There Is More to Planned Purchases than Knowing What You Want: Dynamic Planning and Learning in Multi-Store Price Search Task

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ABSTRACT

As consumers, our lives are full of planning. Understanding the strengths and weaknesses of consumer planning, how planning performance improves with experience, and the possible interventions that may help people form better shopping strategies have important implications for marketers, policy makers, and consumers.

Drawing on the psychology and marketing planning literatures, we hypothesize and show in two simulated shopping experiments that consumers often do not plan optimally and do not fully understand the information value of search. However, they do learn from experience and transfer that learning to shopping in a different product category. Finally, having consumers explicitly verbalize their plan helps them perform better by making them focus on strategy-oriented metacognitive processes. Implications from our results and future research directions are discussed.

As consumers, our lives are full of planning. Understanding how consumers plan their purchases has important implications for marketers, consumers, and policy makers. From the perspective of marketers, knowing how consumers plan their purchases can help identify important factors influencing consumers' decision-making (e.g., advertising, in-store product display, product price format or promotions, salesperson's recommendation), and by appropriately managing these factors, marketers can encourage consumers' purchases. For consumers, the knowledge of planning can help them develop effective strategies for satisfactory product purchases. Finally, from the perspective of policy makers, by understanding the influence of consumer planning on managers' and consumers' decision effectiveness, they can develop interventions that reflect the goals of both marketers and consumers.

Despite the importance of this topic, there is a scarcity of research on consumer planning in marketing (cf. Barsalou and Hutchinson 1987). Most research has focused on planned vs. unplanned purchases (e.g., Bell, Corsten, and Knox 2007; Bucklin and Lattin 1991; Inman, Winer, and Ferraro 2007; Park, Iyer, and Smith1989). However, these studies define planned purchases strictly as those items that were fully specified before entering the store (e.g, on a shopping list). Also, these studies primarily concentrate on exploring the situations in which unplanned purchases are more likely to happen. They did not examine the psychology of planning itself and ignored the fact that an "unplanned" purchase made in the store can be the result of a well developed plan that intentionally stopped short of full specification. For example, a consumer who has a well-formed plan to choose the lowest priced brand in a small consideration set would be categorized as making unplanned purchases because he does not determine the specific brand before entering the store. The purpose of our research is to fill in this important gap by trying to understand consumer planning in the context of a multi-store price search task.

THEORETICAL FRAMEWORK

Planning as a Metacognitive Process

During the last decade, the concept of "planning" has been extensively examined in the cognitive psychology literature (Miller, Galanter, and Pribram 1960; Morris and Ward 2005). In this literature, the terms "plans" and "planning" are used to "describe a procedure for achieving a particular goal or desired outcome" (Morris and Ward 2005) or refer to "any hierarchical process in the organism that can control the order in which a sequence of operations is to be performed" (Miller et al. 1960). According to psychological research on planning, there are two stages of planning (Scholnick and Friedman 1987). First, there is a "plan construction" stage in which a suitable mental representation of the problem is formed. This representation may include the initial state and the goal state of the problem as well as a range of specific actions that could be taken to achieve the goal. There is then a "plan execution" stage in which the selected plan is retrieved from long-term memory, maintained in working memory, and carried out.

Note that planning, especially "plan construction", is a metacognitive process in that people intentionally and actively construct, retrieve, and update their plans for the accomplishment of their objectives, and this metacognitive process is a "cognitive activity directed at one's own cognitive enterprise" (Kluwe 1982). The metacognitive aspect of planning has received little attention in marketing. A lot of marketing research looks at planned vs. unplanned purchases (e.g., Bell, Corsten, and Knox 2007; Bucklin and Lattin 1991; Inman, Winer, and Ferraro 2007; Park, Iyer, and Smith1989) and focuses on factors that are likely to elicit unplanned purchases. For example, Park et al. (1989) demonstrated that the incidence of unplanned purchases was higher when people shopped in an unfamiliar store and experienced no time pressure. However, these studies ignored the psychological process through which people decide how to search for information and make purchases. In a project with direct relevance to planning, Barsalou and Hutchinson (1987) discussed the role of schemas in consumer planning but did not relate planning to in-store decision making and also did not explore the role of learning from experience or other possible ways in enhancing consumer planning.

Planning and Store Choice

Most planning studies conducted by cognitive psychologists investigate problem-solving and use a puzzle-based experimental paradigm in which participants are presented with "board-game like" tasks, such as the Tower of Hanoi where stacked discs have to be rearranged to achieve some goal position (cf. Morris and Ward 2005). Planning activities are then formalized as the solution paths considered or taken by individuals in the problem-solving space. The primary advantages of these procedures are that they are easy to do in the lab and also the cognitive functions that contribute to performance can be easily dissected and scrutinized. However, these procedures do not bring forth "real-world" planning activities, although the mental processes and cognitive functions as revealed in these approaches may be relevant to particular subsets of everyday planning activities.

In order to get a general idea about consumers' everyday planning and design a real-world experimental paradigm to study planning in marketing, we conducted two exploratory studies (N = 260) in which we asked people to describe how they planned for their most recent shopping trip for different products. Around 94% of them mentioned that they engaged in information search before their final purchases. There is also evidence that people often overplan or underplan their purchases (31% vs. 36%), making either more or less than necessary efforts doing planning given their desirable outcomes. Finally, about 88% of participants explicitly indicated that they planned based on their learning from repeated shopping experience.

According to these pretest results, we selected an activity that is familiar to most consumers and also represents an important research area in marketing for many years – consumers' store choice behavior. We specifically focused on multi-store price search behavior including "cherry picking" where consumers actively visit multiple stores in order to exploit the opportunities offered by different retailing environments (Fox and Hoch 2005; Levy and Weitz 2004; Gauri, Sudhir, and Talukdar 2008). Relevant research has explored important factors that may influence people's price search behavior including the economic value of information (Fox and Hoch 2005; Gauri, Sudhir, and Talukdar 2008; Stigler 1961), prior investment (Urbany, Dickson, and Kalapurakal 1996; Zauberman 2003), product price format (Bell and Lattin 1998; Ho, Tang, and Bell 1998; Mulhern and Lenone 1990), and non-economic returns such as shopping enjoyment and marketing mavenism (Urbany, Dickson, and Kalapurakal 1996). However, to our knowledge, very little research has been conducted to explore consumers' meta-cognitive processes, especially how people plan dynamically during price search and what is the effect of possible interventions on final outcomes.

Multi-store price search behavior provides an ideal framework to study planning from the perspective of human information-processing, because selecting stores typically requires constructing novel plans and involves an interaction between consumers and a task environment. Consider how consumers might plan their every day price shopping given the opportunity to shop at multiple stores. There is first a baseline search pattern where consumers are "lazy", do no search at all, and just plan to visit a single store every time whenever they want to make a purchase. If they visit a different store each time, eventually such consumers can learn and take advantage of these stores' price policies. However, is this a regular and good strategy to follow? Based on our pretest results where around 94% of participants mentioned that they engaged in information search from various sources before their final purchases, most people are aware that knowledge is valuable and incremental information search beyond the baseline level is important in order to make good decisions. Next, information learning should generally occur earlier rather than later so that all the costs relevant to information search can be recovered on subsequent shopping trips. However, there exists a price shopper's dilemma: "Do I always need to know all of the prices?" This knowledge would allow the consumer to pay the lowest price, but the price savings may not pay for the costs of learning prices. Thus, the dilemma is whether to learn all (or even some) prices and pay less or to learn less and pay more, but reduce search costs. There is no general solution to this dilemma. In the next section, we describe a specific price search task that exemplifies the price shopper's dilemma and strategies that can solve it. We use this task in both experiments reported here.

