



# Gambling in Pigeons

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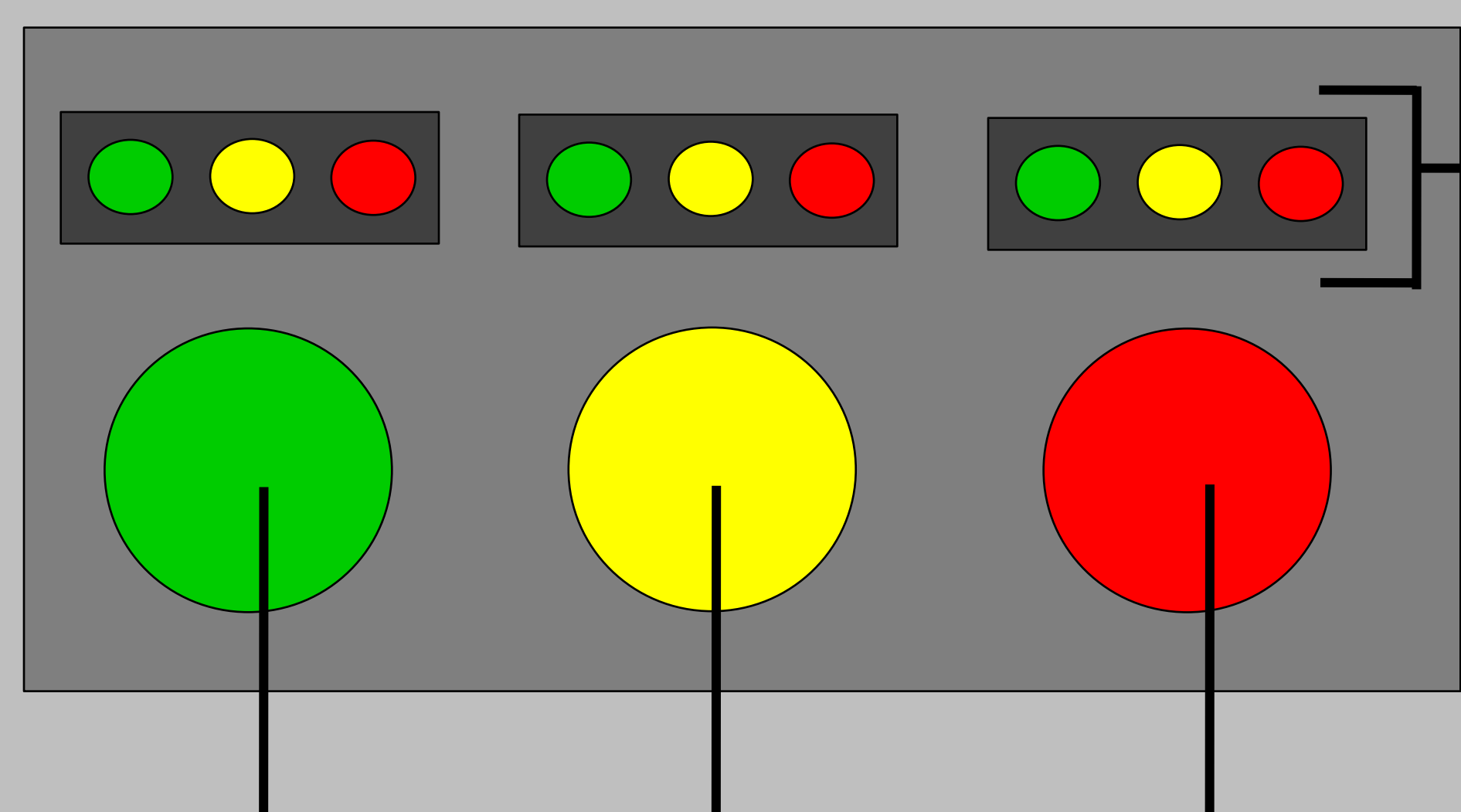
## Introduction

Gambling behavior has the potential for real-life maladaptive consequences. Understanding the environment which fosters gambling behavior is a first step towards developing a possible treatment option.

Experimental studies exploring gambling behavior in humans have limited ecological validity because those studies cannot closely simulate a real gambling condition. For instance, there are ethical considerations which prevent people from losing money in a research setting. An animal model of gambling could be beneficial to establish stronger experimental control over the environment and the ethical concerns regarding loss are reduced (Madden, Ewan, & Lagorio, 2007).

The purpose of the present study was to create a gambling analog using pigeons in an attempt to mimic environmental factors that are involved in real-life gambling conditions.

## Method



These nine LED lights represent "money" that was used to buy food or a gambling opportunity.

The green key was used to "work".  
The yellow key was used to "buy" food.  
The red key was used to "gamble".

