

Project # 3: The Experiment Experiment

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Here is the link to the podcast episode: [Click me!](#)

The first part of the project pertains to the podcast content; your answers to the questions in the first part will all be graded based on accuracy. The second part is experimental and can be done in R; your submission will be to a great extent graded on your readable and relevant data presentation. The third part is more open-ended; your submission for the third part of the project will be graded based on the following:

- overall composition and presentation;
- well-foundedness of your conclusions and interpretation.

Part One: Guided listening.

Brian Nosek is a co-founder of the “[Center for Open Science](#)”. After (or during) listening to the podcast, please, provide your answers to the following questions:

Problem 1.1.(1 point)

What was it that prompted Brian Nosek to undertake the project described in the podcast?

Problem 1.2.(1 point)

What did the project designed by Brian Nosek consist of?

Problem 1.3.(1 point)

What is the (at least one) reason that scientists do not habitually repeat studies?

Problem 1.4.(1 point)

How many experiments did the volunteer scientists “do over”?

Problem 1.5. (2 points)

What was the source of the chosen experiments? Were they obscure within the field?

Problem 1.6.(1 point)

What is the “afternoon-treat hypothesis”?

Problem 1.7.(1 point)

Did the project originator Brian Nosek keep constant track of how many of the experiments were successfully replicated? Or did he wait until the entire experiment experiment was completed?

Problem 1.8.(1 point)

How many original conclusions were confirmed?

Problem 1.9.(1 point)

Is the conclusion that the scientists are faking their data?

Problem 1.10.(2 points)

What experiment did the journalist conduct the morning of taping the podcast? What were the results?

Problem 1.11.(3 points)

What is the file-drawer effect? What is its consequence in the field of psychology?

Problem 1.12.(1 point)

Does the file-drawer effect completely explain the 39/100 ratio?

Problem 1.13.(1 point)

Which example of a common mistake does Dr. Lindsey describe?

Problem 1.14.(1 point)

Which other disciplines are now trying to do the experiment experiment?

Problem 1.15.(1 point)

What remedy does Brian Nosek propose?

Problem 1.16. (2 points)

Is this idea already being implemented in a certain research field? Has this changed the frequency of positive results?

Problem 1.17.(1 point)

Should we lose faith in scientific results?

Part 2: A simple experiment (8 points)

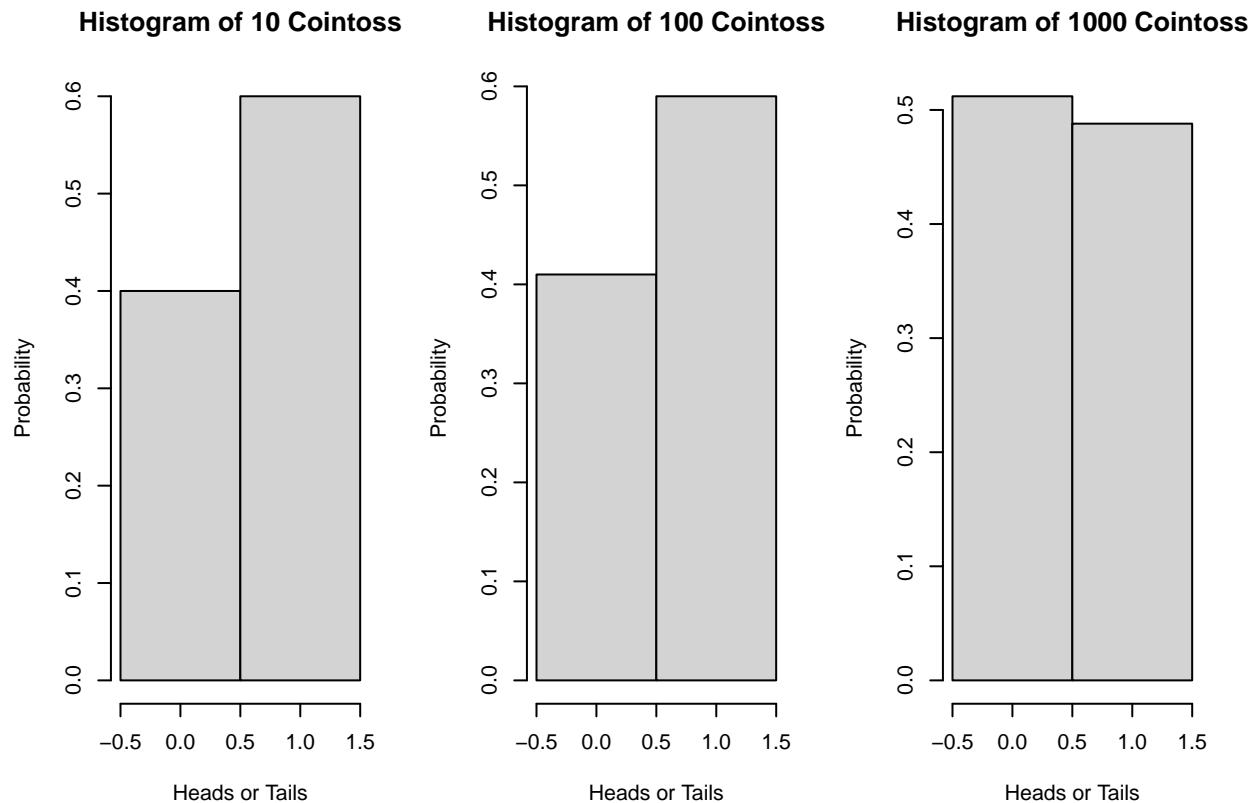
Design and execute a simple experiment consisting of trials such as coin tosses, or rolls of a die. See how close to “fairness” your results are. Are you tempted to increase the number of trials? Plot your findings and comment on the presented data.

```
# heads = 0
# tails = 1

# simulating coin toss
cointoss <- function(n) {
  sample(0:1, n, rep=T)
}

# running simulation for x number of times
x1 = cointoss(10)
x2 = cointoss(100)
x3 = cointoss(1000)

# coin toss probability on histogram
par(mfrow=c(1, 3))
hist(x1, breaks=c(-.5, .5, 1.5),
     main="Histogram of 10 Cointoss",
     xlab="Heads or Tails",
     ylab="Probability",
     prob=T)
hist(x2, breaks=c(-.5, .5, 1.5),
     main="Histogram of 100 Cointoss",
     xlab="Heads or Tails",
     ylab="Probability",
     prob=T)
hist(x3, breaks=c(-.5, .5, 1.5),
     main="Histogram of 1000 Cointoss",
     xlab="Heads or Tails",
     ylab="Probability",
     prob=T)
```



Part 3: Further reading

Problem 3.1. (10 points)

Find **one** available study which was discussed in the podcast. Comment on the original and the replicated study.

Problem 3.2 (5 points)

Look into the following [article](#). What is the take-home message?

Problem 3.3 (5 points)

Look into the following [article](#). What is the take-home message?

Problem 3.4 (10 points)

Find out more about Andrew Wakefield. Then go to this [CDC website](#). What are your comments? What examples of more contemporary misinformation do you know of (with sources cited, please)?