

Bias and Errors

3.7 

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1. What are the three most important things to verify when are reading about a study?

Replication	Effective Sampling	Random Assignment
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2. What are the three sampling methods for MDM4U?

Random	Convenience	Voluntary
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3. For each type of bias/error, fill in the specific name that matches the clue.

A. Errors in Conclusions [**Word Bank:** No Causation, Transferring Findings]

No Causation	a) The research implies that one thing causes another, however, it only establishes a correlation.
Transferring Findings	b) The research is done on rats, but the report implies that it will apply to humans [without further research].
No Causation	c) The sample size is 12. The study says that bubblegum causes hair loss.
No Causation	d) It is possible that the researcher has forgotten a third (spurious) factor that is causing the changes in X and Y.
Transferring Findings	e) The research implies that you can take the research and apply it to different situations.

B. Errors in Random Assignment [**Word Bank:** Placebo Effect, No Blinding, No Double Blinding]

Placebo Effect	f) There is no control group.
Placebo Effect	g) You only test the medication; you <i>don't</i> also test if one group has a sugar pill and then compare the results.
No Blinding	h) The subject knows whether or not they are getting a placebo.
No Double Blinding	i) The subject doesn't know whether or not they are in the control group, but the researcher does.
Placebo Effect	j) You don't randomly assign your subjects into a control group (that get a fake medication) and a test group (that get the real medication)

C. Errors in Sampling [**Word Bank:** Convenience Sampling, Self-Selection, Selection Bias]

Self Selection	k) The subjects get to choose whether or not they participate.
Convenience Sampling	l) You set up your study in a mall and ask whoever passes by to participate.
Self Selection	m) You post the survey on-line and ask whoever is interested to participate.
Selection Bias	n) You only test women who are aged 24 when you are attempting to find the effectiveness of a new medication.
Convenience Sampling	o) You go to the library during period 2 and ask whoever is there to participate.
Selection Bias	p) The subjects are only selected from the hospital's subject pool in the Yellowknife, NWT, Canada.

D. Observation Errors [Word Bank: Hawthorne Effect, Question Effects, Social Desirability Bias, Experimenter Error]

Social Desirability Bias	q) You ask a sensitive question.
Experimenter Error	r) Accidentally, the researcher forgets to include 3 subject's results in their calculation.
Social Desirability Bias	s) You ask a question that might have an embarrassing answer.
Hawthorne Effect	t) You directly observe a person doing the task for your study.
Question Effects	u) You ask a question in such a way that the answer you hope they pick is clear.
Question Effects	v) For example, the survey question: "Do you feel that building houses on the greenbelt is a horrible idea that will harm future generations and the environment in Ontario?"
Social Desirability Bias	w) For example, the survey question: "Have you ever had an STD?"
Experimenter Error	x) The researcher doesn't measure the tree's diameter correctly.

E. Motivation Errors [Word Bank: Bias Due to Funding, Yeah, messing this one up will cause Ms. Gorski to very judgemental]

Bias Due to Funding	y) Coca cola funds a study on effects of sugary drinks on children.
Bias Due to Funding	z) Juul funds a study on the effect of nicotine on young adults.
Bias Due to Funding	aa) The Peel District School board funds a study on new education methods at the Peel District School board.

4. In the first column, fill in the name of the specific error that applies. The complete list follows:

A. Errors in Conclusions ● No Causation (but is implied) ● Transferring Findings	B. Errors in Random Assignment ● Placebo Effect ● No Blinding ● No Double Blinding	C. Errors in Sampling ● Convenience Sampling ● Self-Selection ● Selection Bias	D. Observation Errors ● Hawthorne Effect ● Question Effects ● Social Desirability Bias ● Experimenter Error	E. Motivation Errors ● Bias Due to Funding
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No Causation	a) If causal, your research must have a control group that accounts for the placebo effect.
No Causation	b) If you have low replication, the Law of Large Numbers states that you could have variability and unreliable results.
Question Effects	c) Leading Questions may skew your results.
Social Desirability Bias	d) People answer as they feel they should.
Experimenter Error	e) r is calculated for non-numeric data.
Social Desirability Bias	f) Respondents to surveys exercise more, are without prejudice, read more and eat better than all other evidence suggests.
Social Desirability Bias	g) Sensitive questions may not be answered at all.
Placebo Effect	h) Simply receiving treatment (a sugar pill or placebo) cures some people.
Hawthorne Effect	i) The act of observing people changes their behaviour.
Question Effect	j) The multiple-choice options may not have the answer the subject wants.
Transferring Findings	k) The news media loves to take results from a limited, narrow study and extend them to other times, places, groups, and species.
Experimenter Error	l) The probability calculation has a mistake.
No Causation	m) When there is no Random Sampling, your group may have diversity problems which may skew your data.
No Causation	n) Without random assignment and a control group, you don't know if spuriousness applies. By randomly assigning people into groups, you can rule out other factors.
Experimenter Error	o) You calculate the average incorrectly.
Bias Due To Funding	p) Your survey was paid for by someone with financial interest in the results.