**Apparatus:** An operant chamber (see above) with a food receptacle and house-light was used.

**Procedure:** Three pigeons were trained to peck illuminated response keys. A fixed number of pecks on the green "work" key resulted in the illumination of a single LED light. Responding to the green key simulated a "working" condition because the pigeon was required to exert effort to gain an LED.

If the pigeon had one or more LED lights available, a single peck to the red key bought a gambling opportunity resulting in either a loss or a gain of LED(s). The gambling outcome was based on a random probability which simulated a real-life "gambling" condition. In effect the pigeon was placing a "bet."

If the pigeon had two or more LED lights available then a single peck to the yellow "buy" key resulted in a loss of two LED lights and the delivery of a single food pellet. If there were two or more LED lights available the red key was also available to buy a gambling opportunity.

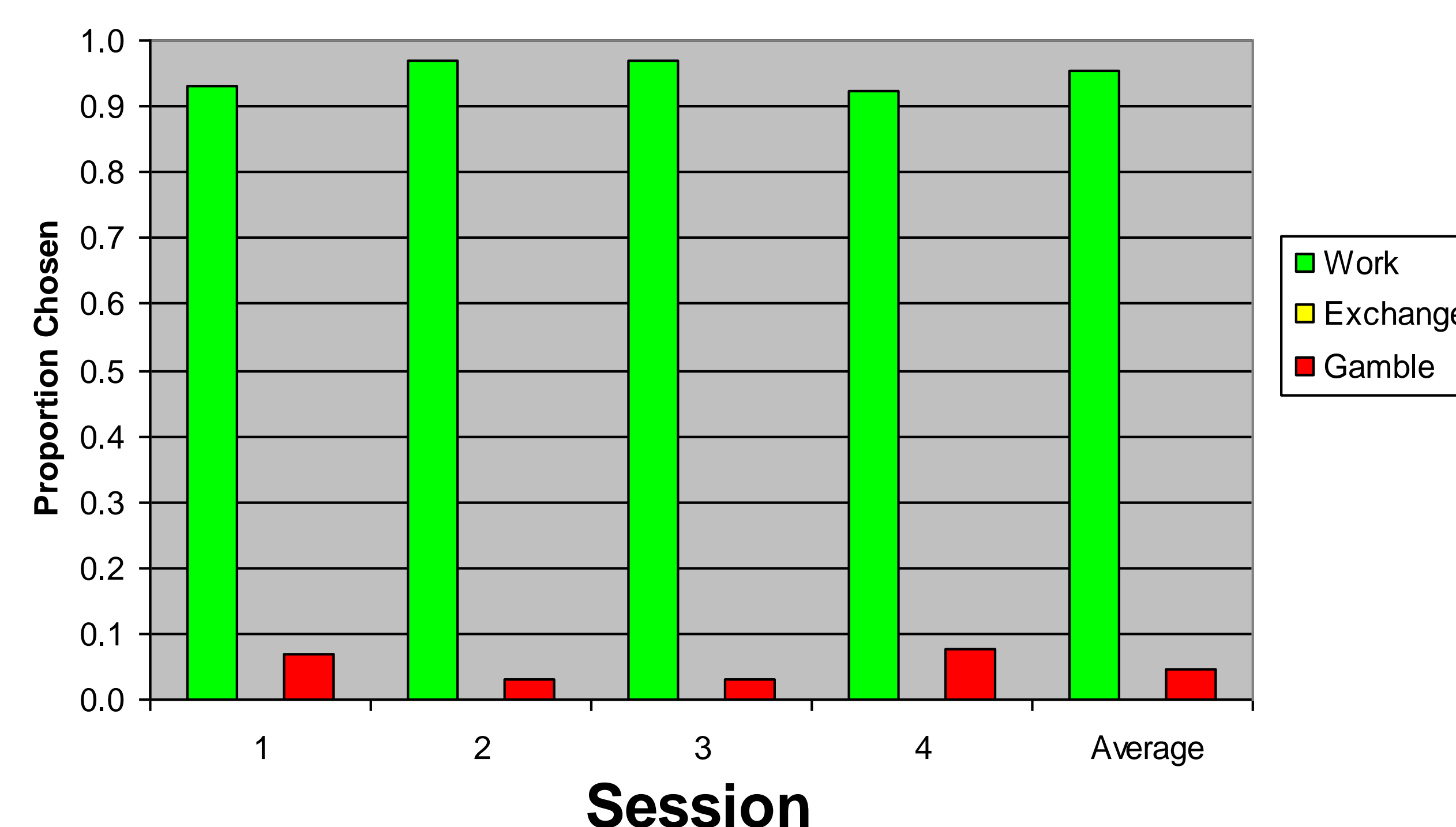
**Manipulation:** The probability of a win or loss associated with the gambling key was manipulated across conditions.