Optimal Plans for A Multi-Store Price Search Task

The following is an example of the instructions, used to define a specific multi-store price search task.

"Imagine that you are working in a foreign country and considering buying some shirts of different colors. Within your consideration set of shopping locations, there are 3 shopping centers Massa, Hunjj, and Blarg. These 3 shopping centers charge different prices for their shirt, some of them are very high and some of them are relatively low. Prices are not affected by the color. In addition, two of these shopping places always charge the same price over time. The remaining one is a promotional store that charges a low sale price half of the time and a higher regular price the other half of the time. Please note that you currently have no idea which of these three places is the promotional one. You also do not know whether or not the sale price at the promotional store is lower than the price found at any other place. In other words, you will need to learn about prices as you shop.

Now you will take 8 shopping trips to purchase 8 shirts in different colors. The currency in this foreign country is the "Kent", and you will have a budget of 1100 Kents for all your shopping trips (i.e., 137.5 Kents for each shopping trip on average). For each shopping trip, there will be a travel cost of 2.5 Kents whenever you visit a store (e.g., the cost of gasoline when you travel). You will earn the money that is left (if there is any) after you purchase all 8 shirts. The amount of money that is available in your account will be always shown on the screen.

At the end of the experiment, your earnings will be converted to U.S. dollars and awarded to you. The conversion rate is such that the highest possible earnings from this task are about $2.5. The lowest possible earning is $0, even if you go over budget and have negative earnings in Kents. In other words, you will be paid extra $0-$2.5 based on your performance in this task in addition to your regular $10 participation compensation."

To achieve the goal of purchasing eight shirts at the lowest possible total cost, the consumer must solve the price shopper's dilemma and plan how to search for low prices now and in the future. Two types of plans can be optimal. The first requires extensive incremental search and proceeds in two phases. In phase 1, the shopper visits all stores until the identity of the HILO store is learned. That is, on each trip all three stores are visited and the lowest priced shirt is purchased. Eventually, the HILO store will be revealed by a price change and the shopper will have full knowledge. In phase 2, on each trip, if the EDLP price is lower than the low HILO price, the shopper will make all her purchases in the EDLP store. If the EDLP price is higher than the high HILO price, then the consumer should stick with the HILO store and purchase all her shirts there. However, if the EDLP price is between the low and high HILO prices, then the shopper can engage in an "optimal cherry-picking" strategy. That is, she would visit the HILO store first. If the price there is low, make the purchase. If the price there is high, she would switch to the EDLP store to make the purchase.

The second type of plan uses minimal incremental search and also proceeds in two phases. Phase 1 is the first shopping trip. All stores are visited and the lowest price shirt is purchased.

Phase 2 is all subsequent trips. During phase 2 only the lowest price store from phase 1 is visited. If the price remains unchanged, a purchase is made. If the price changes, then the shopper has full knowledge and optimal cherry-picking can be used.

Note that both types of plans require exhaustive search on the first shopping trip because this provides essential (but incomplete) information for people to execute their subsequent plans. In both cases, after a reasonable number of trips, the consumer will eventually shop at only 1 or 2 stores. If she has full knowledge, then she will follow an optimal cherry picking strategy and shop at only HILO and EDLP stores. In contrast, if her store knowledge is incomplete (because she adopted a minimal incremental search strategy), then she will shop at only the EDLP store.

Finally, the critical factors determining whether extensive or minimal incremental search is optimal in a given situation include the expected price savings (i.e., the price difference between the EDLP price and the low HILO price) and the total search cost (see Hutchinson and Huang 2008 for details). When the search cost is high relative to potential savings, minimal incremental search strategy is optimal, otherwise extensive incremental strategy is optimal. However, both strategies are viable and perform comparatively well in most cases.

Sub-Optimal Planning

There are a lot of reasons to suspect that people often do not plan optimally. Specifically, as shown by problem solving literature (Newell and Simon 1972; Newell, Shaw, and Simon 1958; Simon et al. 1978), people normally explore only a small subset of possible solutions while solving a particular problem. As a result, they often fail to develop optimal problem solving strategies. This sub-optimal behavior in problem solving literature matches well those marketing findings that consumers engage in inadequate information search before making purchase decisions and often check only a small fraction of available alternatives (Dickson and Sawyer 1990; Hutchinson, Meyer, and Brenner 2008; Lapersonne, Laurent, and Le Goff 1995; Moorthy, Ratchford, and Talukdar 1997; Ratchford 2008; Urbany, Dickson, and Wilkie 1989; Zwick et al. 2003). Possible reasons for this sub-optimal planning may include people's constrained cognitive processing abilities (Alba and Hutchinson 1987; Shugan 1980), their risk aversion (Cox and Oaxaca 1989; Zwick et al. 2003), and their overconfidence in the optimality of the existing solutions (Alba and Hutchinson 2000). Furthermore, it has been demonstrated that one possible reason why people do not appreciate the information value of search is due to their tendency to place more weight in vivid short-run costs without considering possible long-term payoff (Hutchinson and Meyer 1994; Thaler 1980). In sum, we specifically hypothesize that consumers' sub-optimal planning will be primarily reflected in their limited initial information search and their susceptibility to search cost.

H1: Consumers do not plan optimally: (a) Their initial search is often not exhaustive, and (b) search cost inhibits information search.

The Effects of Experience

Given that people often do not plan optimally, it is important to explore whether consumers can learn by themselves over time, with more relevant experience, to plan better and transfer their skills to different product categories or situations.

Past literature on learning and problem solving has shown little positive evidence of skill transfer (Adams 1987; Barnett and Ceci 2002; Catrambone and Holyoak 1989; Gick and Holyoak 1983). These studies suggest that transfer often does not occur between similar but contextually different problems because people cannot make connections between different situations. Differently, in the current research, we propose a positive planning transfer here because as a high-order and meta-cognitive process, previous planning experience can encourage people's introspective awareness to do planning and make them focus on the important features and solutions critical for problem solving (Barnett and Ceci 2002; Morris and Ward 2005).

H2: Experience in one price-shopping context will transfer to a new context: (a) learning strategies will be closer to optimal and (b) performance will be better.

The Effect of Explicit Planning

Explicit planning can make goals more salient and specific and therefore lead to better decision-making (Krantz and Kunreuther 2006). Based on the preference construction literature (Payne, Bettman, and Johnson 1993), consumers' preferences are usually ill defined, and external and environmental cues can help people construct their preferences. Thus, planning might work as an external cue to help people develop more specific goals especially when these goals are not concrete or have not been defined (Bagozzi and Dholakia 1999; Lee and Ariely 2006). Furthermore, it has been shown that specific goals lead to higher levels of performance (e.g, better strategies and better outcomes) than non-specific goals (e.g., "do your best." Earley, Lee, and Hanson 1990; Earley and Perry 1987; Wood, Mento, and Lock, 1987).

Additionally, a good deal of literature has demonstrated the positive role of verbalization in problem solving (Berry 1983; Berardi-Coletta et al. 1995; Gagne and Smith 1962; Stinessen 1985). Specifically, this literature suggests that asking people to talk aloud while trying to solve the problem improves people's performance because the metacognitive processing that is elicited by verbalization can make people focus on the task and the strategy critical for problem solving (Berardi-Coletta et al. 1995; Ericcson and Simon 1980). For example, Berardi-Coletta et al. (1995) varied verbalization instructions across groups in a Tower-of-Hanoi task. In the metacognitive groups, participants were asked to explicitly focus on their psychological processes regarding their understanding of the problem, the strategy they intended to use, and the reasons underlying their strategies (e.g., “How are you deciding which disk to move next?”). There were also control groups in which participants were asked to either think out loud while solving the problem or were given no specific instructions. It was found that the metacognitive groups’ participants produced superior performance when compared with people in the control groups. Since plan construction itself is a reflective and intentional metacognitive process, we propose that having people engage in intentional and explicit plan construction should have a positive effect on their performance by making them focus on metacognitive processes.

