Ethics course seminar II: Scientific fraud

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Scientific fraud - what can it be?

Manufacturing data

Twisting data (e.g. removing “outliers”)

Hiding insignificant results

Statistical fishing (e.g. performing a number of statistical analysis until one gives a significant result)
An example

PhD student performs 2 very similar experiments

Experiment 1 gave insignificant results

Experiment 2 gave significant results
Ethical dilemma

Supervisor knows about the 2 studies and thinks you should only publish the significant results (due to pressure from funding agency)

The student is tempted to report the significant results without reporting the insignificant results because:

- Pressure from supervisor to publish
- Pressure from scientific community
- Pressure from yourself (ability to perform - reward)
- Only the significant results may lead to a publication in a highly rated journal
Options

I. Repeat the study a third time (validation)

II. Publish ALL the data

III. Publish only significant results

IV. Involve a third opinion
Ramifications I

Repetition of the experiment

Pros: honesty, objectivity

Cons: risk of discrediting the significant results, loss of time, potential conflict with the supervisor
Ramifications II

Publish all the data

**Pros:** honest, more interesting

**Cons:** harder to publish, less interesting
Ramifications III

Publish only significant results

**Pros:** win time, results are better to publish (better journal?), avoid conflict with supervisor

**Cons:** scientific fraud
Ramifications IV

Involve third opinion

**Pros:** distribute responsibility, gain an objective view

**Cons:** loss of time, potential conflict of supervisors
Conclusion

The ethical correctness only given if

- All data from the 2 experiments are shown
- Experiment is repeated a third time