

Sampling Processes in Experience Based Decision Making

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Introduction

I investigate the sampling behavior in experience based decision making in order to gain insight into the strategies DMs use to understand experienced gambles.

Research Goals

- Test the effect of two manipulations predicted to impact sampling processes

1. Initial Information State (IIS)

One group of DMs is informed about the number of possible outcomes from a gamble (1, 2, or 3) and the other group is not

2. Motivating Incentives (MI)

One group is paid according to a one-shot post sampling play and the other group is paid based on the accuracy of the estimates of the probabilities that define the gambles

Methods

- Participants included 153 volunteers (mean age = 21; 67% female) who responded to an advert for a paid DM experiment
- DMs were randomly assigned to groups
- Each DM was exposed to 10 gamble pairs
 1. Gambles were either blank, or labeled with the number of outcomes
 2. After experiencing the gambles DMs either:
 - Chose the preferred gamble to play
 - Estimated the probability of outcomes before choosing the preferred gamble to play

Experimental Stimuli

Blank Experience Interface

First experience the two options, then click the button below.

Experience Center		
Brown Prospect		Green Prospect
Experience: 0 points		Experience:
Select Brown •	← Choose →	Select Green •
Experience the Selected Prospect		

Gamble Pairs

Pair	Gamble A	Gamble B	EV(A)	EV(B)
1	(4, 0.8)	(3, 1)	3.20	3.00
2	(4, 0.2)	(3, 0.25)	0.80	0.75
3	(32, 0.1)	(3, 1)	3.20	3.00
4	(32, 0.025)	(3, 0.25)	0.80	0.75
5	(6, 0.4; 2, 0.4)	(3, 1)	3.20	3.00
6	(6, 0.1; 2, 0.1)	(3, 0.25)	0.80	0.75
7	(4, 0.6)	(3, 0.75)	2.40	2.25
8	(4, 0.4)	(3, 0.5)	1.60	1.50
9	(4, 0.8)	(6, 0.5)	3.20	3.00
10	(6, 0.5)	(4, 0.6)	3.00	2.40

Results

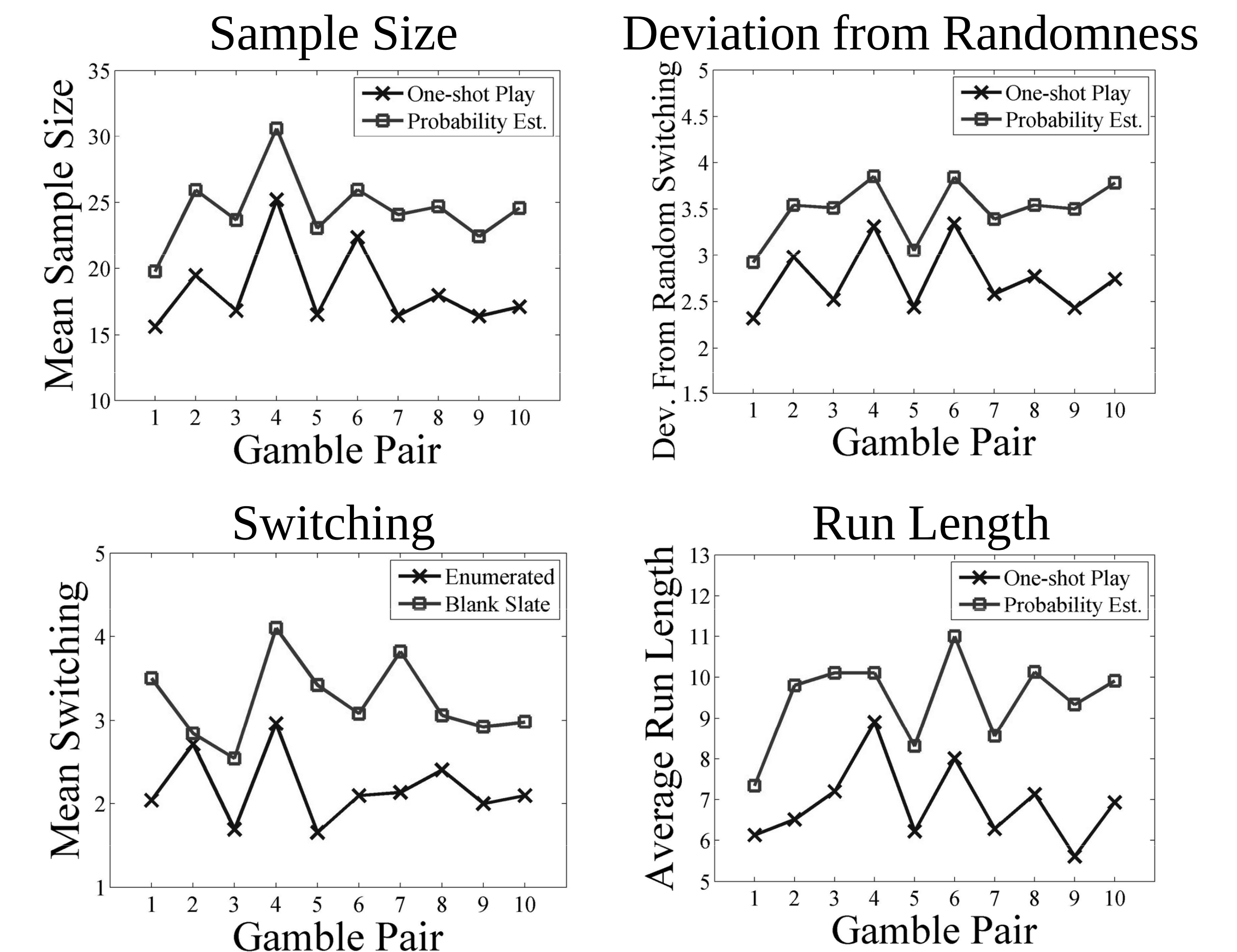
- All variables tested by 3-way repeated measures MANOVA 10 gamble pairs (within Ss) × 2 information states (between Ss) × 2 motivating incentives (between Ss)
- Dependent Variables: Properties of Experience*
 1. Total experience size **(MI)**
 2. The tendency to switch between gambles **(IIS)**
 3. The distribution of these switches **(MI)**
 4. The average run length **(MI)**
 5. The run length variance
 6. Statistical accuracy of probability estimation **(MI)**

(MI) = Motivating incentive factor is significant

(IIS) = Initial information state factor is significant

*Gamble pair factor is significant for all dependent variables.

Results



1. Initial Information State

Weak impact on experienced samples

2. Motivating Incentives

Stronger impact on experienced samples

Probability estimation promotes samples with:

1. More experience samples
2. More accurate estimation
3. Fewer random searches
4. Longer runs of repeated experiences

Discussion

- Experiences incentivized by probability estimation differ from experiences incentivized by a one-shot play
- DMs do not appear to focus on probability estimation unless specifically motivated to do so

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