

SE367: Final Project Report

The Advantages First Principle in Gambling

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Abstract

This paper examines how people act towards making a decision while gambling. We assume that the people examine the positive consequences or the gains associated with a gamble before the loss associated with the same gamble. This is the first part of the Advantages First principle which was found to be followed in a risky decision scenario by Huber et al. (2010). The second part of the proposed hypothesis examines how people eliminate riskier options in favour of less risky options. It was found that the first part of the principle was always followed, i.e. subjects always looked at the gain before the loss associated with a particular gamble. However, there was no significant case of option elimination detected before the entire information tree was searched. The subjects preferred not to eliminate any options using only the gains associated with an option, and had a tendency of getting to know each option completely before gambling with that option.

1 Introduction

This paper attempts to relate the mental model people form while gambling to the mental model formed while participating in everyday risky decisions. The latter model was examined in more detail by Huber and his colleagues (2010) during their paper on risky decision making. However, they found an inconsistency with the observed pattern in case of gambling. They had concluded that the inconsistency might be due to:

- The involvement of actual money
- All gambles may be represented identically in the working memory quite easily. As such, there is no actual motivation for reducing the memory load by eliminating options.

In this paper, we try to examine the first reason i.e. the involvement of actual money. For this, we have two experiment settings. In the first one, we pay the participants

actual money to gamble, while in the second setting the participants gamble with wooden sticks. It was expected that in both experiments, the participants would look at the positive consequences of a gamble before its negative consequences. Further, it was expected that the participants would search more of the information tree in the case which involved actual money as opposed to the case of gambling with sticks.

2 Method

2.1 Participants

17 students (all male), belonging to different branches and different hometowns, participated in the experiment, voluntarily. None of them had participated in a similar gambling experiment before. 8 of these 17 participated in the first experiment involving money, while 9 out of the 17 participated in the second one involving gambling with sticks.

2.2 Setup

Click on the boxes to display information

A	B
Click to reveal what you WIN!!	Click to reveal what you WIN!!
Click to reveal what you LOSE!!	Click to reveal what you LOSE!!

C	D
Click to reveal what you WIN!!	Click to reveal what you WIN!!
Click to reveal what you LOSE!!	Click to reveal what you LOSE!!

Please make a choice:

☐ A ☐ B ☐ C ☐ D

The experiment had a web interface. The participants were

given a laptop, by a confidant, which showed them the instructions to be followed while doing this experiment. Once the participants were ready to do the experiment, the next button was clicked by the confidant. This took the subjects to a screen where they had to choose one out of four different gambling scenarios. The participants were informed that the gamble would be a coin toss where they would have to select either Heads or Tails. However, the prize money they would get on winning or the penalty imposed on losing, would depend upon the option they choose at this screen.

Initially no information was shown about any option on the screen. The participant had to ask the confidant to reveal information about any option he/she wanted. The participant could ask the confidant to reveal the prize money or the penalty associated with any option. The revealed information was hidden a few seconds after the participant had seen it. At a time, only one piece of information was allowed to be revealed. The participants could ask for all the options to be revealed one by one.

2.3 Data Collected

The order in which the participants asked for the options to be revealed was recorded and sent to a central server. The experiment also asked the participants for the final option they chose to gamble with, their name (optional), age and gender. The manipulation checks included rating the amount of risk percieved by the participant (0-10 scale), and the significance of the outcome (0-10 scale) i.e. the importance of winning or losing.

3 Results

The results of Experiment A (money) indicated that the participants had a significant tendency of asking for the prize money of an option and immediately following it with its penalty (0.875). In one case, a participant asked for all the negative outcomes before any positive outcome (0.125). In the results of Experiment B also, a majority of participants asked for the positive outcome of a gamble and followed it with the negative outcome (0.625). Another observed scenario was asking for 2 positive scenarios and following them with 2 negative scenarios (0.125). A portion of the participants (0.25) asked for all the positive scenarios before any negative scenario.

Scenario	Order of Questions	Observation	Total Observation
Wins before Losses	WLWLWLWL	0.75	0.9375
	WWLLWWLL	0.0625	
	WWWLLLL	0.125	
Losses before Wins	LLLLWWWW	0.0625	0.0625

W - Question about a win/positive scenario
L - Question about a loss/negative scenario

This confirms the first part of our hypothesis, that people look at the positive consequences before the negative consequences in a risky decision scenario. However, the second part of the hypothesis, that participants eliminate options based on the positive consequences was not confirmed. Instead, the participants preferred to search the entire tree in all the cases. The manipulation check was used to discard one response which did not recognize the risk associated with the experiment.

3.1 Other interesting results

The manipulation checks revealed a very interesting result. Although, the participants successfully recognized the elevated risk in the first experiment involving money, the importance attached to the outcome of the gamble was similar in both cases. This may indicate the effect of the process of gambling on the process followed by a participant to arrive at a result.

	Experiment A (money)	Experiment B (sticks)
Risk Rating	6.25 (1.28)	4.625 (1.41)
Importance Rating	5.875 (1.73)	6.25 (1.16)

All ratings were on a scale of 0 to 10

4 Discussion

The results strongly suggest that the participants preferred to process each option completely, by asking for its positive and negative consequences one by one, before moving on to the other options. This strongly hints that the second reason provided by Huber and his colleagues, that a one is able to represent each option in a similar fashion in one’s working memory and reduce the cognitive load, eliminating the need of rejecting options in the decision task, may hold. Another observation is that the participants attached almost

equal importance to the outcome of the gamble in both the cases. This may indicate a sense of thrill, associated with winning a gamble, playing a part in deciding the course of the decision making process.

5 Conclusion

Even in a gambling setting, the first part of the Advantages First principle is followed. However, either the prospect of suffering a personal loss, or the facility of low cognitive load leads people to examine all possible scenarios before making a decision. People prefer to process each gambling option completely before looking at the next. People attach similar importance to winning or losing a gamble even if there is a small difference in the prize/penalty involved.

6 Proposed future work

One could examine the prospect that a low cognitive load may allow the participants to search the entire information tree. To achieve this, one may increase the number of alternatives provided to the participant, or mix options giving out money in different currencies. One may also examine the prospect of a personal aspect interfering with the Advantages First principle.

References

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