H3: Having participants explicitly verbalize their plan will improve their performance .

EXPERIMENT 1

Experiment 1 was designed to test our hypotheses.

Method

Experiment Design. First, in an attempt to understand people’s dynamic planning and their ability to transfer their learning to a different product category, participants were asked to perform two shopping tasks. The first was to take 8 shopping trips to purchase eight shirts of different colors, and the second was to take another 8 trips to purchase 8 watches of different colors.

There were 3 primary between-subject independent variables: the number of stores (2 vs. 3), search cost (high vs. low), and whether people were asked to do "explicit planning" or not during the first task. The number of stores was manipulated to test hypothesis 1(b) by varying the amount of total search cost and having participants face either 2 or 3 stores among which there was an EDLP store, a HILO store, and 0 or 1 EDHP stores.

We fully counterbalanced how the high and low HILO store prices would alternate across shopping trips. Given that participants would encounter these two prices an equal number of times in our study, for each product, we individually randomized the first 6 trips as either High or Low (but always with 3 HIs and 3 LOs). However, to provide a uniform measure of learning and optimality, the 7th and 8th trips were always HI then LO for people in the shirt shopping task, and LO then HI in the watch shopping task.

The final design for Experiment 1 was a 2 (product: shirt vs. watch) x 8 (shopping trips) x 2 (cost of store visit: 20 vs. 2.5 Kents) x 2 (explicit planning on the first round: yes vs. no) x 2 (number of stores visited: 2 vs. 3) mixed design where product and trip were within-subject and cost, planning, and number of stores were between-subject factors. Appendix A displays the prices for all the stores in both experiments; however, the key prices were 90 Kents for the EDLP store and 60 Kents for the low HILO price.

Participants and Procedure. The participants were 204 students from an East Coast university who received $10 monetary compensation for participating in the experiment, plus a performance-based bonus.

All materials and instructions were presented on a computer located in individual cubicles. Experiment procedure was consistent with the instructions we descried earlier in the "Optimal Plans for A Multi-Store Price Search Task" section.

After following the instructions and purchasing all 8 shirts, participants performed a similar task and purchased 8 watches of different colors in another set of stores that were said to be in the same country. Both budget and cost for the watch task equaled 2.4 times that of those in the shirt task in order to test people's ability to transfer their learning to a different task environment. Appendix B presents some examples of computer screen shots during the experiment. As can be seen, people's expenses and remaining budgets for both overall and a specific trip were always present on the screen.

Before each of their shopping trips in the first round of the task (i.e., shirt shopping), "explicit planning" participants answered a set of questions regarding their store visit plans including the number of different stores and total stores they were going to visit, what were these specific stores, and what was their intended sequence of visits. There was no explicit planning in the watch shopping task. Throughout the whole process, data including the specific stores they visited, the sequence of their visit, and their cumulative budget were recorded by the computer.

Dependent Measures

In order to test our hypotheses, we developed seven indices to measure people's planning and performance. The first two were the number of people who adopted the potentially optimal strategies (i.e., extensive incremental search or minimal incremental search strategy). In the current experiment, extensive incremental search strategy is optimal when the cost is low, and minimal incremental search strategy is optimal when the cost is high.

The third and fourth dependent variables were the number of people who engaged in exhaustive search on either their first trip or their first two trips. These two indices relate closely to hypothesis 1(a) that people often do not plan optimally and examine only a fraction of available information. Conducting exhaustive search on initial trips is an important indicator that individuals realize the value of information and are willing to incur search cost at earlier stage for a long-term payoff. In all conditions, it was optimal to search exhaustively on the first shopping trip.

The fifth dependent variable was the number of people who followed the optimal cherry-picking strategy on the last two shopping trips (i.e., visit the HILO store first, if the price is low, make the purchase; if the price is high, switch to the EDLP store). Remember that in our experiment design, the last two trips were made identical across participants (i.e., the 7^{th} and 8^{th} trips were always HI then LO in the shirt shopping task, and LO then HI in the watch shopping task). This is an important index for measuring degree of learning, even if the plan for learning was sub-optimal.

The next dependent variable was the number of people who either followed the optimal cherry-picking strategy or visited and purchased only from the EDLP store. We refer to these as “learners” because all of these participants ultimately behaved in a manner consistent with one of the two optimal strategies.

Finally, the seventh dependent variable was participants’ performance-based economic payoff. Although this index does not depict people’s planning behavior directly, it is a good, pragmatic indicator of people’s decision quality.

Results will be discussed for each of these dependent variables in terms of whether they support our hypotheses or not, and table 1 summarizes all of these hypotheses test results.

Insert table 1 about here

Results

Extensive incremental and minimal incremental search strategy Adoption. Overall, 25 out of 204 participants conformed exactly to the extensive incremental search strategy and another 7 people conformed exactly to the minimal incremental search strategy. This overall finding supported our hypothesis 1 that people usually do not plan optimally because only around 12% of consumers adopted theoretically rational strategies.

Figure 1 displays the distribution of these “extensive incremental search strategy” and “minimal incremental search strategy” people as a function of high vs. low cost for both experiments. As can be seen, 20 out of 25 “extensive incremental search” people in experiment 1 were in the “low-cost” condition (χ^2 (1) = 5, p = .02). On the other hand, 5 out of 7 “minimal incremental search” people were in the “high-cost” condition. These results are consistent with the fact that extensive incremental search strategy is optimal when search cost is low, and minimal incremental search strategy is optimal when price is high. However, they also mean that only 25 people in total were strictly optimal, supporting hypothesis 1.

Insert figure 1 about here

Next, partially supporting our hypothesis 2, experience had positive effects on extensive incremental search strategy adoption (16 out of 25 “Extensive incremental strategy” adoptions happened in the round 2 of the experiment; χ^2 (1) = 1.96, *p* = .16) but negative effect on the adoption of minimal incremental search strategy (only 2 out of 7 “Minimal incremental strategy” adoptions happened in the round 2). Finally, in terms of the effect of explicit plan construction on the adoption of both strategies, the effect is weak in that 5 out of 9 extensive incremental search strategy adoptions and 3 out of 5 minimal incremental search strategy adoptions on round 1 belong to the “planning” condition.

Initial Exhaustive Search. The number of people who conducted exhaustive search on their first and first two shopping trips is important indices of optimal metacognitive planning because they indicate that people realized the value of information search and conducted exhaustive search as early as possible. As mentioned earlier, for both extensive and minimal incremental search strategies, the shopper is to conduct exhaustive search on the first trip; and for the extensive incremental search strategy, the shopper must conduct exhaustive search on at least the first two shopping trips.

First, 55% of people conducted exhaustive search on their first shopping trip, and 31% of people did exhaustive search on both trip 1 and trip 2. These results supported hypothesis 1(a) that many consumers do not follow optimal plans and do not understand the information value of search. However, given that these numbers are much higher than those for adoption of extensive and minimal incremental search strategies, the results can be described as “half empty, half full”. Particularly, it is good that more than half of the participants demonstrated the right intuition to conduct initial exhaustive search, although there is still room for them to improve their performance.

