Top Down Summary of Current Eye-Tracking

So far we have found that in simple choices between pairs of foods, pictures, or pictures of politicians, attention has a main effect, but the effect of increased attention shows no interaction with the value of the item being attended. But, we also have studies where a form of interaction effect is found.

At present we have found interaction effects in complex multi-attribute choice tasks including: apartment choice, EQ5D health outcome choices, binary social dilemma choices, and (more weakly) in risky gamble choices. This interaction effect was only present at the level of the individual attribute values, not at the level of the overall item values. However, the “Nikhil” dataset showed no interaction effect at the level of the attributes (when assuming screen position defines attributes). The Nikhil task was the only one where the outcomes were completely identical and simply interpretable: they had the same numeric scale (unlike e.g. apartment choices), the same attribute scale as all were financial payouts (unlike e.g. health choices) and referred to equally likely single outcomes with no associated consequences or information which had to be integrated from other visual locations (e.g. the associated payout for self vs. other in social dilemma choice).

Furthermore, in the EQ5D experiments, there were interesting patterns in attention itself. More attention was given to attributes that had a greater weighting in behavioural responses overall, and more severe (higher value) information was attended to for longer. However, this effect was weak overall, becoming stronger when one controlled for the fact that many choices were dominated, or particularly easy. On many trials, a decision was made before all information had been attended even once, meaning there was little possibility for ever identifying any interaction effect. In the valuation task, there was a noticeably stronger correlation between attention and attribute weighting, and rating severity. Here, the more complex task inherently required participants to consider and integrate all attributes to be able to form a specific rating.

These results initially led us to question whether it is the specific simplicity of those binary choice tasks which results in no interaction effect.

Possibility 1 – Charlotte’s Experiment

One possibility is that in simple binary choice, one often only need assess the two options with very rough accuracy to determine which is better. Thus, if one were forced to make a more specific judgement about the degree or strength of relative preference then this makes the task more complex. Similarly to the EQ5D experiments where valuation requires processing of all the information. This additional depth of processing may result in an interaction becoming evident. This would be a significant advance as it shows that attention has qualitatively different impacts in different tasks, or the interaction effect is only present when depth of processing requirements are high. This is why we ran Charlotte’s experiment. Let’s just say the results have not matched our hypotheses…

Possibility 2 – Devdeepta’s Experiment

Another possibility is that a primary role of attention is to weight different pieces of information when they cannot be thought about or conceived of simultaneously. This would explain why we find the interaction effect in the complex multi-attribute choice tasks, where the different attributes cannot be thought about on the same subjective scale (e.g. pain vs depression in EQ5D, or crime safety vs commute time in apartment choice). It would also explain why there is no interaction in the Nikhil data (everything on the same scale), or the simple binary choices. Therefore, Devdeepta’s experiment was designed to examine whether there is an interaction effect at the attribute level for a task where the attributes are non-commensurate (i.e. can’t easily be thought of on the same scale), but not when they are commensurate. This would be a significant advance as it would be a major component of explaining how different information is weighted and integrated during complex choice. It would also feed into many existing behavioural models that contain an “attention” component, that has never been tested against any actual attention data. The results from Devdeepta’s experiment show that there is no interaction effect in either condition at the level of the item value. We should further develop the analysis to examine whether the interaction effect is present at the attribute level.