who were asked to test this hypothesis were significantly less likely to perceive the chosen store as cheaper than those who were not ($\hat{\pi}_{\text{control}} = .44, \hat{\pi}_{\text{test}} = .03; \chi^2(1) = 8.29, p < .01$) and recalled significantly more expensive versus cheaper trips ($D_{\text{control}} = -2.38, D_{\text{test}} = 2.76; F(1, 66) = 16.61, p < .0001$). Together, the results from these four studies suggest that forward-looking consumers selectively test the hypothesis that the current store choice can be improved upon by selectively attending to those comparisons that reveal opportunities for improvement.

GENERAL DISCUSSION

Many established psychological phenomena reflect biases in favor of our prior beliefs, past choices, and focal alternatives. For both cognitive and motivational reasons, we tend to process ambiguous or mixed information in a biased fashion, resulting in exaggerated

perceptions of the value of our current choice and a reluctance to switch to objectively better alternatives. However, the current research demonstrates that the bias in favor of the status quo or focal alternative can completely reverse when people anticipate having to make similar decisions in the future. Throughout our studies, the anticipation of future store choices increases the relative impact of unfavorable comparisons, resulting in an overly negative perception of the current choice and an increased likelihood of switching to another alternative. The increased impact of unfavorable comparisons persists even when people have not yet committed to their choice, when they do not select the focal store themselves, and when the focal store is actually cheaper than the other stores. Rather than overvalue the status quo, consumers who prepare for future decisions overvalue the alternatives and fail to fully appreciate their current choice.

Why does the anticipation of future store choices increase the impact of unfavorable price comparisons? A first possibility is that forward-looking participants had stronger affective reactions to the unfavorable comparisons (i.e., they felt more regret), which increased the salience of these comparisons, and thus their relative impact. A second, related possibility is that forward-looking participants generated more upward counterfactuals (Markman et al. 1993). However, neither account explains why the increased impact of unfavorable comparisons persisted even when the selection of the focal store was outside participants' control and did not have any consequences for them, conditions that should suppress both feelings of regret and the generation of counterfactuals. A third possibility is that participants who anticipated future choices were more sensitive to unfavorable comparisons because they were more involved with the task. However, the experiential conditions did not differ in self-reported attention and participants who expected to be quizzed about the price comparisons reported being more interested in the outcome of their store selection, yet were less sensitive to the unfavorable

comparisons.

We propose an alternative account that explains the findings as the result of selective hypothesis testing. Consumers who anticipate future choices prepare for these choices by selectively testing the hypothesis that their current choice can be improved upon, thus increasing the impact of comparisons that reveal such opportunities for improvement, that is, the unfavorable comparisons. We propose that consumers in a competitive marketplace have been trained to believe that a better alternative exists or will exist in the future (indeed, much of modern marketing can be seen as an attempt to instill such beliefs). As a result, consumers typically prepare for the future by selectively testing the hypothesis that the current choice can be improved upon.

However, as experiment 3 indicates, the hypothesis that is being tested ultimately depends on consumers' beliefs about the relative attractiveness of the options. When participants believed that one of the options was superior to the others, they indeed prepared for future choices by selectively testing whether one of the alternatives offered an opportunity to improve and, as a result, recalled more unfavorable than favorable comparisons. However, when participants believed that one of the options was inferior to the others, they prepared for future choices by selectively testing whether one of the alternatives was the option to avoid and, as a result, recalled more favorable than unfavorable comparisons. These results also indicate that the anticipation of future choices does not automatically prime promotion-based goals (see Higgins, 1996, for a discussion of the self-regulatory goals of promotion and prevention). Instead, forward-looking consumers may either adopt a promotion focus or a prevention focus depending on whether the possibility of either a positive or a negative outcome is made salient (with positive outcomes being more salient by default in consumer settings). Stated differently, the

anticipation of future choices seems to create the hypothesis that one of the alternatives, rather than the current choice, is the bad option to avoid or the good option to obtain, resulting in either the pursuit of advancement (promotion) or the pursuit of preservation (prevention).