There was a main effect of the magnitude of search cost. The low-cost condition encouraged more exhaustive search on trip 1 and on both trips when compared with the high-cost condition (exhaustive search-1st trip: low-cost vs. high-cost was 61% vs. 49%, $\chi^2 = 9.28$, $p = .004$; exhaustive search-1st and 2nd trip: low-cost vs. high-cost was 42% vs. 21%, $\chi^2 = 17.71$, $p < .0001$). Furthermore, the main effect of the number of stores was also significant in that more people did exhaustive early search in the 2-store condition than in the 3-store condition (exhaustive search-1st trip: 2-store vs. 3-store was 67% vs. 43%, $\chi^2 = 24.47$, $p < .0001$; exhaustive search-1st and 2nd trip: 2-store vs. 3-store was 42% vs. 20%, $\chi^2 = 20.69$, $p < .0001$). The fact that people's performance was susceptible to the magnitude of search cost provides further support to hypothesis 1(b) that people are often short-sighted and having a limited appreciation of information value. They are reluctant to incur the search cost in order to gather information for possibly subsequent greater payoff. No other main or interaction effects were significant.

Second, as shown on the left side of figure 2, consistent with hypothesis 2, more experience enhanced exhaustive early search. Here for both exhaustive search on the 1st trip and exhaustive search on both 1st and 2nd trips, we subtract the percentage of "exhaustive search" people on round 1(i.e., shirt shopping task) from the percentage on round 2 (i.e., watch shopping task). In terms of the exhaustive search on the first trip, this difference was significantly greater than 0 (Difference = 64% - 46% = 18%, $\chi^2 = 8.27$, $p = .004$). And the same pattern emerged when looking at exhaustive search on both 1st trip and 2nd trip (Difference = 38% - 24% = 14%, $\chi^2 = 9.08$, $p = .003$). In addition, low search cost was found to encourage the transfer of this early exhaustive search when compared with high search cost ($\chi^2 = 4.89$, $p = .03$ for the exhaustive search on the 1st trip; and $\chi^2 = 3.05$, $p = .08$ for the exhaustive search on both 1st and 2nd trips). Specifically, in the low-cost condition, 74% of participants did exhaustive search on the 1st trip on round 2, whereas this percentage was only 49% on round 1 ($\chi^2 = 23.27$, $p < .0001$). Similarly, 52% of people conducted exhaustive search on both trip 1 and trip2 on round 2 and this percentage was only 31% on round 1 (χ^2 = 13.29, p = .0003). In contrast, in high-cost condition, this increase in early search tendency from round 1 to round 2 was less or not significant for both "exhaustive search on the first trip" (Difference = 55% - 43% = 12%, χ^2 = 4.24, p = .04) and "exhaustive search on both trip 1 and trip 2" (Difference = 25% - 16% = 9%, χ^2 = 1.17, p = .28). No other main or interaction effects were significant.

Insert figure 2 about here

Next, in terms of the effect of explicit planning on initial exhaustive search, there was no significant explicit planning effect, although as depicted by figure 3 (left side), the direction of the data was consistent with hypothesis 3 (exhaustive search-1st trip: non-planning vs. planning was 45% vs. 47%, $\chi^{2=}$ 0.21, p = .90; exhaustive search-1st and 2nd trip: non-planning vs. planning was 21% vs. 27%, χ^2 = 1.01, p = .31).

Insert figure 3 about here

Optimal Cherry-Picking on the Last Two Shopping Trips. The next index we were focusing on was the number of people who were optimal cherry-picking on both the 7th and 8th shopping trips. Overall on the first round of the experiment, there were 35% of people who followed this pattern, and this number increased to 45% in the round 2, supporting hypothesis 1 that many people did not adopt the optimal strategy on the last two shopping trips. In addition, for the overall results across rounds, there were more people adopting the optimal strategy in the 2-store condition (2-store vs. 3-store, 51% vs. 29%, $\chi^2 = 16.18$, $p < .0001$) and in the low-cost condition (low-cost vs. high-cost, 49% vs. 32%, $\chi^2 = 9.92$, $p = .002$), further supporting hypothesis 1 (b) that people are often short-sighted and subject to the influence of both unit and total magnitude of search cost.

Second, in order to test the effect of experience on optimal cherry-picking (H2), we subtracted the percentage of people who were optimal cherry-picking on their last two shopping trips in the round 1 from that in the round 2 and then tested whether this difference was greater than 0. Results are depicted in figure 4 (left side). Supporting hypothesis 2, more people adopted this strategy in the second shopping task than in the first shopping task (Difference = 0.45 - 0.35 = 0.10, $\chi^2 = 6.78$, $p = .01$). Furthermore, there was an effect of search cost on this strategy transfer in that the increase in optimal strategy adoption from round 1 to round 2 was only significant in the high-cost condition (Difference = 41% - 23% = 18%, $\chi^2 = 12.09$, $p = .0005$) but not in the low-cost condition (Difference = 50% - 48% = 2%, $\chi^2 = 0.04$, $p = .84$). No other main effect or interactions were significant.

Insert figure 4 about here

Finally, when testing hypothesis 3 from the perspective of the effect of explicit planning on strategy adoption, we focused in the round 1 of the experiment because explicit planning was manipulated at this stage. Although the direction of the data was consistent with our hypothesis, (non-plan vs. plan, 33% vs. 36%), the effect of planning on the optimal strategy adoption was not significant ($\chi^2 = 0.02$, $p = .88$). When looking at each combination of number of stores and search cost, this planning effect was marginally significant in the "3-store" and "low-cost" condition (non-plan vs. plan, 22% vs. 44%, $\chi^2 = 2.88$, $p = .08$) but not in other conditions (ps > .25). Given that when the search cost is high, the minimal incremental search strategy is optimal and cherry picking on the last two shopping trips is not the only strategy that can result from this minimal incremental search strategy (e.g., people can also visit only EDLP store throughout all the trips after the first exhaustive search), the lack of planning effect on overall results was not surprising.

Being A "Learner" on the Last Two Shopping Trips. Overall on both rounds, about 60% of people were "learners" who either followed the optimal cherry-picking strategy as discussed or visited and purchased only from the EDLP store. On the one hand, this finding supports hypothesis 1 that 40% of people did not demonstrate any real learning; on the other hand, it is good that more than half of the participants learned to some extent. Supporting hypothesis 1(b), there were more learners in the 2-store condition than in the 3-store condition (68% vs. 51%, $\chi^2 = 10.59$, $p = .001$).

We then subtracted the percentage of learners in the round 1 from that in the round 2 to test whether or not there was an effect of experience on learning (H2). It was found that people's learning did not differ between rounds ($\text{Difference}_{\text{Learner Percentage}} = 0.58 - 0.60 = -0.02$; $\chi^2 = 0.34$, $p = .56$). No other main or interaction effects were significant. Thus, hypothesis 2 was not supported in terms of the percentage of learners. Combining this result with the significant experience effect on optimal cherry-picking, especially in the high-cost condition as discussed earlier, it is evident that many people who followed the "only EDLP" strategy on round 1 switched to optimal cherry-picking on round 2. Particularly, around 27% of the participants who adopted the "only EDLP" strategy on the 1st task switched to the optimal cherry-picking in the 2nd task. This switch rate is greater in the high-cost condition than in the low-cost condition (31% vs. 18%). In addition, among the learners in the 1st task, 69% were also learners in the 2nd task. Since there were also people who did not show any learning at all during the first task becoming a learner in the second task, the final percentage of the learners remained the same for both rounds.

We next tested hypothesis 3 regarding the effect of explicit planning on round 1, and found that there was a marginally significant main effect of explicit planning on the rate of learners (non-plan vs. plan, 55% vs. 67%, $\chi^2 = 2.86$, $p = .09$) in that when we adopted a broader category of learning, asking people to construct their plan explicitly improve their performance.

Final Economic Payoff. Final economic payoff is necessarily decreased as number of stores and search costs increase. Therefore, it was reasonable to test only the effect of explicit planning and experience on this variable. First, after transforming the monetary payoff in the 2nd round to be on the same scale as in the 1st round (i.e., divided by 2.4), there was a main effect of experience on final economic payoff (F (1, 196) = 8.08, p = .005, 2nd round vs. 1st round: 314 Kents vs. 300 Kents), supporting H2. The effect of the explicit plan construction on final payoff in the first round was marginally significant (F (1, 196) = 2.94, p = .08, non-planning vs. planning: 294 Kents vs. 309 Kents), supporting H3.