## Acknowledgments

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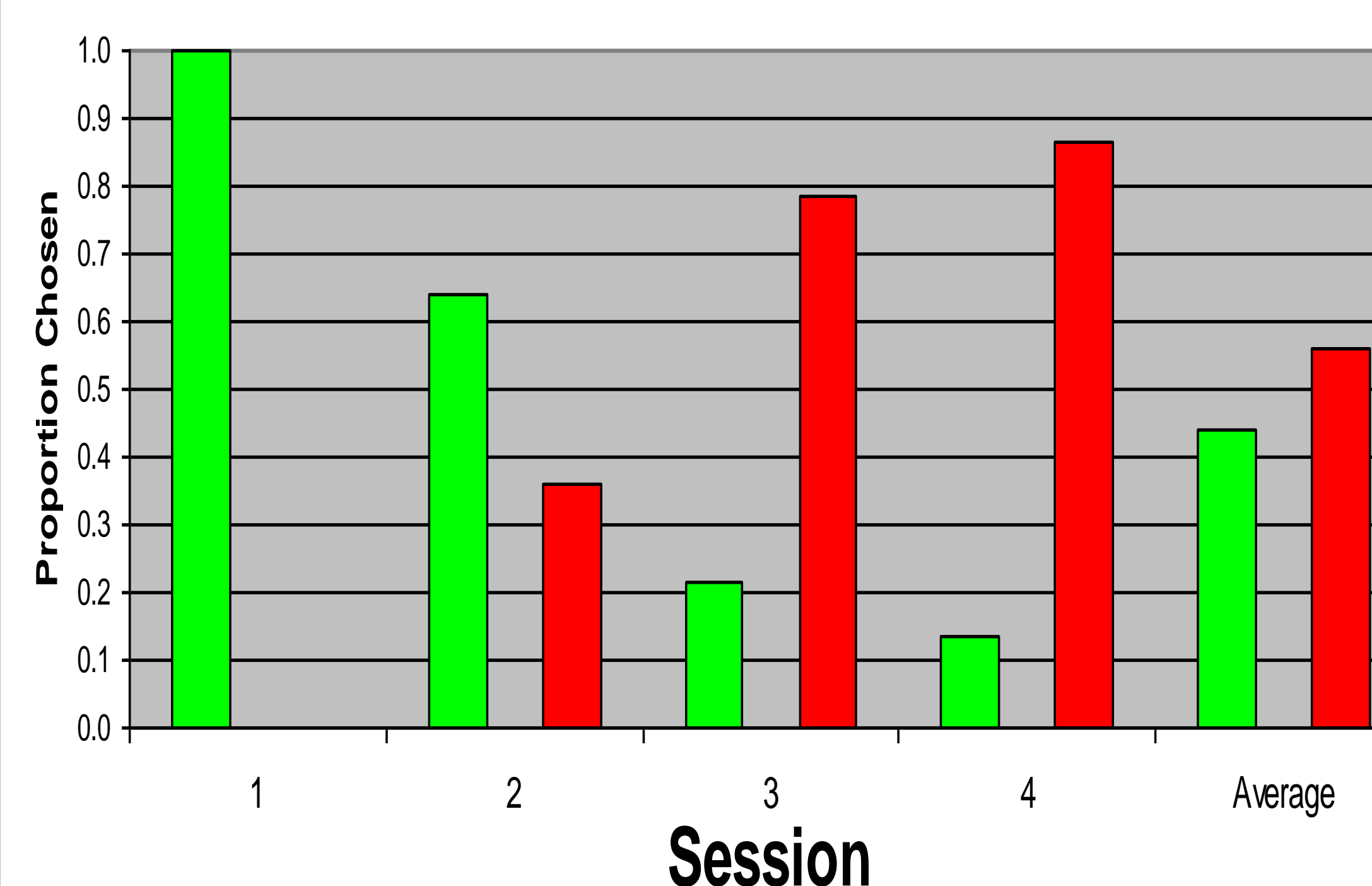
## Results

