Who Doesn't Know How Much the Ball Costs?: Overuse of Common Questions in Choice Experiments

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Abstract

Our experimental population, our participants, are a limited resource. Each time we go into the field with a survey or an experiment and use a common battery of questions, their familiarity with those questions biases responses and can alter our conclusions. We show that for a common battery of questions, Frederick's three-question Cognitive Reflection Test (CRT), that participants in several populations, are familiar with the questions and that this bias the correct response rate. We propose a method for adapting to this phenomena, demonstrate the effects using data from a recent publication and discuss ways that researchers can mitigate effects in the future.

1 Introduction

1. Lots of surprising results in the literature in particular that the CRT is not relelevent in some senses.
2. evidence that it is being over used
3. pitch that with messy experiments we have to use more sophisticated statistics

2 Use of CRT and Response Trends

1. Add hoc observations
2. current trends published
3. as current research by those guys in the email.

3 Statistical Correction for CRT Overstatement

1. key is to have the count of CRT correct and overstatement, i.e., actual count + a random varible for the deception.
2. The gamma distribution is the easiest to use. It is >0 and can be zero, no deception, if need be. So, it nests the truthfulnes case.
3. The scale interacts with the paramter on the CRT in the model, so odd things can happen.

$$u(w) = \frac{w^{1-r}}{(1-r)} \tag{1}$$

4 Comparison of Results

1. using data from [3]
2. Simple case in logit or probit modeling. Gamma is just nested and still identifiable.
3. maximum likelihood estimate yields.
4. compare to without gamma.

4.1 Luce Specification

$$\frac{EU_R^{\frac{1}{\mu}}}{EU_L^{\frac{1}{\mu}} - EU_R^{\frac{1}{\mu}}} \tag{2}$$

1. No need to wrap the Luce spec in a normal CDF.
2. Warning the distributions are not well behaved since the difference of two gammas is a tricky little distribution.
3. Compare the two results.

4.2 Fechner Specification

$$\frac{EU_R^{\frac{1}{\mu}} - EU_L^{\frac{1}{\mu}}}{\mu} \tag{3}$$

1. Need to wrap in a normal CDF.
2. Warning the distributions are not well behaved since the difference of two gammas is a tricky little distribution.
3. Compare the two results.

5 Future Work

References

[1] James C Cox and Glenn W Harrison. *Risk aversion in experiments*, volume 12. Emerald Group Publishing, 2008.

[2] Glenn W Harrison and E Elisabet Rutstrom. Risk aversion in the laboratory. In James C Cox and Glenn W Harrison, editors, *Risk aversion in experiments*, volume 12, page 41âĂŞ196. Emerald Group Publishing, 2008.

[3] Matthew P Taylor. Bias and brains: Risk aversion and cognitive ability across real and hypothetical settings. *Journal of Risk and Uncertainty*, 46(3):299–320, 2013.