Although we have assumed that the preparatory testing strategy can occur for any consumer choice situation, we have only empirically demonstrated it with stores as the choice options and price as the attribute. Given our understanding of the underlying mechanism, to what extent would it generalize to other consumer choices? The selective attention mechanism, as evidenced in experiments 4A to 4C, can theoretically operate in any decision that involves mixed comparative feedback, but it also suggests some clear boundary conditions to the effect. In particular, the selective attention account implies that the strength of the bias will depend on a person's cognitive resources and the attentional demands of the information environment. As a result, the biasing effect of anticipated choices will be less pronounced when consumers are more motivated and capable of attending to each separate comparison (e.g., when fewer comparisons have to be processed). In addition, the strength of the effect will also depend on the ambiguity of the attribute, with more ambiguous attributes offering an opportunity for selective interpretation in addition to selective attention, and the nature of the anticipated future choices. We demonstrated the effect in situations in which the anticipated choices had exactly the same objective (minimize price) and involved an identical choice set. We expect that the effect may not obtain if those anticipated choices involve either different objectives or different alternatives.

How do these results compare with prior work on the influence of future task expectations on the generation of counterfactual alternatives and the search for social comparison information? The fact that forward-looking consumers pay relatively more attention to unfavorable comparisons is consistent with previous findings that people are more likely to

request upward social comparison information when they expect to control their future performance (Ybema and Buunk 1993) and are more likely to generate upward counterfactuals when they expect to perform the same task in the future (Markman et al. 1993). However, there are also a number of important distinctions. First, we propose a different mechanism—attention-based selective hypothesis—since the processing of information is fundamentally different from the request of information or the generation of imaginary alternatives. Second, the results of experiment 3 indicate that, although forward-looking consumers usually focus more on unfavorable comparisons, they actually focus more on favorable comparisons when the possibility of a truly bad outcome is made salient. This raises some interesting questions about the robustness of the effect of future task expectation on social and counterfactual comparisons. For instance, are people who anticipate similar future tasks more likely to search for downward social comparisons (or generate downward counterfactuals) when they know that one of the participants in the task has performed much worse than all the others? Finally, research on social and counterfactual comparisons has assumed that the increased likelihood to generate or search for upward counterfactuals would help improve performance in the anticipated future tasks. However, our results suggest that the increased attention to unfavorable comparisons does not necessarily benefit those forward-looking consumers. We will explore this normative issue in more detail next.

Studies on social and counterfactual comparisons have 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 improve actual performance. Analogously, an increased focus on unfavorable price comparisons could lead to more optimal store choices or more accurate store perceptions. However, our results indicate that this is not necessarily the

case. Participants who anticipated future choices provided more biased frequency estimates of the price comparisons, were less likely to notice that their selected store was the cheapest store, and were more likely to switch to a more expensive store. These results demonstrate that the anticipation of future choices can lead consumers astray when they are acting on mixed feedback. Consumers who anticipate future choices may be more likely to notice opportunities to improve when these opportunities are available, but they may also be so busy searching for ways to improve that they fail to appreciate the value of their current choice.

APPENDIX

Example of Store Price Comparisons (Store A Chosen)

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 Torchiera	\$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.

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FIGURE 1

EXPERIMENT 1: MEAN ESTIMATES OF THE NUMBER OF SHOPPING TRIPS ON WHICH THE CHOSEN STORE WAS CHEAPER OR 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 THE NUMBER OF SHOPPING TRIPS ON WHICH THE CHOSEN STORE WAS CHEAPER OR MORE EXPENSIVE THAN BOTH OTHER STORES.

FIGURE 1

Experiment 1: Mean estimates of the number of shopping trips on which the chosen store was cheaper or more expensive than both other stores.