Discussion

Our results from experiment 1 provided support for most of our hypotheses, and showed that although nearly 60% of people can be classified as "learners", only a small fraction of them were consistent with optimal planning from the very beginning (i.e., only around 12% participants appropriately adopted the extensive or minimal incremental search strategy). Most people did not do all of their incremental search early. Specifically, among the people who visited all the available stores across all the trips for each product (95% in the 2-store condition and 93% in the 3-store condition), only 71% in the 2-store condition and 46% in 3-store condition conducted this exhaustive search on their first shopping trip. Appendix C displays one example of participants' dynamic search pattern in the 3-store condition. It can be seen that most search behavior exhibited searching too little at the very beginning and searching too much toward the end when compared with optimal strategies.

Now it is important to see whether these results can be generalized to other situations. Specifically, our experimental combinations in experiment 1 were relatively simple (i.e., either 2 or 3 stores). However, in the real life, consumers usually face multiple stores. Thus, we need to show that our results hold in more complex environments with more stores. For example, can consumers still learn over time when facing a complicated situation? Will there be a role of explicit planning in enhancing people's performance when the task becomes more difficult? Experiment 2 was designed to investigate these questions. Another purpose of experiment 2 was to explore whether a very high search cost is necessary to encourage people to minimize their search and adopt minimal incremental search strategy.

EXPERIMENT 2

Method

Three hundred and one students participated in the experiment in return for $10 monetary compensation. The design, materials and procedure in experiment 2 were the same as in experiment 1 except for the following changes. First, the two cost conditions were 7.5 vs. 2.5 Kents and the number of stores was either 3 or 5 (see Appendix A for the prices of different stores). Second, since this time the high cost is much lower than the previous one, participants were given 900 Kents (rather than 1,100) for their shirt shopping trips (i.e., 112.5 Kents on average for each trip), and again both budget and cost for the watch task equaled 2.4 times of those in the shirt task in order to test people's ability to transfer their learning to a different task environment. Finally, after comparing search cost with potential savings, as in experiment 1, extensive incremental search strategy is optimal for the low-cost and the 3-store/high-cost condition, and minimal incremental search strategy is optimal for the 5-store/high-cost condition.

Results

Extensive incremental search strategy and minimal incremental search strategy Adoption. There were 7 out of 301 participants adopted extensive incremental search strategy and another 7 people adopted minimal incremental search strategy (see figure 1). These results supported hypothesis 1 that people usually do not plan optimally. The difference of the percentage of "extensive incremental search strategy" people between experiment 1 and experiment 2 (12% vs. 2%) further supports hypothesis 1(b) that people's performance is negatively influenced by the perceived magnitude of search cost (i.e., more search is needed in the 3 vs. 5-store situation than in the 2 vs. 3-store situation). Furthermore, consistent with our proposition, 6 out of 7 extensive incremental search people were in the "low-cost" or 3-store/high-cost conditions. However, only

3 out of 7 minimal incremental search strategy people were in the 5-store/high-cost condition, supporting one of our conclusions from experiment 1 that people tend to search too much or too little.

Next, consistent with hypothesis 2, experience had positive effects on extensive incremental search strategy adoption (5 out of 7 such adoptions happened in the round 2) but little effect on the adoption of minimal incremental strategy (3 out of 7 such adoptions happened in the round 2). In terms of explicit plan construction effect (hypothesis 3), both 2 "extensive incremental search" people on round 1 were in the "explicit planning" condition, but only 1 out of 4 "minimal incremental search" people belonged to the planning condition. Thus, the direction of the results supported our hypotheses, although the effects were not significant due to the small number of people consistent with optimal planning.

Initial Exhaustive Search. Recall that optimal planning requires exhaustive search on the first shopping trip, and extensive incremental search (which is optimal in all conditions except for high cost for 5 stores) requires exhaustive search on the first and second shopping trips. Overall, 33% of people conducted exhaustive search on their first shopping trips and 11% of them did exhaustive search on both trip 1 and trip 2, supporting hypothesis 1(a) that consumers do not follow optimal plans and do not understand the information value of search. However, as in experiment 1, given that these numbers are much higher than those for adoption of extensive and minimal incremental search strategies, these results also show that a substantial minority had the intuition about the value of early search, even if their behavior was not completely consistent with optimal planning.

Similar to experiment 1, the low-cost condition encouraged more exhaustive search than the high-cost condition (exhaustive search-1st trip: low-cost vs. high-cost was 39% vs. 28%, $\chi^2 =$ 5.64, p = .02; exhaustive search-1st and 2nd trip: low-cost vs. high-cost was 14% vs. 7%, χ^2 = 5.64, p = .02). Furthermore, more people did exhaustive early search in the 3-store condition than in the 5-store condition (exhaustive search-1st trip: 3-store vs. 5-store was 47% vs. 20%, $\chi^2 =$ 33.04, p < .0001; exhaustive search-1st and 2nd trip: 3-store vs. 5-store was 17% vs. 4%, χ^2 = 29.37, p < .0001). Thus, hypothesis 1 was supported.

Second, as shown on the right side of figure 2, supporting hypothesis 2, more experience enhanced exhaustive early search. Again for both exhaustive search on the 1st trip and exhaustive search on both 1st and 2nd trips, we subtract the percentage of such people on round 1 from the percentage on round 2. This difference was significantly greater than 0 for exhaustive search on the first trip (Difference = 41% - 26% =15%, χ^2 = 28.97, p < .0001). The same pattern emerged for exhaustive search on both 1st trip and 2nd trip (Difference = 14% - 7% = 7%, χ^2= 22.56, p < .0001).

In addition, for exhaustive search on the 1st trip, there was a main effect of the number of stores (χ^2 = 5.36, p = .02), a main effect of the search cost (χ^2 = 6.81, p = .01), and an interaction between the number of stores and the cost on exhaustive search transfer from round 1 to round 2 (χ^2 = 6.25, p = .01). Contrast analyses revealed that low search cost encouraged the transfer of early exhaustive search when compared with high search cost only in the 3-store condition (overall, χ^2 = 10.69, p = .001; for the high-cost, $\text{Difference}_{\text{round2-round1}}$ = 47% - 39% = 8%, χ^2 = 1.20, p = .27; for the low-cost, $\text{Difference}_{\text{round2-round1}}$ = 66% - 34% = 32%, χ^2 = 39, p < .0001) but not in the 5-store condition (overall, χ^2 = 0.01, p = .93; for the high-cost, $\text{Difference}_{\text{round2-round1}}$ = 17% - 9% = 8%, χ^2 = 4.81, p = .03; for the low-cost, $\text{Difference}_{\text{round2-round1}}$ = 32% - 23% = 9%, χ^2 = 2.28, p = .13).

Similarly, for exhaustive search on trip 1 and trip 2, there was a main effect of the number of stores ($\chi^2 = 13.21$, $p = .0003$), a main effect of the search cost ($\chi^2 = 3.26$, $p = .07$), and an interaction between the number of stores and the cost on exhaustive search transfer from round 1 to round 2 ($\chi^2 = 5.89$, $p = .01$). Contrast analyses revealed that low search cost encouraged the transfer of early exhaustive search when compared with the high search cost only in the 3-store condition (overall, $\chi^2 = 5.83$, $p = .01$; for the high-cost, $\text{Difference}_{\text{round2-round1}} = 17\% - 10\% = 7\%$, $\chi^2 = 1.70$, $p = .19$; for the low-cost, $\text{Difference}_{\text{round2-round1}} = 33\% - 10\% = 23\%$, $\chi^2 = 16.74$, $p < .0001$) but not in the 5-store condition (overall, $\chi^2 = 0.41$, $p = .52$; for the high-cost, $\text{Difference}_{\text{round2-round1}} = 2\% - 1\% = 1\%$, $\chi^2 = 1.52$, $p = .26$; for the low-cost, $\text{Difference}_{\text{round2-round1}} = 4\% - 7\% = -3\%$, $\chi^2 = 0.63$, $p = .43$). Thus, when the perceived search cost is too high (i.e., 5-store condition), experience does not improve people's appreciation of the value of information search.

