Chapter 4 Scenarios

Effect of different types of textiles on sexual activity

Note: This study won the 2016 Ig Nobel Prize in Reproduction. [1]

The effect of wearing different types of textiles on sexual activity was studied in 75 rats which were randomly assigned to one of five equal groups: four test groups and one control. Each of the four test groups were dressed in one type of textile pants made of either 100% polyester, 50/50% polyester/cotton mix, 100% cotton or 100% wool. Sexual behaviour was assessed before and after 6 and 12 months of wearing the pants and 6 months after their removal, using the ratio of intromission to mounting (I/M) and the electrostatic potentials generated on the penis and scrotum, measured by electrostatic kilovoltameter.

1. What is the explanatory variable? Is it categorical or quantitative?

2. What are the response variable(s)? Are they categorical or quantitative?

3. Is this an observational study or an experiment? Why?

4. What is the observational/experimental unit?

5. What is the population?

6. Was there random assignment?

7. Did the experimenters use a random sample?

8. Can you think of any sources of bias which might be avoided by using a random sample?

9. Can you think of a way to conduct a random sample in this experiment?

10. What conclusions can be drawn about the population?

[1] https://www.improbable.com/ig-about/winners/#ig2016

On the reception and detection of pseudo-profound bullshit

Note: This study won the 2016 Ig Nobel Peace Prize. [2]

Full Study Description:

In this study, we focus on pseudo-profound bullshit, which consists of seemingly impressive assertions that are presented as true and meaningful but are actually vacuous. We presented participants with bullshit statements consisting of buzzwords randomly organized into statements with syntactic structure but no discernible meaning. The results support the idea that some people are more receptive to this type of bullshit and that detecting it is not merely a matter of skepticism but rather an ability to identify deception by vagueness in otherwise impressive claims. Our results also suggest that a bias toward accepting statements as true may be an important component of pseudo-profound bullshit receptivity.

Study 1

University of Waterloo undergraduate psychology students participated in this study in exchange for course credit. Participants were presented with ten statements that have syntactic structure but that consist of a series of randomly selected vague buzzwords. They were then asked to indicate the relative profundity of each statement on a scale from 1 (not at all profound) to 5 (very profound).

Participants also completed a series of cognitive tests, receiving a score indicating their susceptability to logical fallacies and cognitive shortcuts. In addition, participants completed an inventory measuring belief in mythical beings, where high scores are indicative of a greater likelihood of belief in the absence of evidence. The goal of Study 1 was to validate the bullshit receptivity scale (the 10 statements selected from vague buzzwords) and establish the relationship between the scale and the fallacy and belief scores.

1. What are the explanatory variables? Are they categorical or quantitative?

2. What are the response variable(s)? Are they categorical or quantitative?

3. Is this an observational study or an experiment? Why?

4. What is the observational/experimental unit?

5. What is the population?

6. Was there random assignment?

[2] https://www.improbable.com/ig-about/winners/#ig2016

7. Did the experimenters use a random sample?

8. Can you think of any sources of bias which might be avoided by using a random sample?

9. Can you think of a way to conduct a random sample in this experiment?

10. What conclusions can be drawn about the population?

Study 3

Note: Study 2 is essentially a replication of Study 1 using real-world (not randomly generated) statements.

In Studies 1 and 2, the authors established a statistically reliable bullshit receptivity scale. It remains unclear, however, whether these associations are driven by a bias toward accepting pseudo-profound bullshit as meaningful or a failure to detect the need for skepticism (or both) when skepticism is warranted.

A total of 125 participants were recruited from Amazon's Mechanical Turk (an online service) in return for pay. Only American residents were permitted to sign up for the study. All participants reported speaking fluent English. Participants were given forty different statements: 10 each of random vague statements (study 1), real vague statements (study 2), meaningful but mundane statements, and motivational quotations. The first 20 statements were classified as pseudo-profound bullshit, the second 20 consisted of two types of controls. Participants were asked to indicate the relative profundity of each statement on a scale from 1 (not at all profound) to 5 (very profound). Participants also completed a series of cognitive tests in order to establish their susceptability to logical fallacies and cognitive shortcuts, as well as factors such as belief in mythical beings.

The researchers assessed the difference in average profundity ratings between legitimately meaningful quotations and pseudo-profound bullshit (a measure of so-called bullshit sensitivity). They also examined the difference in average profundity ratings between pseudo-profound bullshit and mundane statements (a measure of bullshit sensitivity due to failure to detect the need for skepticism).

1. What is the explanatory variable? Is it categorical or quantitative?

2. What are the response variables? Are they categorical or quantitative?

3. Is this an observational study or an experiment? Why?

4. What is the observational/experimental unit?

5. What is the population?

6. Was there random assignment?

7. What conclusions can be drawn about the population?

8. Would you look for an association between the explanatory and response variables, or a causal effect?