

# Either/or: The dynamics of choice

July 7, 2011

## **A new study uses eye-tracking techniques to model consumer behavior when confronted with a range of choices.**

When a consumer enters a typical supermarket, they face a staggering range of choices, with some 40,000 items on offer. They can't afford to spend too much time over each decision and need to search for an item under conditions of time pressure and choice overload.

What computational processes people use, how the processes and performance change with the number of options, and how this process can be exploited by sellers are the questions addressed in the paper, [Search Dynamics in Consumer Choice Under Time Pressure: An Eye-Tracking Study](#).

The authors studied these questions by setting up an experimental version of the consumer's supermarket problem. Hungry subjects were presented with sets of four, nine or 16 familiar snack items - ranging from candy bars to potato chips - and were asked to make a choice within three seconds.

## **Main drivers of consumer decisions**

The authors propose and compare three competing models of the computational processes used to make these fast decisions.

The first model assumes optimal search with zero search costs, which implies that subjects search the maximum number of items possible before making a choice, and then choose the best-seen item.

The second model assumes 'satisficing,' which implies that subjects search until they have found a sufficiently good item, or run out of time.

The third model is a hybrid in which subjects search for a random amount of time, which depends on the value of the encountered items, and then choose the best-seen item.

The results of the experiment provide insights into all of the three questions posed above.

First, they found that subjects are good at optimizing within the set of items that they get to see during the search process the seen set. They choose items that are about 70 percent of the way from random to the maximum value in the set.

But since the initial search process is approximately random with respect to value, it is not the case that items with higher value are more likely to be seen.

The study also found that subjects terminate the search process using a stochastic stopping rule that combines elements of optimal search and 'satisficing.'

The experimental design allowed the authors to compare the three alternative dynamic search models of how consumers might search and decide in these complex situations. The results provide strong support in favor of the hybrid model over the other two.

## **Negotiating a wider choice**

The authors also investigated how the search and choice process changed with the number of alternatives, which is a measure of the difficulty of the problem.

They found that subjects respond to the additional pressure by shortening the duration of their fixations by about 60 milliseconds and by searching for about 250 milliseconds longer, thus increasing the number of options that are sampled before making a choice.

However, the shift is modest compared with the increase in the number of items, and as a result, it has only a small impact on the quality of the choices.

Of particular note is the finding that subjects exhibit a bias to look first and more often at items that are placed in certain regions of the display, which they also end up choosing more often.

## To help consumers or manipulate them?

The authors found that the location of the item can affect where the eye fixates and the decision-making process. For example, the first thing people look at is often what they end up choosing.

This feature of the process could be used to influence decisions. Depending on the motives of the individual selecting the display, it could be used to help consumers, e.g., by increasing the likelihood that the high value items are seen - or manipulate them - e.g., by using packaging and in-store displays to increase the probability that they purchase products they would not have bought under more ideal conditions.

The authors hypothesize that similar computational processes might be used by consumers in situations without time pressure, in which they are overwhelmed by a large amount of information.

A typical example would be the selection of an investment portfolio out of a long list of options offered by an investment company. Consumers might only end up considering a fraction of these options, and marketing factors such as location in display, color, font size and style might affect which ones are actually considered and chosen.

An important lesson of the study is that the quality of choices is heavily influenced by the quality of fixations, but consumers might have limited control over their ability to sample the best items.

An area for future research is, therefore, the extent to which consumers can train themselves to deploy better fixations, especially in situations - such as the supermarket aisle - in which sellers might be trying to influence their decisions.

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