Finally, there was no significant explicit planning effect on the early search pattern, although as depicted by figure 3 (right side), the direction of the data was consistent with hypothesis 3 (exhaustive search-1st trip: non-planning vs. planning was 32% vs. 35%, $\chi^2 = 1.1$, $p = .29$; exhaustive search-1st and 2nd trip: non-planning vs. planning was 7% vs. 8%, $\chi^2 = 0.47$, p = .49).

Optimal Cherry-Picking on the Last Two Shopping Trips. Only 19% and 26% of participants exhibited optimal cherry-picking on the first and second rounds, respectively, supporting hypothesis 1 that few people adopted the optimal strategy. In addition, there was an effect of the number of stores in that more people exhibited optimal cherry-picking in the 3-store condition than in the 5-store condition (3-store vs. 5-store, 25% vs. 18%, $\chi^2 = 4.36$, $p = .04$).

Supporting hypothesis 2 (see right side of figure 4), more people exhibited optimal cherry-picking in the second shopping task than in the first shopping task (optimal cherry-picking people rate$_{\text{Round 2-Round 1}}$ = 0.26-0.19 = 0.07, χ^2 = 3.92, p = .05). There was also a main effect of search cost on this strategy transfer (χ^2 = 3.03, p = .08) in that the increase in optimal cherry-picking from round 1 to round 2 was only significant for the low-cost condition (Difference = 0.32 - 0.19 = 0.13, χ^2 = 4.63, p = .03) but not for the high-cost condition (Difference = 0.21 - 0.24 = -0.03, χ^2 = 0.01, p = .94). No other main effect or interactions were significant. Given that in experiment 1, high cost encouraged the optimal strategy transfer and the magnitude of low cost in both experiments was the same, it seems that the really high cost plus the relatively simpler environment in experiment 1 increased people's motivation to learn through experience.

Then from the perspective of the effect of explicit planning on strategy adoption on round 1, a main effect of planning was found (χ^2= 3.99, p = .04) in that asking people to construct their plan explicitly encouraged the adoption of optimal cherry-picking (non-plan vs. plan, 17% vs. 26%). Thus, hypothesis 3 regarding the effect of explicit plan construction on people's performance was supported.

Being A "Learner" on the Last Two Shopping Trips. There were 42% and 47% learners, respectively, on round 1 and round 2, supporting hypothesis 1 that people usually do not behave optimally. The number of learners did not differ between rounds (Learner Percentage$_{\text{Round 2-Round 1}}$ = 0.42 - 0.47 = -0.05; χ^2= 1.54, p = .21). Given that the experience effect was significant for optimal cherry-picking in the low-cost condition, it is obvious that a lot of people who followed the "only EDLP" strategy on round 1 switched to optimal cherry-picking on round 2. Particularly, among the 20% of the participants who adopted the "only EDLP" strategy in the 1st task, 25%

switched to the optimal cherry-picking in the 2nd task. This switch rate was greater in the low-cost condition than in the high-cost condition (28% vs. 22%). In addition, among the learners in the 1st task (42% of the participants), 57% remained learners in the 2nd task. Since there were also people who did not show learning during the first task who became learners in the second task, the final percentages of the learners were similar on both rounds.

Finally, supporting hypothesis 3, we found a significant main effect of explicit planning on the percentage of learners in the first round (non-plan vs. plan, 36% vs. 48%, $\chi^2 = 6.35$, $p = .01$).

Final Economic Payoff. There was a marginal main effect of experience on participants' final economic payoff (F (1, 292) = 2.41, $p = .10$, 2nd round vs. 1st round: 152 Kents vs. 143 Kents). Furthermore, the effect of the explicit plan construction on this final payoff was statistically significant (F (1, 292) = 4.08, $p = .04$; non-planning vs. planning: 126 Kents vs. 151 Kents). Thus, both hypothesis 2 and hypothesis 3 were supported.

Discussion

Results from experiment 2 basically replicated results from experiment 1. It was demonstrated that the more complex environment (i.e., 3 vs. 5-store) discouraged information search and adoption of optimal strategy when compared with the simpler situation in experiment 1. Similar to experiment 1, people either search too little or too much. Among the people (97% in the 3-store condition and 73% in the 5-store condition) who visited all the available stores in each task, most of them (75% in the 5-store condition and 53% in the 3-store condition) did not search as early as the two optimal plans require. However, both experience and explicit planning intervention can work well to enhance consumer planning.

General Discussion

The goal of the current research was to investigate consumer planning and learning in multi-store price search task. To our knowledge, our work is the first in marketing that systematically investigates consumers' dynamic planning from a metacognitive perspective. In two simulated shopping experiments, we hypothesized and found that consumers often do not plan optimally and do not appreciate the value of early information search. They are often short-sighted and susceptible to the influence of the perceived search cost. When this cost is high (e.g., high single unit of search cost and multiple stores), they are reluctant to pay the cost to gather information that may lead to the greater long-term payoff. Their information search pattern exhibited searching too little at the very beginning and searching too much toward the end in repeated shopping experience when compared with optimal strategies. Fortunately, consumers can learn from relevant experience to transfer their planning to a different product category in an efficient way. Furthermore, by the use of a simple intervention (i.e., explicitly constructing their plans), people's planning can be improved.

Although we focus on multi-store price search in the current research, future studies should explore whether our findings can be generalized to different problems such as search for product utility based on multiple attributes. Furthermore, since the cost of our everyday information search is often in the form of time rather than money, it would be important to see whether our results will hold when time is manipulated as search cost. Zauberman and Lynch (2005) demonstrated that time is discounted faster than money and people expect the growth of slack for time in the future will be more pronounced than for money. Thus, it is possible that given the higher level of time discounting, individuals may be reluctant to spend time in their actual search behavior and therefore perform worse when compared with the “money as cost” condition.

Another important question is why participants’ spontaneous planning is not as effective as the explicit planning mode. Our explanation is that asking people explicitly construct their plans may in some sense cause strategic changes and make them focus on goal-directed and strategy-oriented metacognitive process. Future research should explore other types of interventions that are effective in eliciting consumers’ strategy-directed metacognitive process. It is also critical to explore how to generalize these interventions to real life to help people achieve satisfactory purchases. In other words, what is the appropriate format for encouraging people to do explicit planning in the real world (e.g., advertising, personal advising, etc.)?

We also show that one important aspect of consumer planning is that they did not conduct enough information search when the search cost is relatively low and did too much search when the cost is high. These results validate previous research findings (e.g., Ratchford 2008; Zwick et al. 2003) and also raise a further research question about how to improve people’s appreciation of information value (e.g., what effective external cues can be used?) in order to enhance their planning quality.

Our findings have important implications for marketers, consumers, and policy makers. On the “evil” side, marketers can manipulate external cues to encourage consumers’ impulse purchases and discourage their effortful planning. However, on the “good” side, consumers can intentionally train themselves to make high-quality plans in order to achieve satisfactory product purchases, and policy makers can develop appropriate regulatory interventions and recommendations that can be helpful for both marketers and consumers.

