EC 490

Lecture 8: Behavioral economics of capuchins

1. Consider the biases routinely reported by behavioral economists (endowment effects, loss aversion, etc.). We might wonder whether people learn these biases through their experience of economic transactions, or whether they're biologically inherited.

2. This question is more complicated than it might at first look. In people, the biases aren't manifest under all circumstances. For example, experimenters can switch the endowment effect on and off by various manipulations of background conditions. Thus if this bias is inherited, what must be inherited is a relatively complex condition-sensitive disposition. This in turn means that the question of whether biases are learned responses or native tendencies is hard to investigate by means of behavioral experiments with humans alone.

3. Two alternative methods suggest themselves. First, one could use neuroeconomics to try to discover if different brain areas are active when a bias manifests versus when it doesn't. People might inherit a neural mechanism that produces a bias except when it is opposed by other parts of the brain. Later in the course we'll examine some studies that apply this idea. The other approach is to try to look for evidence of the bias in other animals with whom people have (relatively) recent common ancestry.

4. Santos and Chen taught capuchin monkeys to trade tokens with which they are endowed by experimenters for food rewards. By manipulating conditions in these simple

experiments, one might gain some purchase on the possible biological roots of behavioral-economic biases. The most recent common ancestor of humans and capuchins lived about 35 million years ago.

5. Capuchins are sensitive to prices. When they begin from indifference between two similarly priced alternative rewards, they will switch to higher consumption of one of them if its relative price exogenously drops. They also track stochastic dominance, which is a necessary condition for expected utility maximization. The authors unfortunately don't report whether they show diminishing marginal substitution, and whether this is reflected in changes in their token valuation as they harvest rewards. Thus we can't say, on the basis of what's reported here, whether capuchin behavior respects the axioms of neoclassical consumer theory.

6. Santos and Chen tested capuchin preferences in two conditions. In condition #1 subjects were shown two pieces of apple, but in 50% of trials received only one piece. In condition #2 subjects were shown one piece of apple, but in 50% of trials received two pieces. Thus all trials had an e.v. of 1.5 pieces. Subjects who were maximizing expected utility would be indifferent between the conditions. The authors report that their capuchin subjects preferred condition #2. However, they don't say how this preference was revealed. Did the capuchins simply choose condition #2 when condition #1 was available, or did they offer more tokens to get condition #2? If the latter, one wants to see the magnitude difference and – very importantly – the degree of variance.

7. In a related experiment, condition #1 always promised the capuchins two pieces while delivering one, while condition #2 always promised one piece and delivered one piece. It's

reported that capuchins chose condition #2 when both conditions were available. This is interpreted as showing that they are averse to perceived losses. However, it is at least as reasonable to interpret it as showing that they are averse to promise breaking. Strangely, the authors literally interpret the experiment as showing that "capuchins avoid gambles that are framed as losses" (p. 89). This just seems flat wrong: the outcomes between which the subjects choose in this experiment aren't gambles, since they always get one piece of apple.

8. We next consider a second pair of related experiments. Each again involved two conditions. In experiment #1, condition #1, the experimenter always promised one piece of apple and always delivered two. In experiment #1, condition #2, the experimenter promised one piece of apple but in 50% of cases delivered one piece and in 50% of cases delivered three pieces. We're told that capuchins preferred condition #1, but again are given no quantitative results and no details on how this preference was revealed. In experiment #2, condition #1, the experimenter promised three pieces but always delivered two. In experiment #2, condition #2, the experimenter promised three pieces but randomized between delivering three and delivering one. The capuchin subjects are reported as having preferred condition #2. The authors interpret these experiments as jointly showing that capuchins are loss-averse when facing gambles over gains, and risk-loving when facing gambles over losses. Behavioral economists have regularly reported observing this behavior in humans.

9. The authors report a similar experimental setup and similar results for starlings. Note that the starlings weren't expressing preferences in a token market. But, then again, in results reported to this point it doesn't appear that the reported capuchin preferences have anything to do with their

token endowments or payments either.

10. The authors report, very sketchily, experiments they say exhibited an endowment effect in capuchins. Capuchins first revealed indifference between two goods. Then they under-traded when endowed with unbalanced portfolios of these goods, even when compensated for their transaction costs. It's impossible to critically interpret this report when we don't know whether capuchins, in general, behave in accordance with diminishing marginal substitution. If they don't, then the experiment as described is at best suggestive.

11. The authors say (p. 91) "If biases observed in human behavior are the results of misapplied heuristics, then it seems natural to assume that what is learned can be unlearned, and that these mistakes are likely to disappear quickly in the face of market pressures – especially when stakes are high." The idea here is that the heuristics are (natural?) defaults, but the organism learns which defaults to apply in which situations. But then they say "Our work, however, suggests that these biases emerge in the absence of experience, and thus that biases are likely to manifest themselves in novel situations." It does? What is the difference between a heuristic default and a bias? Surely the former would also be expected to "manifest themselves in novel situations"? They say this passage concerns "novel implications for practicing economists". Is the implication here supposed to be that people might not be able to learn to correct their biases because they have a deep evolutionary history (shared with capuchins)? But where is this implication coming from? No work the authors report concerns ways in which capuchins (let alone people) might or might not learn to correct for inappropriate biases under social pressure.