**Learning and adaptation to structure in repeated choices**

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**Abstract:**

We tend to model repeated consumer choice as if it is stable, rather than subject to learning and adaptation. Consider how shopping experience shifts when shopping in another country, or how one gradually adapts to searching in the internet. We know very little about how consumers learn to make better choices with less effort through practice. Using eye-tracking of repeated conjoint choices it is possible to characterize learning processes that lead to more efficient choices. Conjoint is particularly useful because prediction to each holdout choice reveals the extent to which a given choice is consistent with the other choices. We show that across four different conjoint tasks that choices become both faster and more accurate with experience with the task. Published work (Meissner et al., JMR 2016) reveal two strategies that increases efficiency. Respondents learn to focus on more important attributes and to more quickly identify attractive alternatives. As respondents adapt their processing strategies to efficiently find a good choice, they also limit their susceptibility to well-known biases. In particular, they are less impacted by incidental fixations that that otherwise might distort choice. Additionally, we find very little evidence of motivated search for positive information that justifies the selection of a promising option.

Using the eye-tracking data from the same studies, it is possible to focus on the factors that reduce effort required to choose. Defining effort as the total fixation time required for a choice, that effort can be usefully decomposed into four dimensions which when multiplied together equal total effort. These are Breadth, the number of information cells accessed in a choice, Depth the number of times an accessed cells is visited, Duration, the average time per fixation, and Focus outside, the ratio of total time divided by time focused on the informative cells. We then find a number of unexpected results about the rates of learning from experience across these dimensions across four different conjoint tasks.

1. *Breadth* reflects the ability to focus on important attributes and promising alternatives. Learning to reduce breadth is greatest with complex choices having many alternatives. However we find there is less adaption in two forms of conjoint task. First, where the conjoint choices involve only pairs, the use of an additive difference strategy encourages evaluating almost all of the information from the top to the bottom. Second, in an incentive compatible conjoint for a desired laptop, breadth had the lowest rate of decline, perhaps because the importance of the decision inhibiting substantial reductions in the amount of information accessed.
2. *Depth,* the average number of fixations declines proportionately more than depth for four the conjoint studies. The average number of fixations is around 3.5 across the studies. With practice depth is less needed because decision makers know how to evaluate an informational cell and use it in their decisions without having to go back to it.
3. *Duration*, the average time per fixation is remarkably stable across studies, and indeed increases slightly on average. That means that the important measure of effort can focus on the number of fixations rather than the time per fixation.
4. *Focus outside* decreases with task experience. Reduction in this outward focus occurs respondents learn the structure of the task and thus know where desired information resides. Further, earlier choices help respondents and understand the meaning of a cell without having to check its label or neighbors. Effort reduction through focus strongest in studies which did not have trial choices, but it is a major part of effort reduction in all cases.