APPENDIX A
PRICES OFFERED BY EACH STORE IN EXPERIMENTS 1 AND 2 (Kents)

2-Store Condition (Experiment 1)

EDLP	HILO
90	60 vs. 120

3-Store Condition (in both Experiments 1 and 2)

EDLP	HILO	EDHP
90	60 vs. 120	130

5-Store Condition (Experiment 2)

EDLP	HILO	EDHP1	EDHP2	EDHP3
90	60 vs. 120	100	110	130

APPENDIX B
EXAMPLES OF THE SCREENSHOTS PARTICIPANTS WERE EXPOSED TO DURING THE EXPERIMENT

What Participants See before Entering the Store

WELCOME!

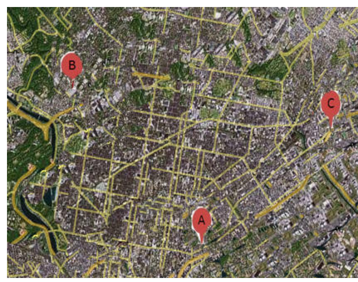
This is your SEVENTH shopping trip and you are supposed to purchase a blue shirt. To shop at any store, please CLICK on the store name to see the price of the shirt. You may visit as many stores as you want. After you have purchased the shirt, you will proceed to the next shopping trip for a different-color shirt.

Total Budget: 900 Kents.	**Average Budget/Trip: 112.5 Kents.**
Spent so far for 6 trips: 638 Kents.	**Remaining budget for this trip: 105 Kents.**
Remaining Budget: 262 Kents.	**Under (Over) from previous trip: 0 Kents.**

A Massa Shopping Mall

B Hunjj Shopping Place

C Blarg Department Store



What Participants Saw in the Store

Tailored Dress Shirt

Fine lines texture a tailored-fit dress shirt styled with a point collar and double back pleats.

Price: **90 Kents**

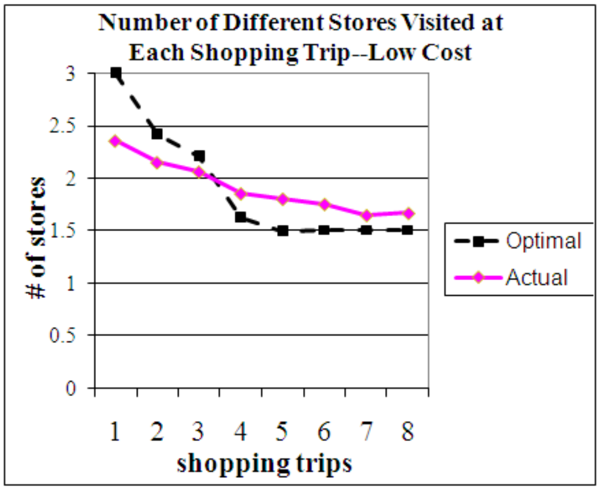
I haven't decided and would like to visit other stores>>

Purchase this shirt>>

Total Budget: 900 Kents.	**Average Budget/Trip: 112.5 Kents.**
Spent so far for 6 trips: 645.5 Kents.	**Remaining budget for this trip: 97.5 Kents.**
Remaining Budget: 254.5 Kents.	**Under (Over) from previous trip: 0 Kents.**

APPENDIX C
EXAMPLES OF THE DYNAMIC INFORMATION SEARCH PATTERN IN 3-STORE CONDITION OF EXPERIMENT 1

When Store Visit Cost was Low and Extensive Strategy was Optimal



When Store Visit Cost was High and Minimal Strategy was Optimal

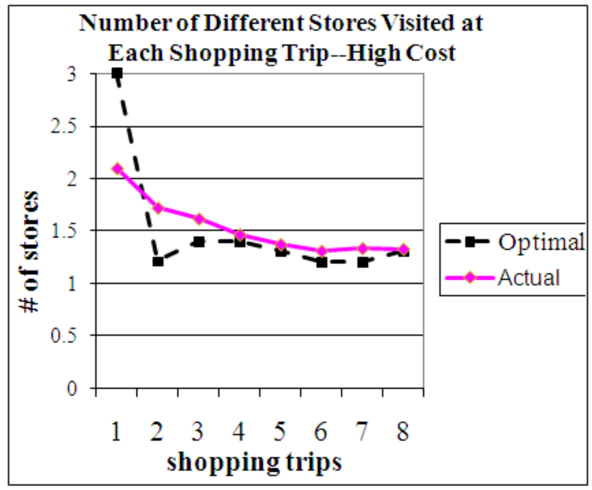


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TABLE 1

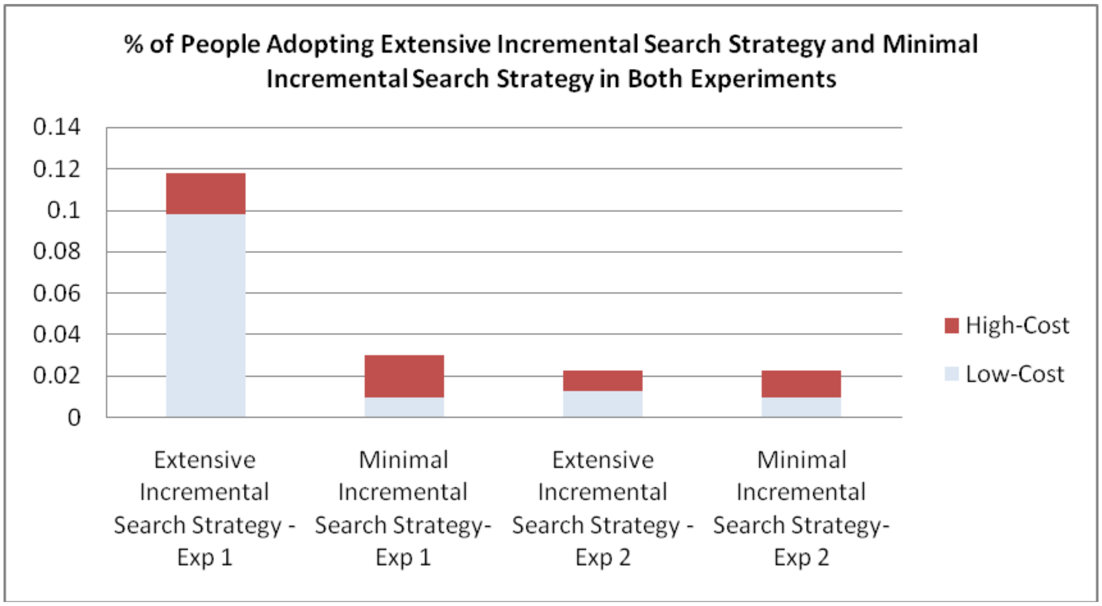
SUMMARY OF EXPERIMENT RESULTS (EXPERIMENTS 1 AND 2) IN TERMS OF HYPOTHESES TESTING

		Hypothesis		
Dependent Variables		**Overall Performance (H1)**	**Experience (H2)**	**Explicit Planning (H3)**
Adoption of extensive incremental search strategy and minimal incremental search strategy	Supported or not (Exp 1)	√	*	*
	Supported or not (Exp 2)	√	*	*
Initial exhaustive search	Supported or not (Exp 1)	√	√	*
	Supported or not (Exp 2)	√	√	*
Optimal cherry-picking on the last two trips	Supported or not (Exp 1)	√	√	*
	Supported or not (Exp 2)	√	√	√
Being a learner on the last two trips	Supported or not (Exp 1)	√	x	*
	Supported or not (Exp 2)	√	*	√
Final monetary payoff	Supported or not (Exp 1)	---	√	*
	Supported or not (Exp 2)	---	√	√

NOTE: "√" = hypothesis was supported by a statistically significant effect, "*" = the direction of data was correct but it was not statistically significant ($p > .05$); "x" = the direction of data was incorrect, but not significant; "---" = not applicable.
Since explicit planning was only manipulated in the shirt shopping task, when testing hypothesis 3 regarding the effect of explicit planning, for all the dependent variables, we focused only on people's performance in this task.