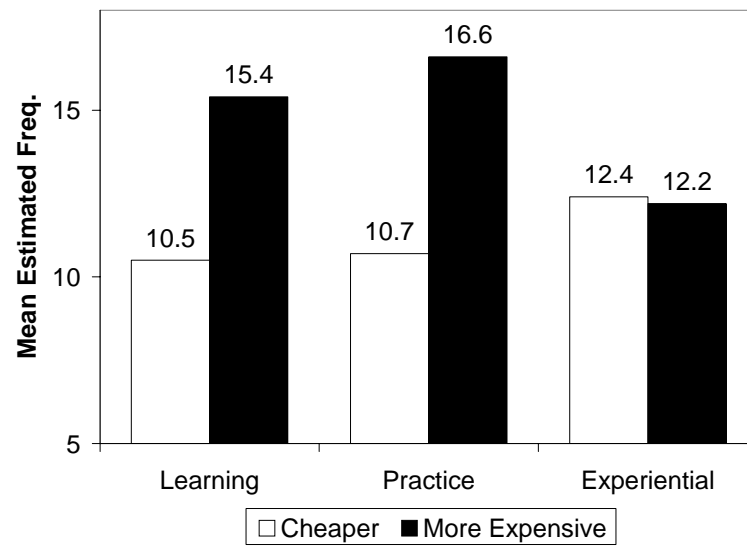


FIGURE 2

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

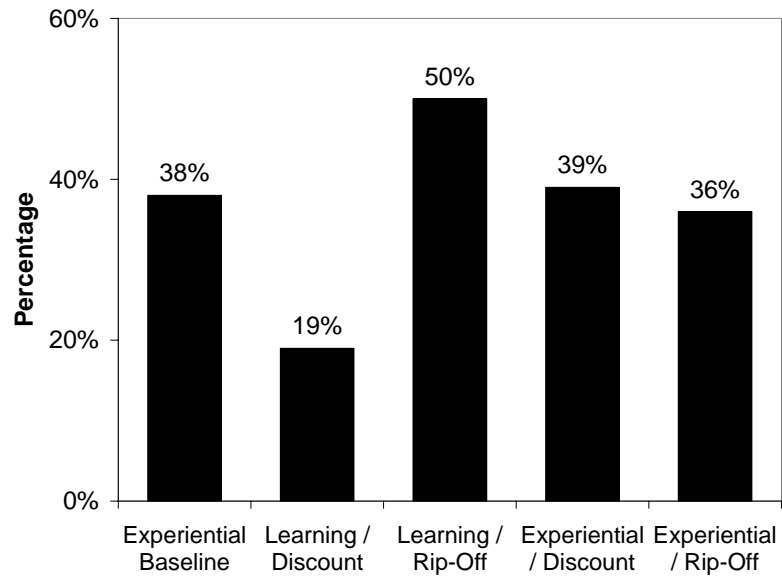
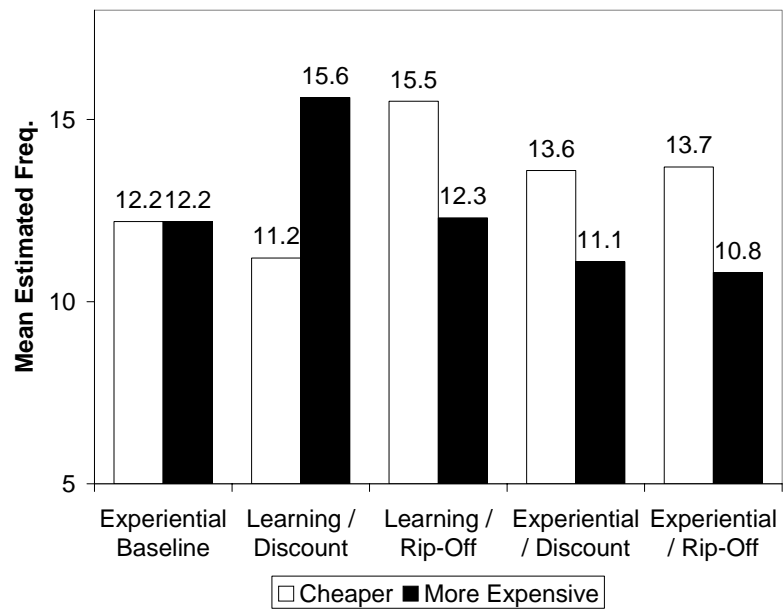


FIGURE 3

Experiment 3: Mean estimates of the number of shopping trips on which the chosen store was cheaper or more expensive than both other stores.



1) LEARNING FROM MIXED FEEDBACK**1) PROCESSING MULTIPLE PRICE COMPARISONS****1) EXPERIMENT 1**

2) Method

2) Results

2) Discussion

1) EXPERIMENT 2

2) Method

2) Results and Discussion

1) EXPERIMENT 3

2) Method

2) Results and Discussion

3) *Learning Conditions*

3) *Experiential Conditions*

1) EXPERIMENTS 4A-4D**1) GENERAL DISCUSSION**