7397: Proportion of 1 LED Choices on Gamble Poor Condition



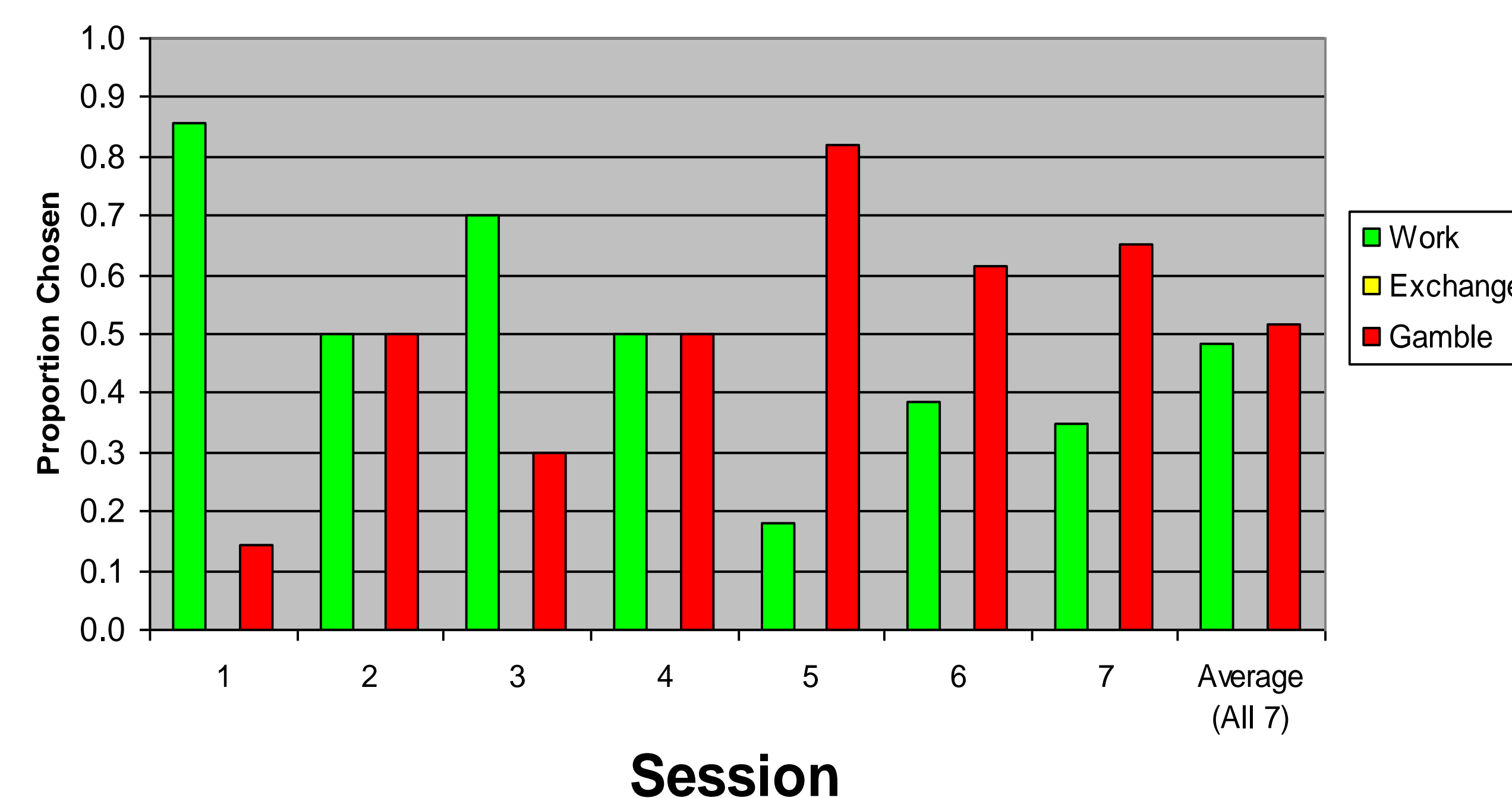
**Figure 1.** Gamble Poor condition for subject # 7397. The gambling probabilities for the gamble poor condition are:  
10% chance to lose 3 LEDs  
20% chance to lose 2 LEDs  
40% chance to lose 1 LED  
20% chance of no gain/loss  
10% chance to gain 1 LED

7397: Proportion of 1 LED Choices on Gamble Rich Condition



**Figure 2.** Gamble Rich condition for subject # 7397. This condition immediately followed the poor gamble condition shown in *Figure 1*. The gambling probabilities for the gamble rich condition are:  
10% chance to lose 1 LED  
20% chance of no gain/loss  
40% chance to gain 1 LED  
20% chance to gain 2 LEDs  
10% chance to gain 3 LEDs

9008: Proportion of 1 LED Choices Transitioning from a Gamble Poor Condition to a Gamble Rich Condition



**Figure 3.** Data showing a transition from a gamble poor condition onto a gamble rich condition for subject # 9008.

## Discussion

The goal of this study was to gain further understanding of conditions which may promote gambling behavior.

We believe we have created an animal analog to gambling. That is, when moving from a leaner gambling situation to a richer gambling situation pigeons gamble more.

Future manipulations may include: work requirements, exchange requirements, gambling costs, reward size, and win loss history of the subjects.