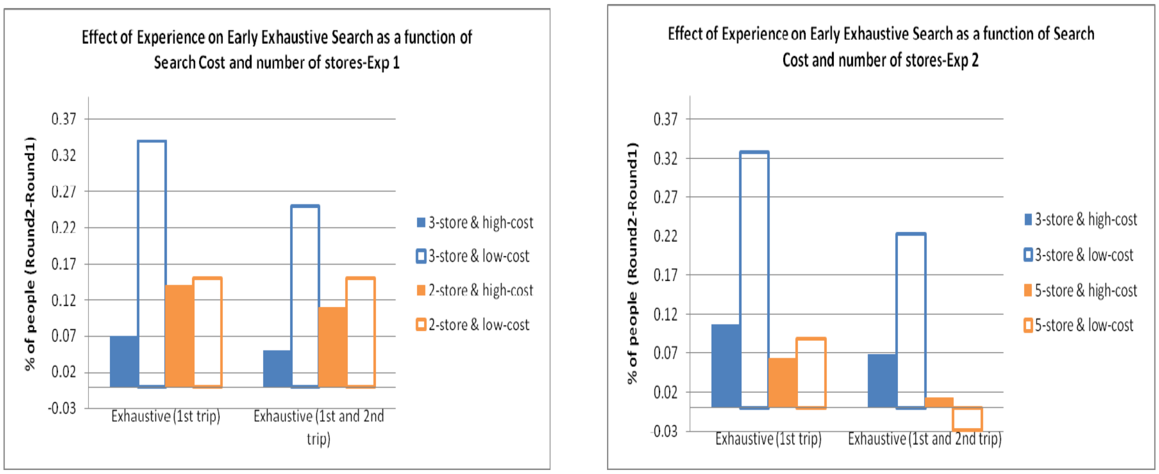
FIGURE 1

NUMBER OF PEOPLE ADOPTING EXTENSIVE INCREMENTAL STRATEGY AND MINIMAL INCREMENTAL STRATEGY AS A FUNCTION OF SEARCH COST IN BOTH EXPERIMENTS



NOTE. Extensive incremental strategy refers to conducting exhaustive search from the first trip until both the HILO and EDLP stores are found. Then people should visit the HILO store first, if the price is low, make the purchase; if the price is high, switch to the EDLP store to make the purchase. Minimal incremental strategy means searching exhaustively only on the first shopping trip and then sticking with the store with the lowest price for the rest of the trips; if the price of this store changes on some later trip, then this store can be identified as the HILO store and people therefore should follow the same post-learning strategy as in Extensive incremental strategy.

FIGURE 2
THE EFFECT OF EXPERIENCE ON EARLY EXHAUSTIVE SEARCH AS A FUNCTION OF SEARCH COST AND NUMBER OF STORES IN BOTH EXPERIMENTS



Notes: Dependent variable as depicted on the Y-axis represents the difference of percentage of people between round 2 and round 1.

FIGURE 3
THE EFFECT OF EXPLICIT PLAN CONSTRUCTION ON EARLY EXHAUSTIVE SEARCH IN BOTH EXPERIMENTS

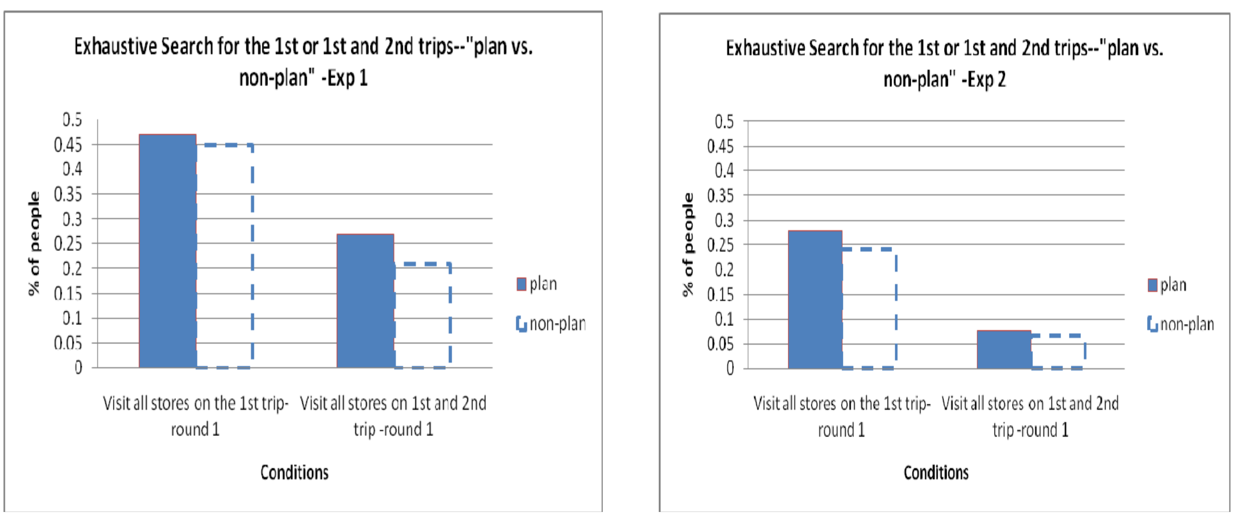
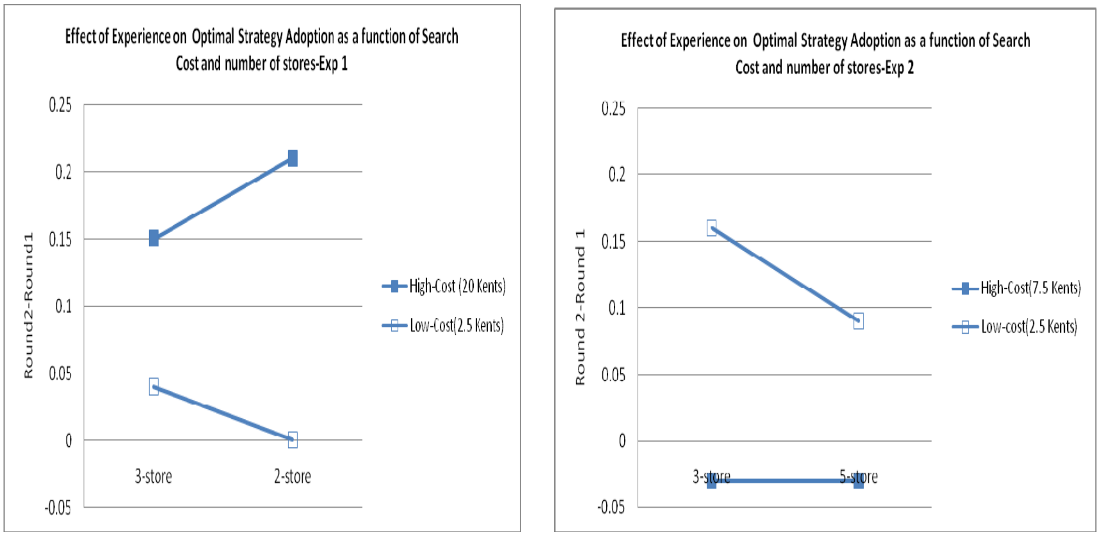


FIGURE 4
THE EFFECT OF EXPERIENCE ON OPTIMAL CHERRY-PICKING STRATEGY ADOPTION AS A FUNCTION OF NUMBER OF STORE AND SEARCH COST IN BOTH EXPERIMENTS



Notes: Dependent variable as depicted on the Y-axis represents the difference of percentage of people between round 2 and round 1.